Fall 1996

Yale Medicine : Alumni Bulletin of the School of Medicine, Fall 1996- Fall 1998

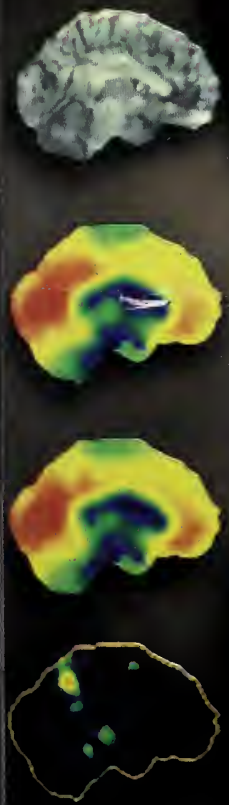
Yale University. School of Medicine

YALE MEDICINE

Alumni Bulletin of the School of Medicine Fall/Winter 1996

The biology of depression *and anxiety*

Molecular techniques and advances in brain imaging suggest new treatments for mental illness



AYAM Outreach Program

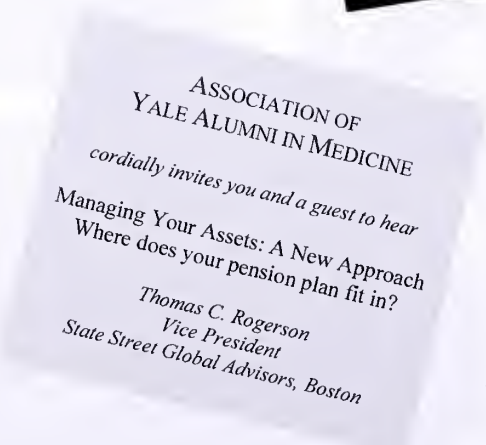
To better communicate with our alumni/ae, the AYAM is pleased to announce **The Outreach Program**, an effort to enhance and expand direct contact with our members.

REUNION WEEKEND

Save the date: **June 6 and 7** for the **1997 Alumni Reunion Weekend**. Yale University President Richard C. Levin, Ph.D., will address alumni/ae at the Saturday annual meeting. Albert B. Deisseroth, M.D., Ph.D., chief of medical oncology, will make a presentation on new gene-therapy initiatives in cancer treatment.

NEW DIRECTORY

Soon, locating fellow alumni/ae will be easier with an updated **Yale School of Medicine Alumni Directory**, last published in 1992. Harris Publishing will be phoning to verify individual listings during eight weeks beginning December 9.



REGIONAL EVENTS

On the heels of alumni/ae receptions in **New Haven**, **Boston**, and **San Francisco**, the School of Medicine will be hosting events in **San Diego** in early February, **Washington, D.C.**, in March and **Westchester, N.Y.**, in May. Details to follow in the mail.

MINI REUNIONS

Members of the Class of 1945 will convene for an informal reunion in April in Florida. If you and classmates are planning a similar event, please call the **Office of Alumni Affairs at 203.785.4674**.

Association of Yale Alumni in Medicine

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On the cover: *New imaging techniques are helping to explain the biochemical basis of depression, anxiety and other brain disorders. The SPECT brain images on the cover are from a new Yale study that indicates patients with panic disorder may have a significantly reduced number of benzodiazepine receptors. The bottom image highlights areas of the brain with abnormally low numbers of these Valium-binding receptors, averaged from a group of 15 patients with panic disorder as compared to an equal number of healthy subjects.*

Cover Illustration by Peter Casolino/design by Jack* Design
SPECT images: J. Douglas Bremner, Robert B. Innis, John P. Seibyl and Dennis S. Charney

YALE MEDICINE

Please recycle

The Alumni Bulletin of the School of Medicine ◆ Fall/Winter 1996; Volume 31, Number 1

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Crosstalk between clinicians and basic scientists at Yale is producing a new understanding of the brain and novel treatments

—providing hope for the 30 percent of depressed patients unresponsive to existing medications.

Division of Molecular Psychiatry

More than one trillion neurons make up the brain, its structures and pathways. Three decades of intensive, basic scientific research at Yale have produced evidence to decipher the mysteries of the brain, providing the basis for rational treatments for mental disorders, including anxiety and depression.

Brain chemistry

By Marc Wortman

Photographs by Frank Poole

It was a year ago that Susan S., a patient at the Connecticut Mental Health Center (CMHC) in New Haven, had fallen once again into a major depression. She was tired and hopeless, exhausted by a long battle with depressive illness that had been severe enough to keep her from working during the past five years.

Yale faculty on the staff of CMHC, the region's principal public mental health facility, had used all the tools in their repertoire and were still unable to lift the leaden shroud blanketing the life of this 56-year-old woman.

Her physician, Robert T. Malison, M.D. '87, HS '87-91, worried about her prognosis. "When the average person feels depressed, he can soon push through it," says Dr. Malison, an assistant professor of psychiatry who heads the CMHC Depression Research Clinic. "But a person with a major depression can't pull himself up by the bootstraps. It's a much more severe, unrelenting syndrome."

As many as one quarter of all women and 12 percent of men will face at least one bout of major depression in a lifetime. Of more than 15 million Americans affected by major depression each year, about two-thirds will respond to treatment with antidepressant medication. Those who do not may face a lifelong, disabling disease, and one out of 10 people suffering from long-term, major depression will commit suicide. In 1990, the economic costs of depression were estimated to be $30 billion annually.

For Susan S., being under the care of Yale psychiatrists meant that the most advanced neuroscience research in the world could be applied to her case. Yale's psychiatry department is uniquely positioned to make new discoveries in the neurobiology of major psychiatric disorders, including depression. With a variety of specialized clinical centers (at Yale Psychiatric Institute, the VA Connecticut Healthcare System campus in West Haven, Yale-New Haven Hospital, and at CMHC, a 31-year collaboration by Yale and the State of Connecticut) Yale's world-renowned faculty treat thousands of patients with mental disorders. These clinicians often work literally across the hall from the

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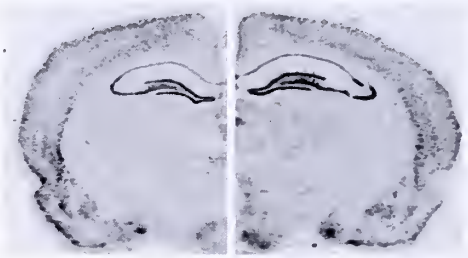
Marc Wortman is a free-lance writer in New Haven.

world's leading basic neuroscience researchers.

With new and sophisticated tools to help in the search for clues to brain abnormalities, the department's scientists work in a wide range of disciplines encompassing brain imaging, pharmacology, genetics and molecular biology. This massive effort to understand the brain from multiple perspectives promises to uncover the secrets of when and why the brain malfunctions, causing mental illness. In fact, the work has been so successful that the combined research program is ranked among the top three nationally in terms of research funding.

A few steps from the clinical unit on the third floor of CMHC where Susan S. was being treated, a team of neuroscientists was busily exploring the nervous system, mostly by studying the brains of rats. That work is intended to provide keys to unlocking the secrets of the human brain, which in most basic structures is very similar to that of other animals. During the past three decades, researchers in those laboratories have pioneered many of the fundamental advances in knowledge about depression and anxiety. Scientific data generated at Yale has been instrumental in improving treatment for the diseases, including groundbreaking work that enabled the development of such revolutionary antidepressants as fluoxetine, better known by its trade name of Prozac. "We've been building a body of basic knowledge for more than three decades that serves as the basis for many of today's treatment advances," says Dennis S. Charney, M.D., HS '77-81, professor and deputy chair of psychiatry for research and education.

Recent findings about the influence of stress on one area of the brain, the hippocampus, suggest new ways of thinking about the cause of depression.



The hippocampus, the curving dark ridge outlined in black in the brain images above, is the portion of the brain that controls emotions and memories. New studies show that stress can shrink the hippocampus and that this damage may contribute to the symptoms of depression. Laboratory research at Yale during the past three decades, says Eric J. Nestler, M.D., Ph.D., left, "provided some of the basic knowledge that drove the pharmaceutical companies to look for a Prozac."

RETHINKING SEROTONIN

Much remains unknown about depression and especially about cases such as Susan S., in which all known forms of treatment do not seem to help. Several members of the neuroscience faculty are struggling to understand why Susan S. and others like her might not respond to treatment. Using recently developed techniques for studying brain cells at the molecular level, Ronald S. Duman, Ph.D., and colleagues George Heninger, M.D., and Eric J. Nestler, M.D. '83, HS '83-87, Ph.D. '82, had been investigating the functions of different brain structures believed to be involved in depression. They observed in rats that stress could alter the function of certain brain regions affected by serotonin, and induce behaviors suggestive of human depression.

Recent findings about the influence of stress on one area of the brain, the hippocampus, suggest new ways of thinking about the cause of depression. Studies in animals have shown that stress can cause the shrinking or even death of neurons in the hippocampus. Moreover, brain imaging studies have shown that the size of the hippocampus is reduced in patients with depression or post-traumatic stress disorder (PTSD). These find-

New SPECT brain imaging techniques developed by Robert B. Innis, M.D., Ph.D., left, and colleagues at Yale and the VA Connecticut Healthcare System have made possible the direct measurement of sites in the brain where antidepressant and anti-anxiety drugs work. Psychiatrists in the not-too-distant future may be able to send a patient for tests to diagnose or to monitor the treatment of patients with depression, obsessive-compulsive disorder and other neuropsychiatric illnesses.

Opening a window on the brain

As if a window had been cut into a brick wall, the revolution in brain imaging technology has, for the first time, allowed researchers to peer into the actual functioning of the human brain. Yale is home to one of the world's leading centers for the use of advanced brain imaging technology for research into the neurochemical basis of mental disorders. "We can now get direct measurements of target sites in the brain," says professor of psychiatry and pharmacology Robert B. Innis, M.D., Ph.D., HS '81-84, who directs the Neurochemical Brain Imaging Program. The program boasts an extensive complement of state-of-the-art equipment at the medical school and the West Haven campus of the VA Connecticut Healthcare System. "If we can understand what the chemical imbalance is that is causing an illness, that will help in diagnosis and enable us to design treatments for the specific imbalance."

The program forms "a nice bridge between basic science and clinical psychiatry," says Benjamin S. Bunney, M.D., HS '68-71, the department chairman, who calls Dr. Innis the world leader in SPECT brain imaging. "What makes it special is that there's a foundation of basic science knowledge, derived from animals, that allows Bob to correlate changes in the brain with the images. Because he's first done the work in animals, imaging and then measuring brain function, he's in a much better position to correctly interpret human images."

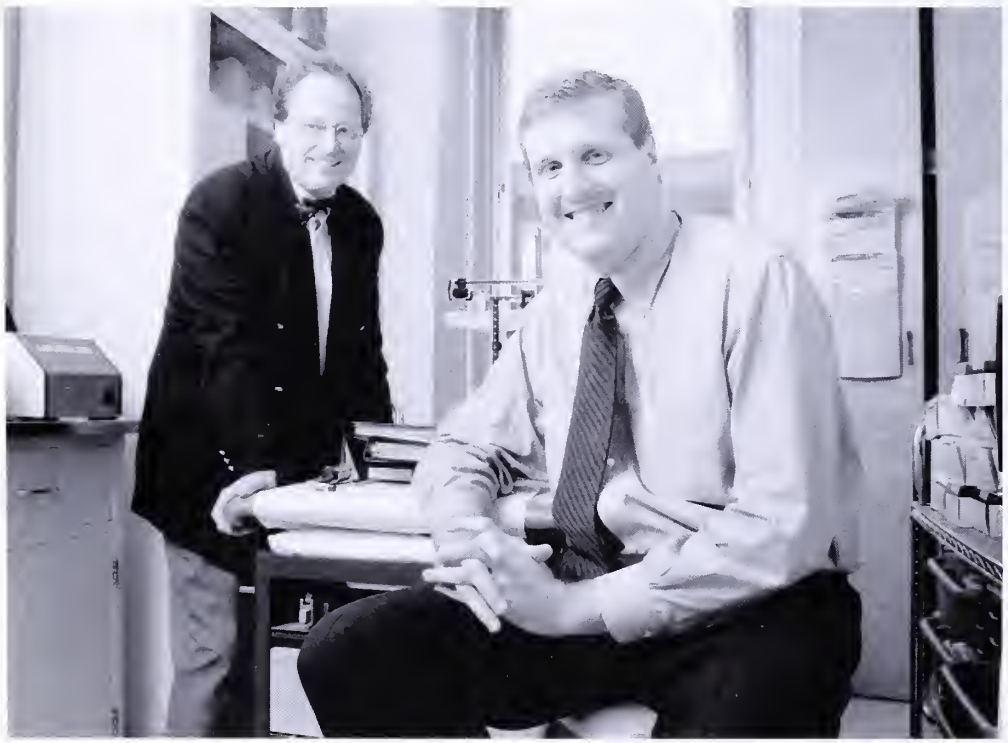
The potential payoff is enormous. For instance, Dr. Innis and colleagues at Yale have just developed a brain imaging technique for diagnosing Parkinson's disease even before any physical symptoms develop. Early detection would allow for more effective treatment to restore the chemical imbalance in the dopamine system known to be responsible for the disease. A multi-center clinical trial is now under way to test this potentially revolutionary technique diagnosing Parkinson's with SPECT imaging. (SPECT stands for single photon emission computed tomography and is similar to, though significantly less expensive than, positron emission tomography or PET scanning.)

Dr. Innis and his collaborators—Kenneth Marek, M.D., associate professor of neurology and director of the Yale Movement Disorders Clinic; and John P. Seibyl, M.D., associate professor of diagnostic radiology and psychiatry, and director of the NeuroSPECT Center—developed extremely low-dose radioactive tracers to show the presence of the dopamine imbalance presaging Parkinson's disease.

While no clinical applications for brain imaging have been developed to date for depression and anxiety disorders, the new methods hold great promise. Psychiatrists in the not-too-distant future may be able to send a patient for tests to diagnose or confirm clinical depression, obsessive-compulsive disorder and other brain maladies.

In association with Dr. Seibyl, Robert Malison, M.D., J. Douglas Bremner, M.D., and Dennis Charney, M.D., Dr. Innis has developed brain imaging techniques to directly measure sites in the brain where antidepressant and anti-anxiety drugs work. In research that has yet to be published, the team produced brain images demonstrating a reduction in the number of benzodiazepine receptors in regions of the brain believed to be involved in panic attacks. Dr. Innis speculates that a chemical imbalance in these brain structures may trigger the onset of panic disorders. "Eventually," says Dr. Innis, "we'll be able to dissect types of mental disorders and optimize treatments or detect an unknown abnormality and develop a new treatment." ▪

Much about the brain and its pathology still remains a vast, tantalizing mystery. Unraveling that complexity among the one trillion neurons in the human brain is overwhelmingly difficult.



Christopher J. McDougle, M.D., left, and Robert T. Malison, M.D., treat patients at the Connecticut Mental Health Center, literally across the hall from the world's leading basic neuroscience researchers.

ings suggest that shrinking or damage to neurons in the hippocampus may contribute to the symptoms of depression. Interestingly, Dr. Duman and colleagues have found that antidepressant agents increase nerve growth factors that may block or reverse the damaging effects of stress in the hippocampus.

The depressive effect of abnormally low serotonin levels, long thought to be at the root of depression, "may in fact be far removed from its real cause," says Dr. Duman, associate professor of psychiatry and pharmacology. This marks a major change in the understanding of depression, potentially opening up a whole new and far more effective approach to treatment. Adds colleague Dennis Charney: "We're moving beyond the hypothesis that suggests that a low serotonin level by itself is the cause of depression. There are 15 different serotonin receptors, all with different functions.

"We know so much more now, that it has become a question not only of serotonin levels but also where in the brain and which specific part of the system," says Dr. Charney. "Bit by bit, we're pinning down the biology of depression."

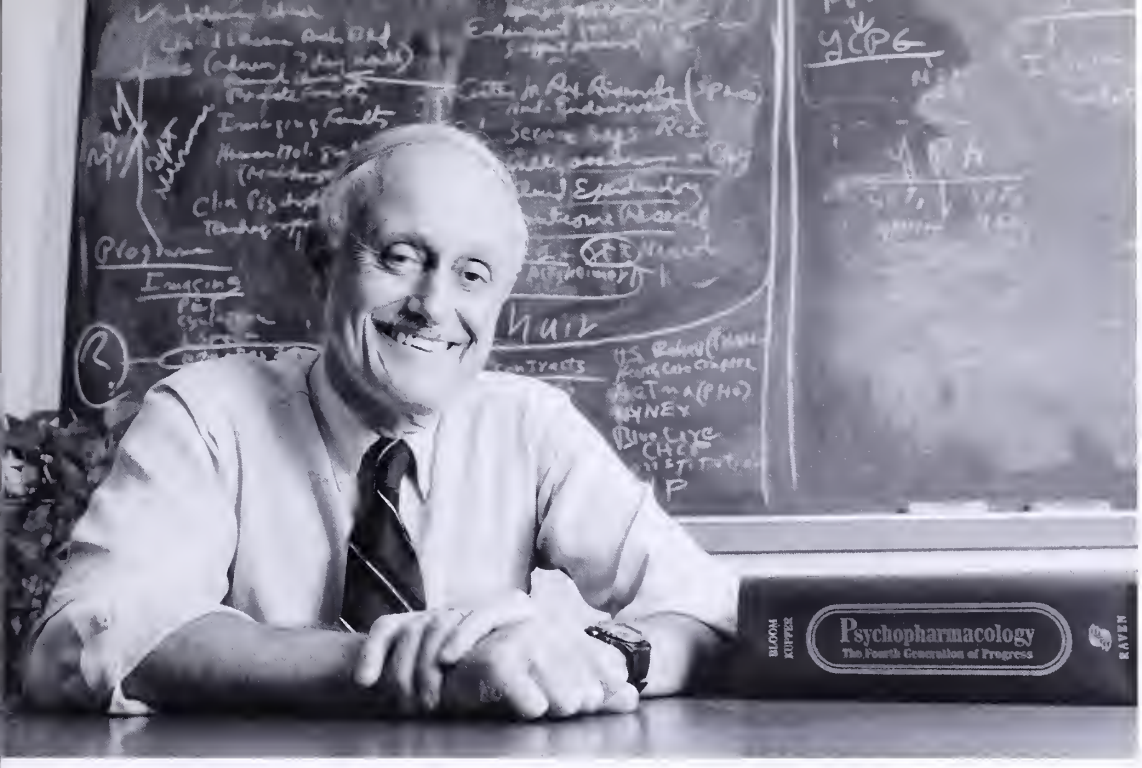
Currently available antidepressant medications are effective in most cases, but they work at an agonizingly slow speed, typically taking two to four weeks before results appear. "If you're suicidal," says Dr. Malison, "that delay can be fatal." Hospital care, an option that is expensive and increasingly limited by managed care contracts, may be necessary to monitor treatment during the time it takes for the drugs to work. (Psychiatric hospitalization has been shortened so drastically under managed care—to an average of 9 days—that the patient often has been discharged before the medication has had an opportunity to work.) And sadly and often with tragic outcomes, a significant number of all patients—as many as 30 percent—never respond at all to available medications.

New theories on the treatment of depression—that slow process of rebuilding and reregulating the actual structure of the serotonin system and possibly other, yet unidentified, structures in the brain—may explain why the medications take so long to have an effect. And they hold a key to improved treatments.

"What's important," says Dr. Heninger, professor of psychiatry, "is that we're making huge advances in the chemistry of illnesses that corrode souls. With the tools of science, we're actually saving souls."

A NEW APPROACH

Dr. Duman, a basic scientist, hypothesized that supplementing antidepressant treatment with other medications targeting the specific rebuilding process might speed up patient recovery. In his search for a supplemental drug, he found papaverine, which formerly had been given to stroke patients to increase blood flow to certain regions of the brain that are now



Psychiatry Chairman Benjamin S. Bunney, M.D.: "The foundation of knowledge now exists to allow us to begin to develop treatments rationally, rather than relying on serendipity."

known to be associated with depression. Papaverine had been superseded by newer stroke medications and was no longer in regular use. "It was essentially just sitting on the shelf," recalls Dr. Malison. Dr. Duman suggested to his clinical colleagues that they see whether it might not help treat a refractory case such as Susan S.'s, knowing that papaverine also increases the nerve growth factors that impact the hippocampus.

Dr. Malison, a clinical psychiatrist with a strong background in neurobiology, immediately saw Dr. Duman's point. He treated Susan S. with a combination of standard antidepressant medications augmented with papaverine. Two weeks after the papaverine was first added to her medications, Susan S., who had not been able to get out of bed most days for months, bounded down the hall into Dr. Duman's laboratory to shake his hand. "She was so happy," he recalls. "It was the first time she'd felt better in years."

For Dr. Malison, it was a personal triumph, as well as a potential medical and research advance. "To this day," he says, "seeing a depressed person get better is my most exciting experience. You watch a person like Susan go from bedridden—and unable to care for herself—to a rebirth."

That was in December 1995. In the months since then, Susan S. has remained free of major depression and resumed many life activities she had long abandoned. Drs. Duman and Malison have begun to explore whether, in fact, papaverine alone might not be an effective treatment for certain forms of depression. "That," says Dr. Malison, "would be a major breakthrough."

SEEING THE LIVING BRAIN

While the efficacy of treatment with papaverine will not be known until much more extensive trials are undertaken, such potentially promising advances are hallmarks of an ongoing revolution in neuroscience. In this *Decade of the Brain*, as the U.S. Congress designated the century's final years, our understanding of depression and other mental illnesses has exploded. Still, the need for improved treatments and prevention remains enormous.

Until just a quarter century ago, the sort of investigations that led to providing hope for someone like Susan S. was not possible. According to Benjamin S. Bunney, M.D., HS '68-71, the Charles B.G. Murphy Professor and chairman of psychiatry and professor of pharmacology, discoveries about the brain and treatments for mental illness were largely serendipitous. The brain's functions revealed themselves only when patients suffered accidents causing well-defined, traumatic brain lesions that changed or halted specific behaviors and thus demonstrated the operation of a region of the brain. Autopsies also showed structural abnormalities, hinting at possible regions to serve as targets for medications. Sometimes, as in the case of antidepressants, a medication employed for one health reason—in that instance, treatment of tuberculosis with a monoamine oxidase inhibitor—had an unexpected therapeutic side effect for another symptom.

Much about the brain and its pathology still remains a vast, tantalizing mystery. Unraveling that complexity among the one trillion neurons in the human brain is overwhelmingly difficult. Each neuron

potentially interconnects with untold numbers of other neurons, multiplying the effect of any chemical interaction. That creates a chain of possibilities in which the pathology may lie at almost any point in the linkage.

If that complexity were not daunting enough, neuroscience researchers have their hands tied in a way that virtually no other medical field faces. "The problem," says Dr. Bunney, "is that in living humans, you can't go into the brain and mess about. Biopsy isn't an option." While autopsy does reveal abnormalities in brain anatomy after death, it comes too late to elucidate abnormal brain function.

A revolution in imaging already has had a profound effect in removing some of those obstacles. "Psychiatrists were frustrated," says Dr. Malison, "because we couldn't see directly into the living brain." Now, magnetic resonance imaging (MRI) provides detailed views of the brain's structures in thousands of cross-sectional views only millimeters thick. PET and SPECT imaging, superimposed over MR scans, now record brain function. **(See *Opening a window on the brain*)**

The generation of scientific knowledge during the past two decades ... has been aided by the revolution in laboratory techniques, especially in molecular biology, imaging technology and genetics.

The path to this technical peak and its clearer view of the brain has been a long one. Early in the history of brain research, scientists found they could alter behavior in laboratory animals by removing small sections of the brain associated with those behaviors. The problem was that these lesions were non-specific. For example, the destruction of fibers running through one region of the brain would affect functions controlled by other regions.

Research advanced with the discovery of neurotoxins that were selective in destroying certain types of neurons. And in 1963, a

Shedding light on the baby blues

For most mothers, giving birth is one of the great moments of life. Nonetheless, nearly two-thirds of new mothers experience the blues, such as tearfulness, sadness and anxiety, for a period of a few days to two weeks after childbirth.

For one in 10 new mothers, however, the baby blues becomes something more than just a passing affliction. They develop a full-blown depression needing clinical treatment. In a few cases—two in 1,000—the disorder cascades into manic or occasionally depressive psychosis, with some mothers committing infanticide or suicide.

Although postpartum psychiatric illness was first recognized and described in ancient Greece more than 2,000 years ago, it remains a poorly understood disorder. It is not recognized by the American Psychiatric Association's Diagnostic and Statistical Manual (DSM) as a disorder distinct from depression occurring at other times. The Postpartum Mood Disorders Clinic on the Clinical Neuroscience Research Unit at CMHC is now undertaking the first controlled studies to further our understanding of the neurobiology of the disorder and develop the most effective treatments.

Under the direction of C. Neill Epperson, M.D., a research fellow in psychiatry, the clinic is looking into the interplay between the normal physiology of pregnancy and the neurobiology of the disorder. "Pregnancy," says Dr. Epperson, "seems to be a trigger for a number of psychiatric illnesses. It's clearly a precipitant, but we're not sure why." The extraordinary changes the mother's body undergoes during pregnancy and delivery may be a possible cause. The 10- and 100-fold elevation of the sex hormones, estrogen and progesterone respectively, during pregnancy followed by their rapid decline after delivery is believed to have a major impact on the central nervous system. This may make postpartum depression biologically unlike other depressions.

Establishing the nature of that link may help shed light on the baby blues and provide keys to treating postpartum and postmenopausal depression. ▪

The running conversation between scientists who work in the laboratory and clinicians who see patients is the foundation of the Yale Way *of psychiatric research. Left: Jingshan Chen, Ph.D, an associate research scientist, presents his findings on molecular mechanisms of addiction at the regular Friday morning molecular psychiatry conference attended by clinical and basic science faculty. It was at such a meeting that Ronald S. Duman, Ph.D., (below), suggested to colleague Robert T. Malison, M.D., that supplemental doses of a hypertension drug called papaverine might help a patient who was not responding to antidepressant therapy. The treatment has worked in early studies.*

Swedish team was able to visualize for the first time, in animal brains, cells that contained neurotransmitters, making it possible to study the functions of the serotonin, dopamine and norepinephrine systems in animals.

George K. Aghajanian, M.D. '58, who has pursued basic neuroscience research at Yale for nearly 30 years, was the first American researcher to apply these techniques. His work exploring the serotonin system is only one of numerous areas for which he has laid the groundwork for many of the major advances in the field. For example, says colleague Eric Nestler, the Elizabeth Mears and House Jameson Professor of Psychiatry and Pharmacology, "work here provided some of the basic knowledge that drove the pharmaceutical companies to look for a Prozac."

The generation of scientific knowledge during the past two decades—with a dramatic increase in speed over the last five years—has been aided by the revolution in laboratory techniques, especially in molecular biology, imaging technology and genetics. These advances have made it possible to map out some of those billions of neurochemical pathways. The new technologies permit neuroscientists to tap and then measure the electrical firing of a single neuron, far too small for the naked eye to see, in the brains of animals. The functions and connections of the healthy neuron can then be traced, eventually pointing to possible means of repairing damaged or improperly functioning areas in humans. "The foundation of knowledge now exists," says Dr. Bunney, "to allow us to begin to develop treatments rationally, rather than relying on serendipity."

Above: *Postdoctoral fellow William A. Carlezon, Ph.D., and graduate student Vidita Vaidya, discuss recent results that reveal changes in the hippocampus possibly related to depression.*

FRUITS OF THE *YALE WAY*

New antidepressants such as fluoxetine, sertraline and paroxetine—from a class known as selective serotonin reuptake inhibitors—are among the first generation of drugs derived via this new means of studying the brain. The development of many other highly targeted, so-called "designer" medications has followed. "They're scalpels in their precision," says Dr. Malison. (**See *Putting neuroscience research to work***) Still better treatments for depressive disorders are on their way. "We're bringing out amazing new knowledge about how the nervous system is formed, connected and

maintained," says Dr. Aghajanian. "With that new knowledge," he explains, "we can then go back and re-examine the different clinical conditions. These advances have the promise of identifying where things are going wrong in the brain."

Not only do patients benefit from the neuroscience synergy. Each new advance in clinical research sends the basic scientists back to the bench with new insights into how a medication works. This gives them clues in their search for further advances in understanding the molecular malfunction at work in mental illness. "It clearly cuts both ways," says Lawrence H. Price, M.D., HS '78-82, former director of CMHC's Clinical Neuroscience Research Unit and a longtime Yale faculty member (he took up a new position at Brown University School of Medicine in July). "The clinicians are always looking to the basic scientists for the definitive word on how it works, and they look to us in the clinic to see whether it really does work."

Training the next generation: George K. Aghajanian, M.D., front, whose basic work over the past 30 years has elucidated the function of neurotransmitters such as serotonin, was a mentor to psychiatry Chairman Benjamin S. Bunney, M.D., lower right. Both in turn helped train Eric J. Nestler, M.D., Ph.D., left, and Ronald S. Duman, Ph.D., standing next to him. Drs. Nestler and Duman have likewise shepherded the work of junior faculty David Self, Ph.D., rear center, and David Russell, M.D., Ph.D..

Dr. Charney's research team is credited with several seminal advances in the understanding and treatment of panic disorders and depression. Those achievements, he says, are a direct result of a working style shared by researchers that has come to be known as the *Yale Way*. He explains: "This close collaboration between the laboratory and the clinic leads to fundamental discoveries that have an impact on the field."

Most clinical researchers at Yale learn the vocabulary of the basic scientists, while the basic scientists familiarize themselves with the issues faced by clinicians. In many cases, individuals such as Dr. Bunney carry out both functions on an almost daily basis. Such close ties between clinical practice and basic research remain rare in most medical schools. "We're close to unique in those interactions," says Dr. Bunney. Few have so deliberately structured themselves to encourage cross-disciplinary interaction. "Usually, these things take place in different buildings and even different departments. People from other universities are amazed to see *in situ* molecular hybridization being done across the hall from clinical assessment of patients."

A TRADITION OF CROSSTALK

When George Aghajanian joined the psychiatry faculty in the early 1960s, very few people believed that such interaction between basic science and clinical application was possible or even the appropriate focus of a psychiatry program. "Psychiatry used to be set off by itself from the rest of medicine," says Dr. Aghajanian, professor of psychiatry and pharmacology. Most psychiatrists were devoted to highly intense interpersonal and behavioral modification therapies. Whatever the many benefits of those approaches may have been, treatment of many serious mental illnesses remained largely inadequate. A visionary member of the department at the time, the late

Daniel Freedman, M.D., saw the fertile possibilities in bringing together the otherwise disconnected talents of practicing clinicians and laboratory-based investigators to study the brain and its illnesses. To open up doors to the future, he established one of the nation's first medical training programs in neuroscience research.

"The building blocks for our present strength in biological psychiatry were established when Fritz Redlich recruited Daniel Freedman," says Dr. Bunney. Frederick C. Redlich, M.D., Yale's chairman of psychiatry for 19 years until he became dean of the medical school in 1967, saw early on that biological approaches would complement the psychoanalytic work then in the mainstream and supported both models of inquiry.

As results from the neuroscience research began to accumulate, funding agencies came to recognize the value of the pioneering approach to seeking out the causes of mental illnesses. In the Yale Department of Psychiatry, the training program has since been formalized via a longstanding, multi-million dollar National Institute of Mental Health (NIMH) Program Grant as the Clinical and Basic Neuroscience Research Training Program in Psychiatry. In recent years other medical schools have followed suit, establishing their own versions of the Yale model.

The program now covers a wide spectrum of clinically relevant neuroscience domains at Yale. Not only do clinicians and basic scientists work together on research projects, they also meet regularly for formal talks and seminars of mutual interest. Each week for the past 25 years, faculty and students alike have gathered for the "work-in-progress" presentations known as the Neuroscience Research Seminar in Psychiatry. Discussions begun there often lead to collaborative experiments. "That kind of crosstalk is a priority and not an accident here," says Dr. Price.

Dr. Price remembers well a dramatic moment when the benefits of the *Yale Way* became clear to him. He was chief resident on the adult psychiatric service at Yale-New Haven Hospital in 1982. A woman with a psychotic depression on the unit was in very poor condition, but her health insurance coverage had been exhausted. As a last resort before her discharge, Dr. Price scheduled electroconvulsive therapy, a costly procedure which has many undesirable side effects such as short-term memory loss.

During that week's Neuroscience Research Seminar in Psychiatry, Dr. Aghajanian discussed a discovery from his laboratory based on the work of a former postdoctoral fellow, Claude deMontigny, M.D., (now at McGill University). As part of a broader study of the neural actions of antidepressant medications, Dr. deMontigny had looked at whether lithium might also affect the serotonin system in the brain where antidepressants were known to bind. His surprising findings showed that lithium actually boosted the effect of the antidepressants in rats. He then carried out a preliminary study on human subjects at McGill, which was followed by a controlled study at Yale by Drs. Charney, Heninger and Aghajanian, confirming its benefits.

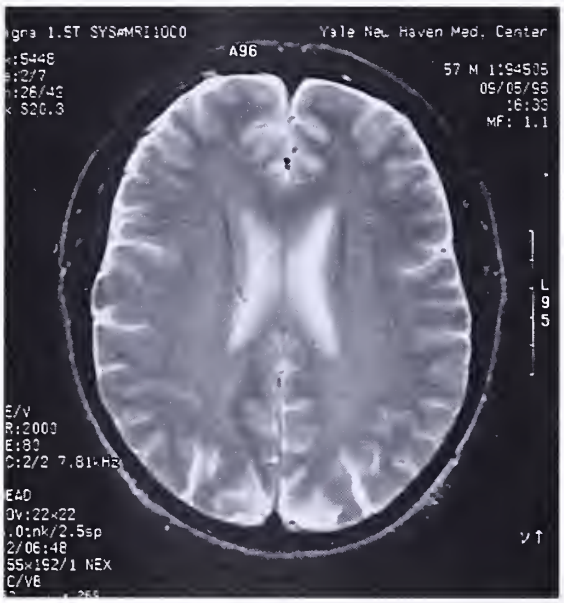
While those results were not yet known to the field, Dr. Aghajanian discussed them with Dr. Price, who thought that in the desperate situation faced by his patient, lithium should be added to her medication. "The day after we gave her lithium," Dr. Price recalls, "she was laughing for the first time in seven or eight months. That was the first change in her affect I'd seen in 30 days." What is termed "lithium augmentation" became, within a few years, a standard part of treatment for major depression.

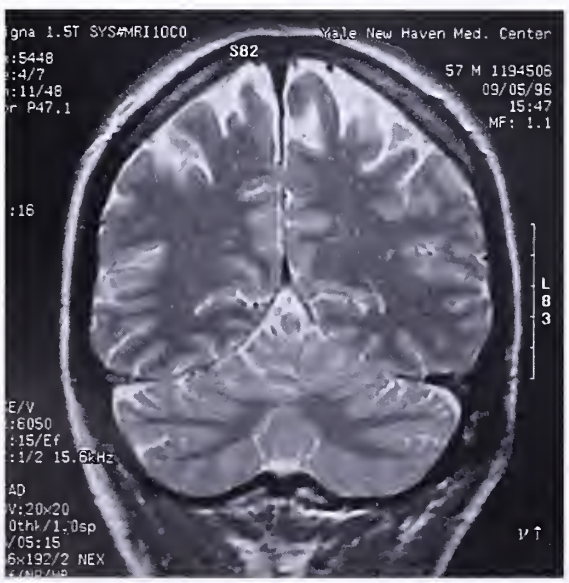
Despite such breakthroughs, Dr. Aghajanian and colleagues continue to struggle to understand the mechanisms of depression and develop a cure. "We still don't know what causes depression," says Dr. Bunney, "and we don't know how to prevent it." One thing the basic scientists have learned is that talking therapy, while it doesn't necessarily cure mental illness, can play a crucial role in the treatment of some patients. "In fact," says Dr. Bunney, "it has been demonstrated that some forms of psychotherapy can alter brain chemistry."

The goal of prevention is far in the future and will certainly require the discovery of a genetic basis for the disease. That will be no simple matter.

The goal of prevention is far in the future and will certainly require the discovery of a genetic basis for the disease. That will be no simple matter: researchers now recognize that there are many different kinds of depression. Studies are under way to develop more targeted forms of treatment for specific types of depression. One day, there may be biological tests to diagnose different forms of depression. That will also indicate the most appropriate treatments.

In the nearer term, Yale investigators hope to reduce the delay in the effect of treatment to a matter of days instead of weeks. "The field needs a new fundamental advance to get beyond current treatments," says Dr. Charney. "We're focused like a laser beam on finding it." **YM**





When *fear* *is an* illness

Biological research sheds new light on PTSD, other anxiety disorders.

By Marc Wortman

Photographs by Frank Poole

When American soldiers moved through the jungles of Vietnam, their survival depended on a constant state of anxiety. That anxiety kept their bodies alert for warning signs of danger. When threat proved real, fear prompted their bodies to sudden, life-saving actions.

But after the war was over, some 15 percent of all returning soldiers could not turn off the anxiety and fear. While their lives were now at peace, their brains were still at war. For some, moving about in public areas became a terror-filled experience; for others, sudden noises could send them diving for cover. Many suffered nightmares, flashbacks and other involuntary memories of traumatic battlefield scenes. Many became depressed by the experience, while others turned to drugs and alcohol to block their misery. With no visible war wound, tens of thousands still emerged disabled by their combat service, just as had the shell-shocked soldiers of World War I and every war since.

War veterans are not alone in suffering anxiety and panic disorders. Approximately 15 percent of all people exposed to traumatic stress, such as child abuse, violence, automobile accidents and natural cataclysms, will develop the illness. Others who suffer from recurrent, unprovoked and intense episodes of fear can point to no single precipitating factor, and likely have an environmental or genetic predisposition to the disorder. While some symptoms of anxiety disorders can be treated, no cure exists. Thanks to dramatic advances in neuroscience research, new hopes for treatment, cure and even prevention of anxiety disorders are emerging. Studies at Yale, especially those undertaken at the National Center for Post-Traumatic Stress Disorder (PTSD) at the VA Con-

Approximately 15 percent of all people exposed to traumatic stress will develop panic or anxiety disorder. Researchers now find that psychological trauma can change the chemistry and structure of the brain, says Dennis S. Charney, M.D., right, deputy chairman of psychiatry for research and education. "What you want to do," says colleague and mentor George Heninger, M.D., left, "is develop a drug to treat generalized anxiety disorder, but not prevent the person from jumping out of the way of an oncoming car."

necticut Healthcare System's West Haven campus, have begun to open up an entirely new understanding about the nature of the disease, which afflicts between three and six million Americans.

Dennis S. Charney, M.D., former psychiatry chief at the West Haven VA and now a deputy chair of the Department of Psychiatry, has led a team which has taken laboratory findings about fear and anxiety in animals, along with new technologies for studying brain function, and applied them to the benefit of patients suffering from panic and anxiety disorders.

Working from a theory of anxiety developed by psychiatry department colleague D. Eugene Redmond Jr., M.D., from his work with primates and patients with anxiety, Dr. Charney found that patients suffering from panic disorders are exquisitely sensitive to chemical stimulation of the brain's neuroadrenergic system, which releases norepinephrine. The release of norepinephrine is a necessary and even healthy response to stress such as fear. It prepares the body at a very rapid speed to respond to danger by increasing blood pressure, raising the heart rate, elevating breathing and transferring energy to muscles. Once the danger is past, the fear response subsides rapidly in normal individuals.

Dr. Charney's research group has shown that people who suffer panic attacks do not shut off their neuroadrenergic, or adrenaline-release, function. "Most of us," says Andrew Goddard, M.D., assistant professor of psychiatry and director of the Anxiety Disorders Research Clinic at the Connecticut Mental Health Center and a collaborator in the studies, "have a stress response which is time-limited, but those with an anxiety disorder have lost this capacity."

In 1995, Dr. Charney along with Steven Southwick, M.D., director of Yale's PTSD program; J. Douglas Bremner, M.D., an assistant professor of psychiatry and a fellow in diagnostic radiology who works with brain imaging technologies; and Robert Innis, M.D., Ph.D., HS '81-84, director of the department's Neurochemical Brain Imaging Program, drew international attention with new studies of anxiety disorders combining brain imaging with behavioral investigations. They showed that long-term high levels of anxiety lead to actual physical changes in the brain. "Psychological trauma," says Dr. Charney, "can change the chemistry and structure of the brain. That was not thought to be possible."

Using magnetic resonance imaging (MRI) to compare anatomy while superimposing those images on positron emission tomography (PET) scans that show the brain's functioning as measured by metabolic changes, Dr. Bremner can actually view size and functional differences in the brains of patients who suffer anxiety disorders such as PTSD. His findings demonstrate that Vietnam veterans suffering from PTSD as well as child abuse victims with PTSD have a significantly shrunken hippocampus, an area of the brain that plays a crucial role in

memory. PTSD involves intrusive memories that lead to many symptoms, including persistent panic attacks, depression and nightmares. Investigators speculate that traumatic stress sets off a process that eventually cascades into the chronic disorder. "Extreme stress," says Dr. Bremner, "may be toxic to certain parts of the brain." Dr. Charney compares it to an immune system disorder in which the brain's own survival processes eventually damage its own cells.

Those findings in patients are now being further refined using animal models. Psychiatry professor Michael Davis, Ph.D. '69, has recently shown in rats that two separate systems in the brain with similar output connections may be responsible for fear on the one hand and anxiety on the other. That would help explain the differing time streams involved in the different behaviors. "You need a system that can react very rapidly to the onset of danger," explains Dr. Davis, "but maybe you need another system to respond in a sustained way."

For clinicians, the implications of Dr. Davis's work are significant. Brain imaging now focuses on the separate systems, and pharmacologists may be able to develop more effective anti-anxiety medications that bind to the anxiety center rather than the fear center. Current

What's love got to do with it?

Some say love is an obsession. But is it a clinical disorder?

According to research from Yale's obsessive-compulsive disorder (OCD) clinics at the Child Study Center and Connecticut Mental Health Center, early parental love and romantic infatuation may share a common neurochemical thread with the obsessive fear of germs.

Scientists have known for several decades that the hormone oxytocin plays a crucial role in the birth process and in nursing, and have have recently discovered that central oxytocin pathways are involved in pair-bonding and the initiation of maternal behavior in animals.

Now, Yale researchers have found cerebrospinal fluid levels of oxytocin to be elevated in people with some forms of OCD, an anxiety disorder that affects nearly 2.5 million Americans.

James F. Leckman, M.D., director of research at the Child Study Center, theorizes that changes in oxytocin levels may help explain why OCD patients suffer the obsessive-thought preoccupations that also are often experienced by people in love and the parents of newborns. Risk factors associated with the onset of OCD include the latter stages of pregnancy and early days following delivery, as well as major life changes such as the loss of a loved one, says Dr. Leckman, the Neison Harris Professor of Child Psychiatry, Psychology and Pediatrics.

Those findings are part of a large, ongoing research and clinical treatment program in the Child Study Center and the Department of Psychiatry, funded by a program project grant from the National Institute of Mental Health designed to shed light on one of the most common anxiety disorders. People with OCD—about two to three percent of adults and about half that rate in children and adolescents—experience repeated, intrusive and unwanted thoughts and compulsive behavior. The bizarre ritualistic behaviors, intended to reduce the anxiety caused by the thoughts, include cleaning and hand-washing even to the point that skin bleeds, repeating phrases like a loved one's name over and over, constant checking and rechecking of doors and switches, or driving back over the same road many times to make certain they had not caused an accident.

"OCD is one of the most difficult psychological conditions," says David L. Pauls, Ph.D., associate professor in the Child Study Center, "because the person realizes the behavior is bizarre. They feel they are trapped and like there is no help." Eventually, people with severe OCD may find their uncontrollable rituals make it impossible for them to carry on normal life functioning. Not surprisingly, depression is often associated with OCD, which is classified as an anxiety disorder.

Dr. Pauls is studying family patterns of OCD to begin to look for a genetic basis for the disorder. His work is part of the broader investigations directed by Dr. Leckman to characterize the disorder and seek out its developmental antecedents. The research is also looking at the association between OCD and Tourette's syndrome, a tic disorder involving abrupt body movements, inappropriate touching of oneself and others, and the

anti-anxiety drugs tend to cause sedation, which can be a danger in itself. As Dr. Davis says, quoting his colleague Dr. George Heninger, "What you want to do is develop a drug to treat generalized anxiety disorder, but not prevent the person from jumping out of the way of an oncoming car."

The discovery of such a medication would be of tremendous benefit to Dr. Southwick's patients at the National PTSD Center in West Haven, one of four in the United States. Chronic PTSD is resistant to treatment, although antidepressant medications do reduce some symptoms. Drs. Southwick and Charney are also looking at drugs known as beta blockers that may reduce the severity of traumatic memories. "Rat studies," Dr. Southwick says, "suggest that interventions could be used around the time of the trauma itself before the memory becomes

In rats, two separate systems in the brain with similar output connections may be responsible for fear on the one hand and anxiety on the other.

need to shout out profanities.

While many of us carry out personal rituals, such behavior only becomes a disorder when it interferes with normal functioning. In fact, Yale researchers now believe that OCD may be a normal developmental stage seen in young children, most often between ages 2 and 3 when ritualized behaviors, such as the need to hear stories over and over, repeat songs or eat specific foods, are common.

Yale has been at the forefront of psychopharmacological research on OCD, conducting studies in the late 1980s that provided evidence of the benefits of fluvoxamine, one of the new generation of antidepressants known as selective serotonin reuptake inhibitors.

Christopher J. McDougle, M.D., associate professor of psychiatry and in the Child Study Center, directs the adult OCD clinic. He says, "What we call OCD is not one disorder but a syndrome." The team of Drs. Leckman, Pauls, McDougle and colleague C. Neill Epperson, M.D., have found that at least two distinctive subtypes of OCD exist, the Tourette's-related and non-tic-related. Onset of the tic-related form is more common in childhood and most often seen in boys. The non-tic-related form begins more often during and after puberty and afflicts women more frequently. The abnormal elevation of oxytocin is prevalent in the peri-pubertal form.

Separating out the diagnoses has helped improve OCD treatment. Dr. McDougle and colleagues developed a new and far more effective medication treatment for the tic-related form by combining a neuroleptic, or antipsychotic, medication with a serotonin reuptake inhibitor, such as fluvoxamine. Since the results of their study were published two years ago, the combination has become the standard treatment for the tic-related subtype of OCD.

For their work, researchers draw on some of the nearly 60 children and 150 adults seeking treatment for OCD each year at Yale clinics. Most people afflicted with OCD respond well to a combination of cognitive-behavioral therapies and pharmacological treatment with recently developed serotonin reuptake inhibitors. But just like those with a broken heart, for some who suffer from OCD, no cure has been found. ▪

Changes in levels of the hormone oxytocin may help explain why OCD patients suffer the obsessive-thought preoccupations that also are often experienced by people in love and the parents of newborns, says James F. Leckman, M.D., director of research at the Yale Child Study Center.

Michael Davis, Ph.D., is one of eight Yale faculty in psychiatry who serve as scientific advisers to Neurogen Corp., a neuroscience drug development company in Branford, Conn. "I'm more interested in the basic science," Dr. Davis says, "but I want somebody to apply it."

Putting neuroscience research to work

Most fundamental discoveries about the brain that have launched the neuroscience revolution have come in the highly specialized laboratories of academic research centers like Yale. But taking those advances the next, time-consuming and enormously costly step to develop pharmaceutical compounds for commercial sale is generally beyond the scope and means of a medical school. That's where private industry steps in. And sometimes, academic investigators step out to help bring their knowledge to commercial application.

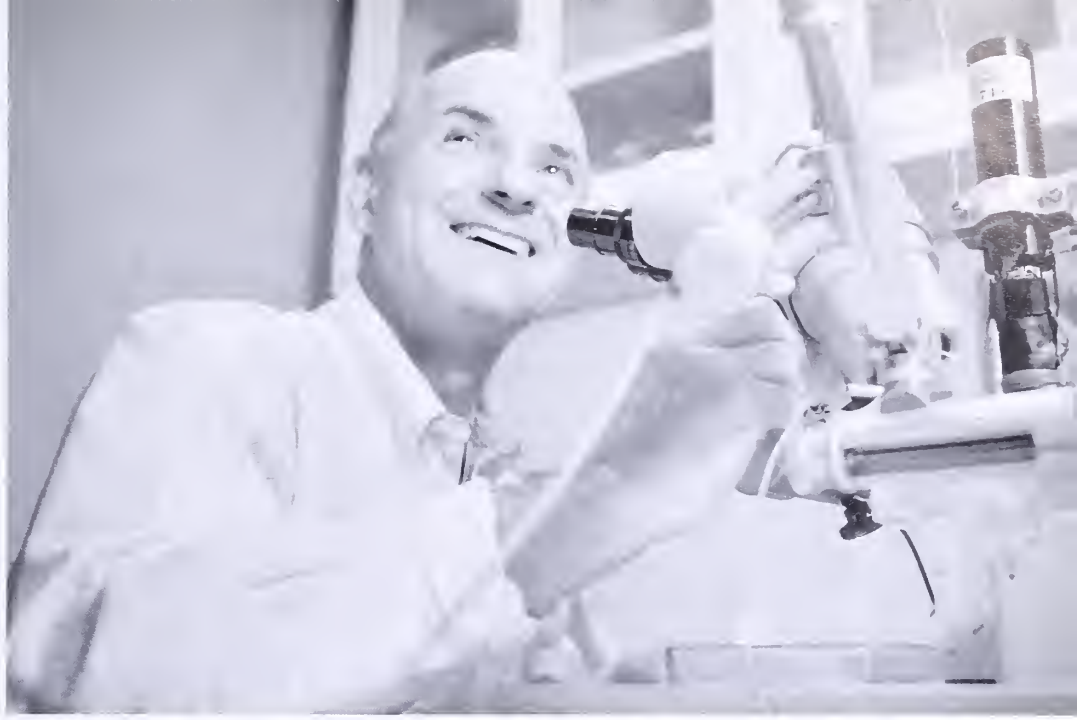
"The kinds of things we do have applications for large numbers of people with very debilitating conditions," says former psychiatry department professor John Tallman, Ph.D. A neuroscientist, he left the medical school in 1989 to help found Neurogen Corp., a neuroscience drug development company in Branford, Conn. He is now the firm's executive vice president and scientific director. His departmental colleague Dorothy Gallager, Ph.D., soon followed him into the firm's ranks. Eight of their former associates, all current faculty members, including Benjamin S. Bunney, M.D., Dennis Charney, M.D., D. Eugene Redmond, M.D., Michael Davis, Ph.D., George Heninger, M.D., Eric Nestler, M.D., Ph.D., Robert Roth, Ph.D., and George Aghajanian, M.D., serve as scientific advisers while continuing their primary research and educational roles at Yale. Although university regulations prohibit faculty from using academic facilities for their own profit, faculty are permitted to serve as part-time consultants to firms. Neuroscience faculty are frequently called upon by pharmaceutical firms to serve as scientific advisers. The Yale faculty thought their knowledge could be put to even more direct use. "We were tired of advising other companies who often did not follow through," says Dr. Bunney. "We decided to put our expertise and ideas to a real test and created Neurogen."

With an infusion of support from several major pharmaceutical firms, including Pfizer and Schering-Plough, Neurogen has grown into a publicly traded, highly respected pharmaceutical research firm employing more than 100 people. Pfizer Inc has licensed Neurogen to develop an anti-anxiety compound based on laboratory findings. "We think we can redefine therapies for anxiety in the same way Prozac did therapies for depression," says Dr. Tallman. Neurogen has also expanded to develop its own compounds. It now has a number of other "designer" compounds currently in development for the treatment of disorders ranging from schizophrenia to obesity. "It's a good illustration of what can happen when you put basic research to work in the service of rational clinical drug development," says Dr. Bunney.

For someone like Dr. Davis, having Neurogen bring his work out of the laboratory and into the clinic makes his academic efforts all the more rewarding. "I'm more interested in the basic science," he says, "but I want somebody to apply it." That's the job for Dr. Tallman and company. "There's an opportunity at Neurogen," he says, "to contribute directly to the rapid development of improved treatments for the millions of people suffering from severe, disabling neuropsychiatric disorders." ▪

Right: *"We're bringing out amazing new knowledge about how the nervous system is formed, connected and maintained," says George K. Aghajanian, M.D., professor of psychiatry and pharmacology. Many of those advances have been made possible by the tools of molecular biology.*

Below: *Postdoctoral fellow Maura Charlton, Ph.D., works in the laboratory with Ronald S. Duman, Ph.D.*



Not only adults suffer from PTSD. Children exposed to violence may develop the disorder as well.

encoded and consolidated." Future studies may determine if beta blockers, when given to emergency medical workers who are exposed to daily trauma, will attenuate traumatic memories. "They have to be given right after the event," Dr. Charney says. "Timing is key. After the memory is encoded, the medication probably won't work."

Not only adults suffer from PTSD. Children exposed to violence may develop the disorder as well. Dr. Southwick is collaborating with Steven Marans, Ph.D., director of the Yale Child Study Center's Child Development-Community Policing Program in New Haven, and center Director Donald J. Cohen, M.D. '66, on a wide range of PTSD studies building on the seminal work done with Vietnam veterans. Plans include studies of the neurobiological mechanisms mediating symptoms in children following stress and of the efficacy of medication interventions for children with PTSD. Says Dr. Southwick, "We're trying to find strategies to help a person within a short period after the trauma."

For Department of Psychiatry chair Dr. Bunney, the possibility that psychiatrists might one day be able to prevent children who have been exposed to severe trauma from developing lifelong disorders represents a triumph of neuroscience. "The excitement," he says, "is that the potential is there. In a lot of illnesses, we already have pretty good treatments—comparable to what we have for physical diseases like hypertension and diabetes—but they're not cures and we can't prevent the disorders.

"We're a long way off from that, but now we have the tools," he says. "It's a question of applying them to develop better treatments and, ultimately, cures and prevention." **YM**

Pure medicine

By turning down reimbursement, Richard and Patricia Gibbs of the San Francisco Free Clinic provide first-class care for uninsured patients and freedom for physicians to do what they do best.

By David Davison

Photographs by Matt Black

What would a physician's fantasy be if he or she won the lottery? "I would still practice medicine," says Judith Mates, M.D., a San Francisco obstetrician, "but I sure would toss out all this paperwork."

Several times a month she does just that. Dr. Mates, who is president of the San Francisco Medical Society, is one of dozens of Bay Area physicians who volunteer their services to treat patients referred by the San Francisco Free Clinic. She is sharing a little bit of a fantasy made real by a husband-and-wife team of Yale-educated physicians who are practicing medicine without the paperwork.

Richard Gibbs, M.D. '86, and Patricia Gibbs, M.D. '87, founded the San Francisco Free Clinic in 1993 as an alternative, perhaps even an antidote, to their successful but unsatisfying conventional practice in family medicine. The mission of the clinic recalls an era when doctors provided treatment in the best interest of patients regardless of their ability to pay, and without a utilization review by a managed care provider. Patients who could afford to do so paid in cash, or perhaps with a couple of chickens from the farm. Third-party payers didn't exist.

The clinic mission is simple, says Tricia Gibbs, its medical director: "We are devoted to taking care of patients without insurance." At the San Francisco Free Clinic, the doctors have received expressions of appreciation from patients in the form of a piece of chocolate cake or a bit of carpentry work on a sticky clinic bathroom door. A brightly decorated metal box in the hallway receives about $3,000 per year from patients who have some change or a couple of dollars to donate. Patients at times cannot understand—or accept the fact—that insurance cards are useless and the services are free. On the way out, there is nothing for patients to sign, no forms to fill out.

David Davison, a development officer for the School of Medicine, is a Yale Medicine *columnist and contributor.*

Inset: *Patricia Hellman Gibbs, M.D., and husband Richard D. Gibbs, M.D., work together while examining a patient at the San Francisco Free Clinic, which they founded in 1993. The Gibbses met as medical students at Yale in the mid-1980s.*

A LIMITED AGENDA

Despite these seemingly quaint characteristics, one should not mistake the Free Clinic for a New Age alternative medicine lodge, or for a grassroots storefront dedicated to global health care reform. Orthodox primary care medicine is practiced here. At least half of the patients are employed; most are low-income families. Ninety-three percent have homes.

"We aren't political," says Tricia Gibbs, a Bay Area native who grew up in Brooklyn, N.Y. "We don't want to save the world. We don't organize letter-writing campaigns. We just want to keep going."

They keep going on a budget of $310,000 per year, raised mostly through an annual fund-raising event and occasional donations. The San Francisco Free Clinic works like a loosely organized health maintenance organization (HMO), with the focus on primary and preventive care. It is located in a converted, two-story, walk-up apartment building on Clement Street in the Richmond neighborhood, a working-class community. The facility consists of a waiting room, three exam rooms, a patient counseling room, an office and a cramped lab.

Patients at times cannot understand—or accept the fact—that insurance cards are useless and the services are free. On the way out, there is nothing for patients to sign, no forms to fill out.

"We do skin scrapings, skin biopsies, gram stains—it saves time and money to do these tests here, rather than send them out," says Richard Gibbs. "As students, we were expected to know how to do these tests. Unfortunately, many physicians do not get the chance to use a lot of what they learned in medical school."

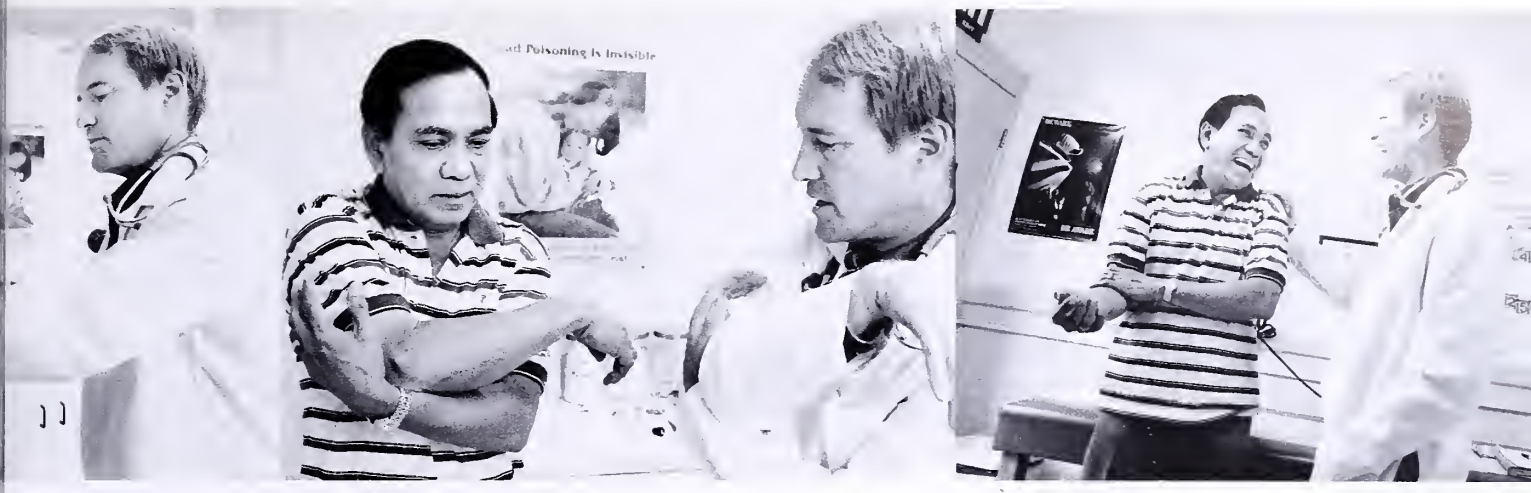
Since the clinic opened, word of mouth has been enough to attract patients. The word has gotten around in the Bay Area philanthropic community, too. Medications, supplies and equipment are donated from a network of 30 physicians and from a half dozen pharmaceutical companies. In almost all cases, patients are provided with both short- and long-term medications without cost. Recently, an acquaintance of the Gibbses called to say he was insulted that he hadn't been asked for a donation, then sent a check for $5,000.

Richard Gibbs, the clinic's president, estimates that for every dollar raised, three dollars worth of care is delivered. Money goes into services, not administration. From the outset, the idea was simple—just say no to *all* third-party payments. The law says if you take fees from any payer, you must accept them from all payers, including the government.

Private, non-profit health clinics number in the thousands across the country. But the vast majority are funded through government-backed third-party payments, primarily Medicaid. Since the mid-1960s, the U.S. Public Health Service has provided funding for community health centers in rural and urban areas, designed to serve those living near or below the poverty line. These clinics now serve approximately 9 million people with primary care-oriented health services, but the system is far from comprehensive. Millions of Americans continue to fall through the cracks.

San Francisco is also the home of a large and well-known community health program. The Haight-Ashbury Free Clinic—which started out in the 1960s as a storefront health clinic—now employs an army of administrators to keep up with the paperwork involved in managing government grants and in collecting Medi-Cal (state-run Medicaid) and Medicare payments. The politics of taking care of San Francisco's indigent and welfare population is a big issue, and the Haight-Ashbury Free Clinic is often in the middle of it. The Gibbses acknowledge its important role and they refer patients there who are eligible for government medical insurance.

But the San Francisco Free Clinic constituency is primarily the



Leaving behind the insurance and billing paperwork of private practice has given the Gibbses (and physicians they've recruited into their network of specialists) more time to focus on patients and the practice of medicine. Above, Richard Gibbs listens to patient Manuel Tolibas describe a shoulder injury before examining him and finding the muscles atrophied and weak. Dr. Gibbs teaches Mr. Tolibas stretching exercises to regain the normal range of motion in his shoulder, and prescribes an anti-infammatory medication. Before leaving, Mr. Tolibas shares a joke from his native Philippines.

working poor—people and families caught between systems. Richard Gibbs points out that one out of four city residents has no insurance, including an estimated 60,000 to 70,000 children. Nationwide, the estimated number of people without insurance is 40 million. When welfare is simply not an option, and medical care is needed, a place like the Free Clinic fills a huge need.

The San Francisco Free Clinic counted 3,024 patient visits in 1995. Thirty percent of the visits were devoted to physical examinations, immunizations, pap smears, breast exams, TB screenings and smoking-cessation counseling. A few paid, part-time physicians provide the basic services, assisted by volunteers. Typically, community-based health clinics ask doctors to volunteer their time on site, a model that has in some cases proven unworkable, as busy doctors can't always follow through every week with their commitment to get to the clinic. That leaves patients frustrated and the clinic waiting room jammed.

THE SAME KIND OF CARE

The key to the San Francisco Free Clinic system is the network of 60 volunteer physicians, specialists and sub-specialists around the city, who see patients right in their own offices after a referral by the clinic doctors. At the specialist's office, a patient from the Free Clinic receives the same care as any other patient would. The only difference is that no fee is charged. Several radiology groups provide free imaging studies, including CT and MRI scans, X-rays and mammograms. A plastic surgeon donates a morning a month on site.

One radiologist, Phillip Tirman, M.D., who volunteers with obvious pleasure and pride, remembers his reaction to being asked to provide free services. "I started thinking back to the old medical school interview when I said one of the reasons I wanted to go into medicine was to help people," he says. The Free Clinic provides him with an opportunity to make good on those words expressed to interviewers in the early 1980s. (According to surveys by the Association of American Medical Colleges, today's medical school applicants—faced with the prospect of a career under the control of huge health systems and managed care—are more idealistic than ever about their motivation to enter medicine.)

"In San Francisco, there is no shortage of specialists to take care of patients," says Richard Gibbs.

Filling a gap in care

The San Francisco Free Clinic's mission is to serve people who are not covered by private health insurance or eligible for care in government-sponsored clinics. It accepts no reimbursement, unlike the approximately 2,600 federally qualified community health centers across the country. Most of those are private, not-for-profit organizations that rely heavily on a base of federal funding to exist—typically 40 percent of a center's annual budget comes from grants from the Department of Health and Human Services. The balance comes from a mixture of private insurance and government reimbursement, including Medicaid and Medicare. These clinics, located in rural and urban areas, serve more than 9 million people nationwide. There are more than 33.4 million men, women and children who are Medicaid beneficiaries in the U.S. An estimated 43.2 million people are without access to a primary care provider.

Medications, supplies and equipment are donated from a network of 30 physicians and from a half-dozen pharmaceutical companies.

Top: *Anita Arora came to the San Francisco Free Clinic for relief from severe headaches. On a return visit, after her symptoms have diminshed with time and medication, she follows Patricia Gibbs' hand with her eyes in a test to rule out vision problems.*

Middle: *Dr. Gibbs takes a close look at Ms. Arora's eyes for signs of intracranial pressure, which could indicate the presence of a tumor. The exam, and an MRI study provided by a local radiology practice, rule out both tumor and stroke as a cause for the headache pain.*

Bottom: *After talking about the test results, Dr. Gibbs and Ms. Arora discuss treatments that may help if her headaches return.*

Specialists donate an average of two patient visits per month. In a sense, the clinic is an HMO-style gatekeeper, but on its own terms. No insurance overseer or government bureaucrat superimposes rules and regulations. When patients need hospital services, four major San Francisco hospitals are available to provide charity care. One hospital has specifically allocated $40,000 of services for patients from the San Francisco Free Clinic. And that doesn't count the donated time of hospital staff.

Practicing medicine without middlemen "strips away everything that confuses doctors and patients," says Tricia Gibbs, who had found, during her private practice years, public trust in doctors to be low. "Patients have become suspicious. At the Free Clinic, the patients know we're here to help them. There's a trust and a bond between the doctors and the patients." Tricia Gibbs has noticed that her patients at the clinic are twice as likely to follow doctors orders than the patients she used to see. Strong patient compliance with smoking cessation and weight loss programs are typical of the clinic success story.

In a feature segment on a local television newscast, a clinic patient gave her point of view. "We're treated with dignity and respect," said the 61-year-old woman, who was being treated for pancreatitis. Before coming to the clinic, she held a job that carried no health insurance, and she was too young for Medicare. An acute attack landed her in the hospital for an operation and a nine-day stay. The routine care she now gets from Tricia Gibbs would have easily spotted her condition and prevented a painful, scary and expensive experience. The question of paying off her $31,000 hospital bill is unresolved, exemplifying the risks and the choices confronting many uninsured Americans.

One-third of the patients at the San Francisco Free Clinic are from the city's Asian community. An Asian American social worker on staff serves as both a language translator and a vital interpreter of cultural differences that can impede the efficacy of health care services for many people. Twenty percent of the clinic work is pediatrics. Extended families are a large part of the patient base. Word of mouth is more than enough to bring patients to the door. Media coverage, while it has generated a few donations, has also brought the problem of too many new patients seeking care. It is not a walk-in clinic; appointments are required and emergency care is still the purview of the local area hospitals. If a person has insurance, the clinic staff gives assistance finding another service provider.

Last year when California voters passed legislation excluding illegal immigrants from state services—including health care benefits—Richard and Tricia Gibbs convened a brief staff meeting. Everyone agreed that the clinic

would proceed as if the vote hadn't happened, another luxury of being free of Medi-Cal rules and reimbursements. "Who wants sick people in the community?" says Richard. The clinic takes care of anyone who is uninsured, period.

As one would expect in a clinic focused on preventive care, child vaccinations, treatment for high blood pressure and routine exams are the norm. Volunteer nurses are an essential part of the medical team. According to both Tricia and Richard Gibbs, the most important and satisfying results from their work come from identifying a major ailment in time to effect preventive treatment. When a complicated case comes up that calls for expensive procedures or specialty care, the volunteer network is called upon.

DRAWING ON THE *YALE SYSTEM*

Both Richard and Patricia Gibbs attribute their self confidence and their skills as physicians to the *Yale System* of medical education. They draw on their training at Yale as they keep up with the rigors of practicing and teaching medicine in a challenging and complex clinical environment. They believe that what they learned at Yale was ideal preparation for their subsequent family medicine training, and for keeping up with advances in their profession today.

"We let the literature guide our practice," says Richard Gibbs. "Irrespective of primary-care training or elaborate research, the teaching at Yale is what I remember most. It was great."

"Yale provided me great role models," says Tricia Gibbs, recalling surgery professor Barbara Kinder, M.D. '71, and Leo M. Cooney, Jr., M.D., the Humana Foundation Professor of Geriatric Medicine. "He was a great teacher," remembers Tricia. Adds Richard: "We met in Dr. Cooney's class."

The Gibbses have made the Free Clinic an active center for clinical training. It is a family practice preceptor site for the University of California, San Francisco, and for the Physician Assistant Program at Stanford University. Students and residents are there every day, providing invaluable patient care and learning medicine in the kind of ambulatory setting that is in demand by teaching programs nationwide. A visit by Dean Gerard N. Burrow, M.D. '58, last year launched a plan to enable Yale medical students to train at the clinic.

After meeting at Yale, Patricia and Richard were married in 1984. They both trained in family medicine at the University of Washington. When they moved to the Bay Area in 1990, Richard (a former dancer) took a part-time job as the physician for the San Francisco Ballet, where he still enjoys the orthopaedics dimension of the work.

One hospital has specifically allocated $40,000 of services for patients from the San Francisco Free Clinic. And that doesn't count the donated time of hospital staff.

On a summer afternon spent with a visitor to the clinic for this article, Richard and Tricia dart

Most specialty care for patients at the clinic is referred to physicians in the community, who see the Gibbses' patients in their offices. An exception is the monthly appearance at the clinic by Lars M. Vistnes, M.D., chairman emeritus of plastic surgery at Stanford University School of Medicine. Left, Dr. Vistnes and Ann Gilmore, R.N., prepare for surgery to remove a growth from the mouth of a patient.

from room to room, taking care of patients, supervising students and fielding questions. Richard excuses himself from the discussion to look in on a patient exam being conducted by a student. Tricia takes a moment to phone the baby-sitter and make sure that their five children, who range in age from 4 to 10, can do without her for a little longer that afternoon while she takes the time for a serious jog. A former member of the U.S. Ski Team, she is training to run in a 50-mile ultra-marathon.

Richard and Tricia readily admit that their clinic model is not instantly replicable. They were able to throw off the collar of a conventional career, take a huge cut in income, and create the Free Clinic thanks to some important help. Tricia's father, a successful investment banker, and her mother, a well-connected philanthropist, pulled together the private donations needed to get the clinic started. Her parents are key to putting on the annual fund-raising dinner that attracts a wide range of corporate and individual supporters. When asked for the formula to succeed as a charity, Richard bluntly advises, "Load your board with heavy hitters." When asked what they see ahead, their long-term expectations are neither grandiose nor unreasonable.

The key to the San Francisco Free Clinic system is the network of 60 volunteer physicians, specialists and sub-specialists around the city.

"We could use a little more space," says Tricia.

"We need an endowment so we don't have to fund-raise every year," says Richard.

"But we don't want to outgrow our resources, either," Tricia adds. She also cites the ongoing need to fill gaps with more volunteer services from sub-specialists.

Both Richard and Tricia quietly reiterate that they are not conducting a social experiment, nor do they hope to treat all of the people all of the time. "We're not doing this just for the patients," says Tricia Gibbs. "In the evening when we go home we usually feel good about the way we spent the day." It seems like a simple wish. Ask the average doctor in private practice about his or her work and the discussion usually revolves around the frustrations of dealing with insurance middlemen, the disappearance of the doctor's autonomy and the gloomy prospects of shrinking incomes.

The medical students, the residents, the staff doctors and volunteer specialists involved with the Free Clinic all show a different face. "It's free for the physicians as well as for the patients," is how one cardiologist put it to a television reporter. He wore a look of immense delight and satisfaction as he talked about the patients he treats as a volunteer. "If Dr. Gibbs wants me to do a test on a patient, I say, 'Sure.' I don't have to get on the phone and call some bureaucrat. I don't need an extra $100. What I need is an opportunity to fulfill my need to be a giver, and to be appreciated for it."

"We still have paperwork, but it's not annoying paperwork," says Tricia Gibbs. "We take notes and keep charts. But we don't fill out forms." The time they gain by not arguing with insurance companies or shuffling Medi-Cal forms saves about an hour a day, time that they invest in seeing more patients. What may seem like a fantasy to some physicians in private practice is the routine at the San Francisco Free Clinic. **YM**

The success of the San Francisco Free Clinic is measured, in part, by the increasing number of medical students and residents who receive training there. Above, Richard Gibbs and Alexander Z. Rivkin, a Yale medical student now in his final year, talk during Mr. Rivkin's primary care clerkship at the clinic in September.

Carolyn W. Slayman, Ph.D.

"My job is to be the catalyst," says the school's first deputy dean for academic and scientific affairs.

Photographs by Peter Casolino

Carolyn W. Slayman had completed her Ph.D. training in biochemical genetics at the Rockefeller University and taught in Western Reserve University's biology department for three years when she started her career as an assistant professor at the Yale University School of Medicine in 1967.

Since then, her accomplishments have been characterized by firsts: the first woman to chair a medical school department at Yale and the first woman to become a deputy dean at the school. She was appointed chair of the Department of Human Genetics, later renamed the Department of Genetics, in 1984, and she was named deputy dean for academic and scientific affairs last fall when the school's administration was restructured in response to the increasingly complex demands placed on academic medicine. In 1991, Yale University recognized her academic excellence by naming her Sterling Professor of Genetics.

Born in Portland, Maine, Dr. Slayman graduated from Swarthmore College in 1958 with highest honors in biology and chemistry. She received her Ph.D. degree in 1963 from Rockefeller University, and spent the following year as a National Science Foundation postdoctoral fellow at Cambridge University. After serving on the Western Reserve University faculty in Cleveland, she came to Yale, where she has centered her research on the proteins that transport nutrients across cell membranes and the genes that code for those proteins. During this time, she has been a mentor and role model to many graduate students and postdoctoral fellows alike.

She is active in professional organizations,

having recently completed a term on the National Advisory General Medical Sciences Council at the National Institutes of Health. She serves on the Scientific Review Board of the Howard Hughes Medical Institute and is a trustee of Bowdoin College in Brunswick, Maine.

In this *Yale Medicine* interview, Dr. Slayman talks with Helaine Patterson, director of the School of Medicine's Office of Public Information, about the direction of the school's academic and scientific affairs.

YALE MEDICINE: LAST FALL, THE OFFICE OF THE DEAN WAS RESTRUCTURED AND THE POSITION AND OFFICE OF DEPUTY DEAN FOR ACADEMIC AND SCIENTIFIC AFFAIRS WAS ESTABLISHED. WHAT ARE THE OFFICE'S STRUCTURE AND MAJOR PROGRAMMATIC THRUSTS?

CAROLYN SLAYMAN: The office has a number of broad responsibilities for academic and scientific programs, and for the faculty of the medical school. Before describing them, though, let me begin by emphasizing my close working relationship with the other Deputy Deans: Joseph B. Warshaw, M.D., (clinical affairs) and Stephen M. Cohen (financial affairs and administration). As you can imagine, much of the planning and decision-making that goes on at the medical school cuts across all three areas. When a senior faculty member is being recruited or a major new academic program is being launched, all three of the deputy deans work together. Likewise, all three of us are deeply involved in financial and space planning, and we meet regularly with the chairs and business managers of each of the medical school's departments to make sure that thinking at the department level is woven into a broader picture for the school as a whole. In fact, it was exactly this kind of interweaving and sharing of responsibilities that Dean Burrow had in mind when he reorganized the dean's office last year.

YOU MENTIONED THAT YOUR OFFICE HAS A SPECIAL RESPONSIBILITY FOR THE FACULTY OF THE MEDICAL SCHOOL. COULD YOU DESCRIBE IT?

As you know, the medical school has a large and extraordinarily talented faculty who teach, do research and care for patients. In a very real sense, these people define the excellence of the place, and it's critical to use the highest possible standards as we make decisions about appointments and promotions. It's also critical to offer help and encouragement to the faculty as they cope with professional challenges and career decisions that can be quite stressful: how to find the next research grant, for example, or how to juggle responsibilities toward students, patients and co-workers.

Last year, I learned a lot about the scope and structure of the medical school faculty by chairing both the Tenure Allotment Committee and the Senior Appointment and Promotions Committee. I also worked closely with Norman Siegel, M.D., [acting chairman of pediatrics] who headed a task force to examine our faculty ranks and tracks. The task force's report will be ready soon, and it will recommend the creation of two new tracks—a clinician-educator track and an investigator track—to respond to the changing environment in health care and biomedical research.

WE UNDERSTAND THAT THERE HAVE ALSO BEEN CHANGES IN THE OFFICE OF FACULTY AFFAIRS.

Yes, we've recruited a new associ-

Carolyn W. Slayman, Ph.D., discusses opportunities for technology transfer with Jon Soderstrom, Ph.D., and Ben Muskin, new members of the expanded Office of Cooperative Research. The University opened a branch office at the medical school in July. The office guides faculty who have made discoveries in their work to translate those discoveries into a form that can be patented and marketed.

"In a very real sense, the faculty define the excellence of the place, and it's critical to use the highest possible standards as we make decisions about appointments and promotions."

Dr. Slayman talks with Ira Mellman, Ph.D., about the new Biological and Biomedical Sciences program, which has streamlined the application process for graduate students and broadened their opportunities within Yale. Dr. Mellman, professor of cell biology, is director of the new program.

ate dean for faculty affairs to head what Yale informally calls the faeulty office: Morton G. Glickman, M.D., a member of the Department of Diagnostic Radiology since 1973.

The faculty office is where all of our appointments and promotions are handled and faculty records are kept. It does an enormous amount of advising of chairs and faculty members about matters of appointments, promotions and career development—questions that range from rather specific ones: "Am I eligible for sabbatical?" "What if I want to take a leave of absence?" to much more complicated ones, such as: "I am an assistant professor in a clinical department. I love research, but I also love working with patients. I'm not sure yet whether it makes sense for me to plan my career to advance through what Yale would call the academic track, where there's a lot of emphasis on research, or along the clinical track, where there's more emphasis on direct work with patients."

In addition, the school's Office of Academic Development, headed by Associate Dean Merle Waxman, M.A., enhances academic growth and career development of faculty, fellows and students. Merle arranges educational programs and oversees mentoring opportunities at the school, and works closely with other components of my office.

Both Merle and Mort have wonderful opportunities to meet our faculty members at very early stages in their time at Yale and to help guide them in their careers. That's also part of what comes under the heading of academic and scientific affairs.

COULD YOU BRIEFLY DISCUSS SCIENTIFIC AFFAIRS, BOTH PROGRAMATICALLY AND ADMINISTRATIVELY?

In scientific affairs, we are reconfiguring the school's grants and contracts and technology-transfer activities to make resources available to our faculty from the dean's office as they seek external support for their work. The new director of our grants and contracts office is Jill Schneider, who holds an M.S. degree from Massachusetts Institute of Technology's Sloan School of Management. Jill has experience in the pharmaceutical industry and more recently as business manager of the Yale Department of Dermatology, so she knows the University very well. She works closely with the departments to streamline the process of submitting grants and to improve the way in which we disseminate information about grant possibilities. The faculty are very busy doing their own research, and yet they're totally dependent on being able to generate external support for it. We want to be sure that all faculty members are notified very quickly of new funding opportunities that may be relevant to their work. Jill will devise better systems, we hope electronically, to get word out to our faculty when a new foundation is formed or the National Institutes of Health (NIH) announces a new program of research support on a particular disease or a particular problem in biomedical research. There's a lot of re-engineering under way in the grants and contracts process.

The second key person is Sara Rockwell, Ph.D., a radiation biologist and faculty member since 1974. Sara's research has centered on the biology of cancer cells in solid tumors and on using that information to improve cancer therapy. She's remaining active in the laboratory but will spend half of her time as director of our Office of Scientific Affairs. She'll work very closely with Jill. Where the main emphasis of Jill's work will be on administrative procedures, Sara will work more directly with the faculty. This spring, for example, Sara and others set up a series of well-attended workshops that

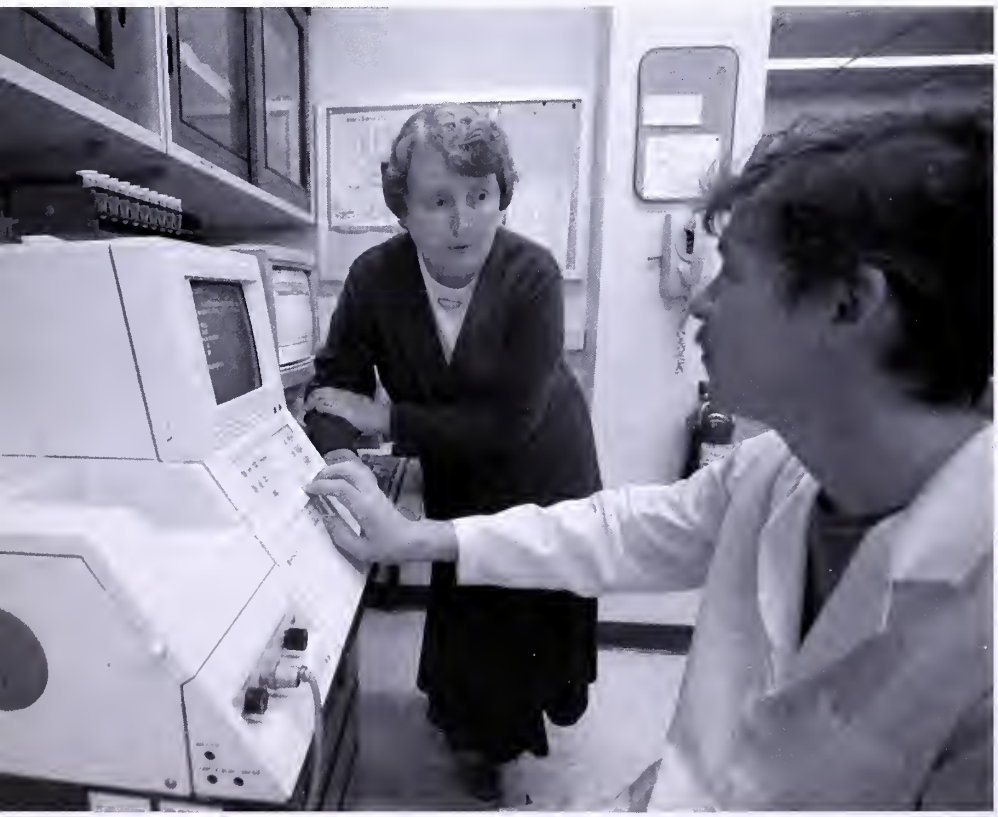
"The traditional, department-based way of recruiting faculty has been a rigorous one, and it has allowed the medical school to build an enormously strong faculty of scientists and teachers, of whom we're very proud."

focused on how to prepare an NIH grant application, how to describe a proposed scientific project, how to formulate the budget, and how to respond to criticisms that may come from the study section. She will continue these workshops and has others in mind—for example, to help postdoctoral fellows find ways to get fellowship support and apply for jobs. So, there's an educational function to the Office of Scientific Affairs.

The other important component of Sara's job is to serve as an active liaison between my part of the dean's office and the medical school's various research support functions, including core research laboratories that offer our scientists access to modern technology such as confocal microscopy, DNA and protein sequencing, and the construction of transgenic mice. Sara will be a link from the dean's office to help those core research laboratories improve their services. She also interacts in a very important way with the Yale Animal Resource Center. Because so much of our research involves laboratory animals, Sara works both with users of animals and with Robert Jacoby, D.M.V., Ph.D., professor and chairman of comparative medicine and director of the Division of Animal Care, and his staff to be sure that we're doing everything we can possibly do to keep our animal facilities and practices up-to-date. And she is our link with the regulatory committees: the Human Investigation Committee, the Animal Care and Use Committee, the Biosafety Committee, the Radiation Safety Committee—all of those committees which have critical functions in overseeing various aspects of medical research to make sure it's done properly and safely.

COOPERATIVE RESEARCH IS THE THIRD COMPONENT OF YOUR OFFICE. WHAT IS THE MEDICAL SCHOOL DOING TO FORM NEW PARTNERSHIPS WITH INDUSTRY?

Quite a lot. On July 1, a branch of the University's Office of Cooperative Research opened at the medical school. This office, set up in 1982 through the efforts of the Provost, helps the faculty with matters of technology transfer. It guides people who have made discoveries in their work to translate those discoveries into a form that can be patented and marketed. As an example, one might cite Lyme



Chair of the Department of Genetics before assuming her new role in the dean's office, Dr. Slayman remains active in research. "My laboratory is, fortunately, immediately downstairs from my administrative office, so a favorite thing to do when I get a break of even 15 or 20 minutes is to pop downstairs and talk to a postdoctoral fellow about an experiment. It's a nice way to punctuate the day."

disease, a very active area of study at Yale. Work on a Lyme disease vaccine has been helped by the efforts of the Office of Cooperative Research, putting Yale faculty members who work in this area in contact with a company interested in testing and producing the vaccine.

For more than 10 years, the cooperative research office has been based on the main campus, and we've all felt that it was a little too distant from the medical school. There's a figure worth quoting here: more than 80 percent of Yale discoveries reported to the cooperative research office have come from the School of Medicine. All of this activity has prompted the need for a more prominent presence on Cedar Street. Yale is very fortunate this year to have recruited a new director for the Office of Cooperative Research, Gregory E. Gardiner, Ph.D., who arrived in February. Greg has set up a branch office in the medical school headed by E. Jonathan Soderstrom, Ph.D., who comes to us from Oak Ridge National Laboratory. Jon and his co-worker, R. Bennett Muskin, have begun to walk around the halls of the medical school, introducing themselves to our scientists and getting to know people who are doing work that is potentially transferable into the private sector. Their aim is to be as helpful as possible at an early stage in the research.

Greg Gardiner, Jill Schneider and Sara Rockwell have been meeting together and meeting with me to think about ways in which their efforts can be integrated. Often people's work is supported at the beginning by grants and later by contracts, so there should be a seamless flow in the availability of information and support to our faculty. As the three administrators work together to improve access to information and help, next year will be a key time when these efforts will begin to pay off in a way that's visible to our faculty and research staff.

Dr. Slayman meets with Jill Schneider, right, director of the Office of Grants and Contracts. New systems are being devised to get word of funding opportunities to faculty quickly, says Dr. Slayman: "There's a lot of re-engineering under way in the grants and contracts process."

ARE THERE OTHER AREAS IN WHICH YOUR OFFICE IS INVOLVED?

Yes, I've also been working with a number of other key people in the medical school. I work directly with Nancy Roderer, M.L.S., who heads our medical library; with John Paton, Ph.D. who heads academic computing; with James D. Jamieson, M.D., Ph.D., head of the M.D./Ph.D. program, and I'm looking forward to working with Ira S. Mellman, Ph.D., director of the combined graduate program in biological and biomedical sciences established this summer as a result of two years of very hard work throughout the University. We're going to have a much better integrated Ph.D. program at Yale, and Ira will work closely with me, as well as with Graduate School Dean Thomas Appelquist, Ph.D. So, there's an educational side of the office as well.

DURING THE NEXT FOUR YEARS, WHICH WILL END THE 20TH CENTURY, ARE THERE ANY PROGRAMMATIC GOALS OR PARTICULAR AREAS OF RESEARCH OR SCIENTIFIC AFFAIRS THAT YOU THINK WILL BE EMPHASIZED?

Absolutely. Let me talk about several things here. The first is the very important question of how the School of Medicine sets its scientific direction. This should not be the purview of any one person. It should be the result of collective, careful, wise thinking on the part of the academic leaders of our school. My job is to be a catalyst. I try to bring people together and foster active discussion that will guide us, as faculty positions

Dr. Slayman discusses an experiment with members of her laboratory in Sterling Hall of Medicine. Her research has centered on the proteins that transport nutrients across cell membranes and the genes that code for those proteins.

become available, to recruit new people in directions that are the most exciting ones we can possibly think of.

The traditional, department-based way of recruiting faculty has been a rigorous one, and it has allowed the medical school to build an enormously strong faculty of scientists and teachers, of whom we're very proud. But as science becomes more interdisciplinary, it's important for departments to work together in defining areas that the school wants to sustain and strengthen. An example would be cancer research. Many parts of the medical school have a current strength in cancer research, and an interest to make sure that we remain at the forefront of that field. Included would be the Cancer Center, which is an integrating structure for the school; clinical departments such as internal medicine and pediatrics, bridge departments such as pathology and genetics, and basic science departments like cell biology and pharmacology. Instead of having each department think separately about how it wants to sustain its strength and search for young faculty members when the opportunity arises, we want to encourage discussion across departments, to get people talking about the future of cancer research, the most promising directions, and where we should put our resources as we recruit new faculty members. To follow that particular example a step further, there's a growing consensus that one of the most exciting areas in cancer research has to do with the regulation of the cell cycle. How are cells regulated as they go through cell division? We need to be stronger in this area. By coordinating recruitment of junior people over the next few years, the opportunity exists for us to build that kind of strength together more effectively than any one department would be able to do by itself.

Along with the recruitment of faculty, we need to offer them an absolutely outstanding scientific environment. In particular, we must have first-rate laboratory space. It's no secret that we are not happy with the current state of laboratory space at the medical school, although some is new and handsome, such as the Boyer Center, and some of the older areas have been nicely renovated over the past few years. There's a lot of deferred maintenance, and we must embark on a program of renovation and modernization of our laboratories if our scientists are going to be able to do their best work. We'll be modernizing existing laboratories, starting this year with the first floor of the B-Wing of Sterling Hall of Medicine. It is an old building but still has scientific life in it. The walls and basic structure are very sound, but the interior, particularly in the B-Wing and C-Wing laboratories, has not been renovated for 30 years and is really suffering. The air handling is inadequate, and other aspects of the infrastructure are limiting. The laboratories themselves, the benches and the sinks, even the layout, are a bit antiquated. The tendency now is for people to want to work in open laboratories in order to encourage cross fertilization between laboratory groups.

THE BOYER CENTER WOULD BE A GOOD EXAMPLE.

Yes, the Boyer Center has doors that connect laboratories, so students and staff members from one group are always talking with people in the neighboring groups. In older space, this is simply not possible. People didn't recognize the value of that interconnectedness for a long time, and our older laboratories are laid out like separate little boxes, inhibiting discussion and the sharing of equipment and ideas. Not only do we want to upgrade the labs physically and make them function better, we also want to lay them out differently, more in tune with modern ways of doing research.

ANOTHER TOPIC. FOR MANY YEARS, PEER REVIEW HAS BEEN PART OF THE SCIENTIFIC TRADITION. ARE ANY MODIFICATIONS NEEDED? IF SO, WHAT NEEDS TO BE DONE FOR THE 21ST CENTURY?

NIH, under the leadership of Harold Varmus, has been looking carefully at the peer review process recently, evaluating it and making changes. Yale medical school faculty members have been very active in that evaluation. We have more than 50 scientists who sit on advisory councils of NIH institutes or serve on study sections. Our scientists are well-connected in Washington and very much part of the self-examination that NIH has been going through.

But I'll focus my remarks on the medical school. We need not only to keep up-to-date with what's going on in Washington, participate in it and help it where we can, but we also need to think about our own local procedures. Discussions are under way about the possibility of a pre-review process that could help our scientists submit really strong, competitive applications for funding. Several other universities and medical schools have a system in place where a faculty member who wants to submit a grant doesn't send it directly through the grants and contracts office to Washington, but rather prepares it early enough so it can be read critically either by a colleague in the same department, by members of a large and diverse committee, operating out of the grants and contracts office. If one or two colleagues were to look at an early draft of a grant application and send it back with constructive criticism, this would be a kind of peer pre-review that would help the scientists realize: "Maybe that experiment has a flaw, and I'll think about it again." By having the benefit of constructive criticism, the application that goes down to NIH would be stronger and have a better chance of being funded. So, we'll be thinking very hard during the next year about whether we want to set up that kind of mechanism, at least on an experimental basis. We'll be talking with our scientists to see whether they're interested in it.

On the one hand, people are nervous about submitting grant applications these days. They know how competitive the situation is at NIH, and they will want to do whatever they can to make their own applications as strong as possible. On the other hand, people are awfully busy. Anything that requires preparing an application, not just for the deadline but maybe a month ahead, and asks you to take a turn serving on one of these review committees and to give some of your time to help your colleagues is a serious undertaking, and would have to be organized very carefully.

FEDERAL SUPPORT FOR BIOMEDICAL RESEARCH CONTINUES TO BE A MAJOR CONCERN IN WASHINGTON AND ON UNIVERSITY CAMPUSES. HOW IS THE DEBATE IN WASHINGTON AFFECTING YALE?

There's an enormous amount of nervousness at Yale and in other research-intensive universities and medical schools, as you can imagine. We heaved a collective sigh of relief earlier this year when, somewhat surprisingly, Congress was persuaded to give a healthy increase of 5.7 percent to the NIH budget for fiscal year 1996. That was terrific, and the funds are being very well used. But, as we all know, the political process in Washington works one year at a time, and it's very hard to know what's in store.

The budget forecasts that we've seen for the future don't look good. Requests for funds for biomedical research are going to have to compete with other priorities, and it'll be a very political process. Many of our scientists are active in professional societies, which are trying to educate the Congress. Many people in top administrative posts at Yale have themselves been quite active in making the case as strongly as they possibly can that this country's system of biomedical research, which has evolved over the past 50 years, shouldn't be allowed to go downhill because of lack of funding.

"We need not only to keep up-to-date with what's going on in Washington, participate in it and help it where we can, but we also need to think about our own local procedures."

AS A GENETICIST AND FORMER CHAIR OF GENETICS, ARE YOU STILL INVOLVED IN GENETIC RESEARCH?

I'm determined to stay active as a faculty member in the Department of Genetics, and I have a research lab that is still going strong. We've done research for a number of years now on genes that code for transport proteins that move ions back and forth across the cell membrane. We're making mutations and looking at the effect of mutations on ion transport. It's very basic research.

My laboratory is, fortunately, immediately downstairs from my administrative office, so a favorite thing to do when I get a break of even 15 or 20 minutes is to pop downstairs and talk to a postdoctoral fellow about an experiment. It's a nice way to punctuate the day. **YM**

The *haunted faces* of mental illness

Madness as satanic possession marks the earliest images of mental illness from the Whitney/Cushing Medical Library's exhaustive Clements C. Fry Collection of Medical Prints and Drawings. *Exorcism was long believed a cure for mental illness. This 16th-century German woodcut, based on the story of a young, mentally ill woman believed possessed by the devil, shows the "therapy" at work. Background image: An 1880 etching by Paul Richer portraying a demonic attack.*

The face of madness," wrote the late French philosopher and historian Michel Foucault, "haunts the imagination of Western man." Haunts is the correct metaphor. The words commonly used to describe mental illness convey this sense of invasion by powerful, malevolent forces: *unhinged, plagued, possessed, weighted down, unbalanced* and worse, often far worse. The artistic, religious and medical representations of mental illness turn these metaphors into terror-filled visual images. Devils and ghouls invade, stones grow from skulls, faces contort, objects crush, spikes pierce heads, brains spill forth. In image after image, the faces contort in the agony of being besieged by forces beyond control.

Artists have long been drawn to the subject of mental illness. Images of fools, witches, madmen and demonic possession can be traced back to 14th-century illuminated manuscripts. Later artists, including Durer, Breughel, Hogarth, Goya and Van Gogh, found subject matter there, too. This survey of historical images is culled from the Clements C. Fry Collection of Medical Prints and Drawings of the Historical Library of the Harvey Cushing/John Hay Whitney Medical Library.

In part, they document a history of viewing mentally ill people as bizarre medical exhibits. They also show how the treatment and image of mental illness develop hand in glove. The medieval exorcism of devils (that failing, burning at the stake was common) gave way in the 1600s to removal by "enlightened" physicians of "stones of folly" from the heads of the mentally ill. Pseudoscience, quackery and cruelty were long part of treating the mentally ill. During the late 1600s, confinement and isolation of the mentally ill began. The notoriety of Bedlam—popular name for London's Hospital of St. Mary of Bethlehem—soon came to express the horrors of life with mental illness.

Beginning in the 19th century, the study of mental illness began to take on its modern, scientific cast. Lacking adequate tools for treatment, however, the diagnostic and artistic focus remained the experi-

This engraving from Tony Robert-Fleury's 1876 painting, Pinel Freeing the Insane, *shows the release of patients at the Salpetriere asylum in Paris from their restraints by Philippe Pinel. The reform-minded Pinel was the first psychiatrist to attempt more humane treatment after more than two centuries of isolation cells and chains for the mentally ill.*

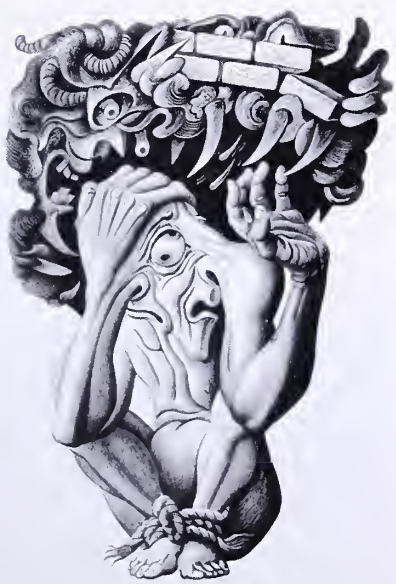
Left: *Quackery has long plagued treatment of the mentally ill. Note the assistant's hand drawing out "stones of folly" from his pouch to be "extracted" by the surgeon from the patient's head in Claes Janz Weydtmans early 17th-century Flemish engraving.*

Below: *Spanish artist Daniel Urrabieto y Vierge worked in France in the late 19th century.* Yard of an Asylum *depicts the more humane conditions of the open, if walled, yard.*

ence of possession and the face of the possessed. Paul Richer, a superb draftsman as well as clinician working with Jean-Martin Charcot at the Salpetriere asylum in Paris, drew images of stages in mental illness, such as the "demonic attack" phase of hysteria reproduced here. Even the 20th-century American artist Boris Artzybasheff pictures the face of Anxiety as contorted and monstrous as uncontrollable outside forces terrorize and overwhelm.

Today's representation of mental illness, the brain scan, goes beyond the face for the first time. Treatment and image remain inseparable. As one gains a clearer picture of the many environmental and biological forces at work in mental illness, the ancient fear of possession and the possessed loses its force. One day, through research, the haunted faces of the mentally ill will disappear into artistic and medical history altogether.

Marc Wortman



Above: *English illustrator George Cruishank depicted various forms of mental disorders in his popular caricatures.* The Blue Devils *of 1836 shows the overwhelming weight of depression. As comic as the figure appears, the very real threat of suicide plagues him.*

Left: *The 20th-century American artist Boris Artzybasheff continues the tradition representing the mentally ill as besieged by terrifying outside forces. A detail from his 1947 work* Anxiety *portrays the victim as trapped, unable to move.*

YCC launches new program in cancer genetics

The Yale Cancer Center has established a new program in cancer genetics to help patients with the dilemmas raised by advances in genetic research.

"Testing positive for genetic predisposition to cancer does not necessarily mean a patient will get cancer, but rather that the patient has a genetic mutation that increases the likelihood," explains Allen Bale, M.D., director of the Cancer Genetics Program.

"There is very little genetic testing being done now," says Susan Mayne, Ph.D., associate director for cancer prevention and control at the Yale Cancer Center, the first Connecticut institution to offer a cancer genetics program. "For the most part, family histories have been relied upon to determine a course of action."

Initially, the Yale program is offering testing only to those people with a family history of cancer. But it is the role of the genetic counselor to help prospective patients decide whether they even want to have a test.

"It's important to educate patients before testing so they can decide what's right for them," says Yale Cancer Center counselor Ellen Matloff, M.S. "Some patients don't want to know—it would impair their quality of life. For others, knowledge is empowering; it helps them plan and make important life and lifestyle decisions." She adds that the stress of not knowing is often the worst part.

Dr. Mayne says that once a genetic predisposition to cancer is determined, the big question is what to do with the knowledge. "Just knowing you have this genetic susceptibility doesn't do much good if you can't do anything about it. That's why our cancer prevention and control efforts and cancer genetics efforts are closely linked."

By focusing on families, researchers find broader implications because these families may hold the key to the genetics of cancer as a whole. In pursuit of understanding how cancer develops and how to prevent and treat it, scientists at the Yale Cancer Center are trying to learn more about carriers with and without the disease.

The study of genetic susceptibility also presents the challenge of defining effective approaches for counseling individuals from high-risk families concerning genetic testing. "We do not yet know the best way to counsel people with a familial predisposition to cancer," says Dr. Mayne. "An approach that works for prenatal diagnostics, for example, may not be optimal when dealing with cancer.

Medical van brings care to the community

Across New Haven, a new 36-foot van is delivering medical care to residents who in the past may have fallen through the cracks of the health system.

The new Community Health Care Van is the centerpiece of an innovative research and evaluation project, one of the newest national models to provide health care to drug users and other medically underserved city residents, says Frederick L. Altice, M.D., assistant professor of medicine at Yale School of Medicine and a member of the Yale AIDS Program.

With this new van, Dr. Altice

Yale investigators clone a gene for skin cancer

Researchers from the U.S., Australia, and Sweden have combined forces to isolate the gene for basal cell carcinoma of the skin, according to findings published recently in the journal *Cell*. These findings could lead to skin cream that would cure the disease, and to genetic testing for susceptibility to skin cancer.

The newly identified gene, called PTCH, is essential for keeping skin cells under control. "Genetic mutation of PTCH is the key step in development of skin cancer," says Allen E. Bale, M.D., senior author of the *Cell* paper and director of the Cancer Genetics Program at the Yale Cancer Center.

This discovery paves the way for novel approaches to preventing and treating basal cell carcinoma, according to David J. Leffell, M.D. HS '84-87, associate professor of dermatology at Yale and a co-author of the report.

"Although it's still several years away, it's not unreasonable to imagine an ointment that, when applied to the skin, may control the growth of the cancer," says Dr. Leffell. "Because skin cancers occur externally, a dose of a medication that can replace the function of the faulty gene could be applied directly to the cancer while minimizing side effects."

In 1992, Dr. Bale began studies on the nevoid basal cell carcinoma syndrome (NBCCS) gene, a gene connected to a rare hereditary disorder where sufferers develop thousands of skin cancers and may also have birth defects and childhood brain tumors. He mapped the NBCCS gene to human chromosome 9, and after sorting through 40 other genes, reported isolation of PTCH, a human gene similar to a previously reported fruit fly gene. "No one had a clue that this gene had anything to do with human cancer, but some of the features in fruit flies were strangely similar to the birth defects in NBCCS," says Dr. Bale, associate professor of genetics and medicine at Yale.

The researchers found that individuals with NBCCS are born with a mutation of PTCH in all of their cells. Further investigation revealed the same mutation in non-inherited tumors, which account for the vast majority of basal cell carcinomas. In those tumors, the mutation was

and his colleagues hope to discover whether this care and other directed efforts will help decrease or alleviate emergency department visits for acute health care problems and increase the use of primary care services. The project is sponsored by the School of Medicine, the Hospital of St. Raphael, the City of New Haven and its health department, Yale-New Haven Hospital, the Hill Health Center, Fair Haven Community Health Clinic and the APT Foundation.

"We aim to do preventive outreach as a model to reflect the needs of the community," says Dr. Altice. The van will travel throughout New Haven in tandem with the city's Needle Exchange Program. The van also will be used by another Yale program, the Medical Residents Training Program, which provides medical services one day a week to individuals at city soup kitchens.

Since the mobile medical health clinic program began in 1993, more than 1,800 men and women between the ages of 20 and 45 have been served. Dr. Altice hopes to more than double that amount with the new van.

As part of this federally funded project, the Yale team will follow 500 drug users and look at the way they use health care services. "We will see if people who have repeated interaction with the van change from episodic and fragmented care to primary care. We also will explore how different people perceive health care, and how and why drug users use certain kinds of care," adds Dr. Altice.

The van and related aspects of the research and evaluation project are supported by a four-year, $3 million grant made to the Yale School of Medicine by the National Institute on Drug Abuse. Dr. Altice is this grant's principal investigator. ■

Peter Casolino

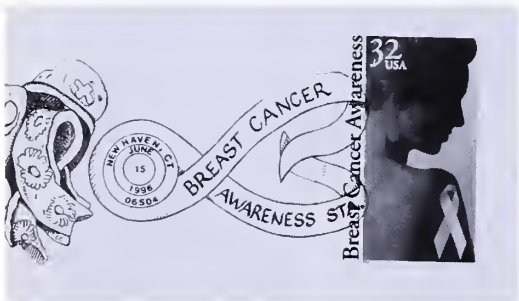
U.S. Rep. Rosa DeLauro congratulates Frederick L. Altice, M.D., assistant professor of medicine, at the dedication ceremony for a new community health van serving New Haven neighborhoods. The van, left, is the centerpiece of a project to provide health care to city residents who may not otherwise receive it.

often caused by exposure to ultraviolet light.

A second Yale study, reported in the September 1996 issue of *Nature Genetics*, expanded on these findings. Assistant professor of pediatrics Mae Gailani, M.D., and colleagues reported a larger test of the notion that genetic mutations may cause non-inherited basal cell cancers.

They discovered by means of a screening test that the gene was damaged in about a third of non-inherited basal cell tumors, and that these mutations had occurred within the tumors rather than being inherited. Then researchers took a closer look at the gene in two tumors where no genetic damage had been found. In both cases, the gene turned out to be mutated.

According to Dr. Bale, the screening test probably overlooked most mutations in the gene. The gene may be damaged in most if not all non-inherited basal cell cancers, he said.



Cheryl Carlson's sculpture of the pink breast cancer awareness ribbons serves as the basis for the pictorial cancellation used on the first day of issue of a new U.S. postal stamp. The stamp, of which one million have been printed, draws attention to the importance of early detection and treatment of breast cancer. Ms. Carlson, an East Lyme, Conn., woman who lost her battle with breast cancer in November 1995, was honored at a first-day-of-issue ceremony at the Yale Cancer Center on June 15, which would have been her 45th birthday. ■

Medical, graduate schools streamline Ph.D. programs

The School of Medicine, together with the Graduate School of Arts and Sciences, this fall initiated a combined, interdepartmental program for students who wish to pursue a Ph.D. degree in preparation for careers in the biological and biomedical sciences.

Ira S. Mellman, Ph.D., professor of cell biology at the School of Medicine, has been named the first director of the Program in Biological and Biomedical Sciences (BBS), an amalgamation of 10 major departments, sections and academic programs based at the School of Medicine. This program recognizes the excellence of the school's research environment and the fact that research in the biomedical sciences has become inherently interdisciplinary, no longer conforming to traditional departmental boundaries. It also coordinates programs and streamlines the application process to attract outstanding students who are interested in the flexible and interdisciplinary program of study.

More than 40 students entered the following interest-based tracks: genetics and development, cell biology and molecular physiology, neuroscience, molecular biophysics, microbiology, immunology, pharmacology and molecular medicine, each of which draw their faculties from multiple departments.

"Their first year is devoted to course work, hands-on training in high-technology areas, and a series of three laboratory rotations during which students are introduced to a wide range of research problems, faculty and methodological approaches," says Dr. Mellman. "By the second year, students choose a mentor in whose laboratory they perform their dissertation research."

Although degrees are ultimately awarded by existing departments, the BBS program provides educational, administrative and social support for Ph.D. students. M.D.-Ph.D students also are integrated into this larger group during their laboratory research period. Conversely, BBS encourages its Ph.D. students to explore the emerging interface between fundamental research and molecular medicine or human biology. Stipends and tuition for all students are provided from one of several sources, including NIH-sponsored training grants, private fellowships and endowed fellowships.

Dr. Mellman is a Yale graduate, having received his Ph.D. degree from the Department of Genetics in 1978. After spending three years as a fellow and assistant professor at Rockefeller University, he returned to Yale and has been a faculty member ever since. For six years, he served as director of graduate studies in the Department of Cell Biology.

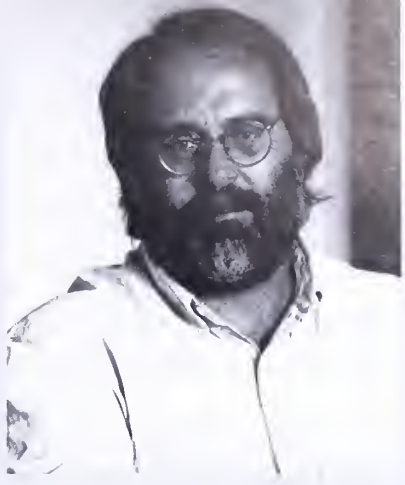
Study shows that preemies fare better when fed earlier

A new study suggests that feeding even the tiniest babies soon after birth helps stimulate a wide variety of important physical changes that promote growth and development.

In a 12-center trial sponsored by the National Institute of Child Health and Human Development, researchers studied the effects of early feeding of milk or formula on 1,665 premature infants, born weighing between 1 to 3 pounds. They found babies under the age of nine days who received small amounts of dilute formula or breast milk through a nasogastric tube, gained weight faster than those who received no tube feedings. Delaying those feedings by as little as a week was associated with a lag in weight gain of 2 to 4 grams per day.

"Keeping babies solely on

Researchers explore the quality control of the cell



Ari H. Helenius, Ph.D.

Within the body's billions of cells exists a system so intricate that each protein manufactured must undergo a series of tests to ensure its quality. Yale cell biologists have taken on the challenge of unraveling this quality control system in an effort to better understand the cell's behavior and its relationship to genetic diseases.

According to Ari H. Helenius, Ph.D., professor and chairman of cell biology, the production of proteins in the human cell can be compared to a factory assembly line. "In a factory, before a new product is sent out, it has to pass quality control checks that are necessary to find error," explains Dr. Helenius. "Similarly, when defects are discovered by the cell's quality control, the proteins are noted and given time to correct themselves. If no improvement occurs, the protein is removed and dismantled." The system recycles the good components within the body.

Also called architectural editing, this system depends on the cell's ability to recognize, retain and destroy incompletely assembled proteins, ensuring the structural integrity of protein products. Sometimes, however, a functional protein with a minor defect is rejected resulting in more damage to the body than if the cell had allowed the slightly defective protein through the system.

When the blueprint for a given protein is defective, as in inherited diseases such as cystic fibrosis, some liver diseases and blood-clotting disorders, the protein is destroyed, leaving no agent to perform necessary functions. Dr. Helenius says it is specifically these cases that make it so important for researchers to find ways of relaxing the stringency by which quality control works and thus, hopefully, eliminating the causes of such diseases.

Using viral and cellular proteins as their tools, Dr. Helenius and his co-workers are analyzing the rules that govern the cell's quality control system. They are identifying the various molecular players involved, and searching for drugs that could be used to regulate the process in patients with hereditary diseases or infections. "We need to tell the quality control not to be so picky and to let certain proteins go, even though the cell thinks it's the wrong thing to do. In certain cases, it will cause less difficulty to the body," says Dr. Helenius. ▪

intravenous feedings appears to result in atropy of the gastrointestinal tract, which usually doesn't last long," says Richard A. Ehrenkranz, M.D., HS '72-74, professor of pediatrics at Yale and lead author of the study. He continues to say that when premature babies are fed small amounts of formula or breast milk from an early age, the feedings seem to prime the gastrointestinal tract and make it more ready to accept full feedings of milk or formula.

These findings were presented in June at the annual meeting of the American Pediatric Society, the European Society for Paediatric Research and the Society for Pediatric Research.

Research targets anxiety in children facing surgery

A two-year study is under way at Yale focusing on the anxiety children suffer prior to surgery.

According to Zeev N. Kain, M.D., assistant professor of anesthesiology and pediatrics and head of this research, preoperative anxiety poses a threat to more than half a million children every year in the United States.

"This psychological phenomenon may result in increased length of time to induce anesthesia, slow recovery from the anesthetic, slow wound-healing and a delayed release from the hospital," says Dr. Kain. The children may also suffer long-term negative behavioral changes, including nightmares and other sleep disturbance, eating disorders and aggression against authority.

Through this study, Dr. Kain hopes to better understand the root causes and risk factors for preoperative anxiety and discover ways to alleviate it so the psychological and physiological problems that children who undergo surgery face will not continue to grow.

Collaborating with Dr. Kain are Linda C. Mayes, M.D., the Arnold Gesell Associate Professor of Child Development and Pedi-

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Defusing a time bomb

At Yale, home of the nation's first HHT clinic, there's help for patients with rare bleeding syndrome.

By John Green

Yale physicians and researchers at an international meeting in Edinburgh last May to mark the Rendu centennial, clockwise from bottom: Robert White, M.D.; Joel Wirth, M.D.; Joshua Korzenik, M.D.; and Pierre Fayad, M.D.

A century ago, a Parisian internist named Henri Rendu examined a patient who had been sent to him for recurrent bleeding. The cause, according to the referring physician, was hemophilia.

A blood test, however, showed normal clotting, and a skeptical Dr. Rendu found blood vessels in the patient's nose that were abnormal. Hemophilia was not the cause, he decided, and on Oct. 23, 1896, he presented the case to a group of his colleagues as a new phenomenon, a rare syndrome known today as hereditary hemorrhagic telangiectasia (HHT).

Mistaking HHT for hemophilia was understandable, says Robert I. White Jr., M.D., professor of diagnostic radiology, who founded the nation's first clinic for HHT at Yale in 1988. "It's a disease that masquerades as many things."

For some patients, unaware of the disorder and its sometimes-fatal consequences, HHT is a timebomb, says Dr. White, director of the Yale Vascular Malformation Clinical and Research Group. Its most common symptom is frequent nosebleeds. In addition to hemophilia, HHT is frequently misdiagnosed as stroke, ulcers, epilepsy or anemia.

The multi-disciplinary, clinical approach developed at Yale is crucial to identifying and managing the disease, says Dr. White. Patients are screened for family history and obvious symptoms. If the disease is suspected in the lungs or brain, the two most vulnerable organs in HHT, high-resolution computed tomography (CT) or magnetic resonance (MR) scans are used to confirm the diagnosis.

Since 1988, Yale's Vascular Malformation clinic has screened and treated approximately 250 patients with HHT. "Although it's difficult to diagnose," says Dr. White, "it's very treatable and all the serious complications can be prevented." A genetic test is in development.

HHT, also known as Osler-Weber-Rendu Syndrome, results from congenital malformations of

the blood vessels. These defects, called telangiectasias, are direct connections between arteries and veins without intervening capillaries, as in the normal circulation. The telangiectasias are prone to hemorrhage, and new ones form in critical target organs throughout the patient's life.

HHT is an autosomal dominant disorder, which means that a child born to a parent with HHT has a 50 percent chance of inheriting the mutated gene and some form of the disease. Sir William Osler demonstrated the hereditary nature of the syndrome and Frederick P. Weber added significantly to its description. It was previously estimated to affect some 5,000 Americans. But after recent population studies, the estimate has been revised upwards to as many as 50,000 Americans.

Dr. White's timebomb analogy is apt because in more than half of those affected, the symptoms can progress from minimal to mortal. By the age of 30, most people with HHT have nosebleeds, which become more severe as they get older and often require blood transfusions in later life. The telangiectasias that show up as relatively minor signs like red spots on tongue, lips and fingers often do not appear until after the age of 30.

More deadly complications may develop. Approximately one-third of people with HHT develop gastrointestinal bleeding, one-fourth have abnormal vessels in the lungs, and close to 20 percent develop a cerebral form of the disease that can lead to brain hemorrhage and stroke.

Treatment strategies for HHT involve developing new and better ways to stop bleeding, a problem that is tackled from many angles at the multidisciplinary clinic. Joshua Korzenik, M.D., instructor of internal medicine, has developed a new way of treating gastrointestinal bleeding using a hormone effective in up to 50 percent of patients. And with Pierre Fayad, M.D., assistant professor of neurology, Dr. Korzenik is studying the effects of a soybean extract on controlling the frequent nosebleeds associated with HHT. He is also studying whether lasers can be used to treat telangiectasia of the stomach and duodenum.

Dr. White developed a technique for treating the lung manifestation of the disease, using silicone balloons containing radiologic dye to strategically close circulation in areas prone to bleeding.

Douglas Ross, M.D., assistant professor of surgery, is studying the effect of using skin grafts to stop the most severe nosebleeds. David Leffell, M.D., associate professor of dermatology, has had excellent results removing cosmetically prominent skin telangiectasias using tunable dye laser. Issam Awad, M.D., professor of neurosurgery, along with John Chaloupka, M.D., assistant professor of radiology, are studying methods of first blocking circulation to vascular malformations in the brain, then surgically removing them.

Treatment strategies for HHT involve developing new and better ways to stop bleeding, a problem that is tackled from many angles at the multidisciplinary clinic.

Other key members of the HHT clinic staff are Jeffrey Pollak, M.D., associate professor of radiology; John Persing, M.D., professor of surgery; Joel Wirth, M.D.; assistant professor of medicine; and Catherine Burdge, R.N., the clinical nurse coordinator who helps screen and track some 500 patients involved with the center.

The HHT Foundation International, established by Dr. White and others to reach and help patients worldwide, has evolved from 15 original members who visited Yale in 1990 into an active organization of more than 500. The group publishes an upbeat quarterly newsletter, *Direct Connection*, and maintains a World Wide Web site on the Internet *(http://www.hht.org)* and an electronic mail address *(hhtinfo@hht.org)*.

The foundation also sponsors an annual conference that this year brought 125 families to Salt Lake City, home of the nation's second HHT center of excellence, at the University of Utah. To mark the Rendu centennial this year, an international meeting of HHT physicians and researchers was held in Edinburgh last May. Participants at both gatherings heard some very good news: researchers have found that HHT is caused by defects in genes on chromosomes 9 and 12 that are crucial to the formation of blood vessels. Scientists also have identified the biochemical mechanism for HHT in some patients.

With chapters in the Netherlands, Australia and Denmark, the foundation actively raises funds for research into the genetics, new diagnosis, treatment and management of HHT. ▪

John Green is a free-lance writer in New London, Conn.

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atrics at Yale, and Marc H. Bornstein, Ph.D., chief of the child and family research section at the National Institute of Child Health and Human Development in Bethesda, Md.

The Arthur Vining Davis Foundations grant will support two companion studies conducted by Dr. Kain. The first seeks to determine the various factors that predispose parents and children to preoperative anxiety. Based on this information, the second study will examine different types of programs to prepare children and their parents for surgery.

Biomedical engineering supported by new grant

With support from The Whitaker Foundation, a major new program in biomedical engineering has been established within Yale University's Faculty of Engineering and its School of Medicine by consolidating separate activities in biomedical imaging, molecular bioengineering and traditional biomedical engineering.

Yale University President Richard C. Levin said: "Significant expansion of the undergraduate biomedical engineering curriculum, as well as a cohesive graduate program, will greatly enhance Yale's general strength in science and engineering. Within the School of Medicine, the expansion of biomedical engineering will influence the future careers of physicians trained at Yale and provide many of them with the opportunity to realize the potential applications of engineering within medicine."

Yale is at the forefront of many research areas in which engineering is applied to medicine, according to John C. Gore, Ph.D., professor of diagnostic radiology, who has a joint appointment in the applied physics department and is the grant's principal investigator. "This grant will accelerate the implementation of biomedical engineering at Yale, expand its scope and provide the resources to achieve many of the aims of this major new initiative," he said.

Teaching graduate students engaged in applications of physics and engineering to medicine will be more formally organized, Dr. Gore notes. "More importantly," he said, "these students will undertake research in a multidisciplinary environment on important research problems in biomedical engineering."

The Whitaker Foundation grants made to Yale and seven other educational research institutions are designed to help enhance biomedical engineering by developing permanent, high-quality programs that will benefit education and research in the field.

Yale, Bridgeport hospitals establish partnership

The parent corporations of Yale-New Haven Hospital and Bridgeport Hospital have completed an affiliation that will allow them to compete more effectively in managed care and will provide patients with broader access to high quality, cost-effective medical services.

As part of the affiliation, the two hospitals will retain separate staffs, governing boards and financial structures. "For our employees, this is a transparent change and will not make a difference day-to-day on their roles and activities," says Joseph A. Zaccagnino, president and CEO of Yale-New Haven Hospital. "This is not a merger or acquisition."

There will, however, be a merging of two physician residency programs, in general surgery and a newly created residency for emergency medicine.

The hospitals together employ 8,600, with a medical staff of over close to 3,000. There are 900 beds at Yale-New Haven and 425 at Bridgeport; about 38,000 patients are discharged from Yale-New Haven annually, and an additional 19,000 from Bridgeport.

High honors for the discovery of snurps

Joan Steitz, Ph.D.

Cellular particle research brings Yale a second City of Medicine Award

Joan A. Steitz, Ph.D., the Henry Ford II Professor of Molecular Biophysics and Biochemistry and a Howard Hughes Medical Institute investigator, was one of four medical researchers to receive the 1996 City of Medicine Award.

Dr. Steitz was honored for her discovery of cellular particles that read the genetic code in cells to make proteins. Her work in identifying these small nuclear ribonucleoproteins, called snurps, served as a springboard for understanding the mechanics of gene expression.

The awards program was established in 1988 to recognize outstanding achievements in medicine throughout the nation and the world. Recipients include six Nobel Laureates. Of the 33 recipients in nine years, two have been from Yale. Vincent T. DeVita Jr., M.D., HS '66, professor of medicine and director of the Yale Cancer Center, was a 1995 award winner.

Stephan Ariyan, M.D.

Stephan Ariyan, M.D., HS '70-76, M.B.A., clinical professor of plastic surgery and otolaryngology and former chief of plastic surgery, has been awarded the Essay prize from the Educational Foundation of the American Society of Plastic and Reconstructive Surgeons. Dr. Ariyan presented the essay *Restructuring of Academic Departments of Surgery at University Medical Centers: Administrative and Financial Considerations*, at the society's annual meeting in Dallas in November.

Bruce Fichandler, P.A. '73, lecturer in plastic surgery and director of admissions for the Yale Physician Associate program, was re-elected treasurer of the American Academy of Physician Assistants (AAPA). His two-year term began in June.

Two other Yale physician assistants were honored by the AAPA in May at its annual conference in New York City. **J. Jeffrey Heinrich**, Ed.D., P.A., lecturer in plastic surgery, was named civilian P.A. of the year; and **Shepard B. Stone**, M.P.S., lecturer in anesthesiology, was named military P.A. of the year.

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Jerry Domian

Healing powers

Among the speakers and special guests at the 1996 Yale Sports Medicine Seminar in New Haven were Frank Jobe, M.D., of the Kerlan-Jobe Orthopaedic Clinic in Los Angeles, and Kartmut Krahl, M.D., Ph.D., an orthopaedic surgeon in Essen, Germany. From left, front row, are Dr. Jobe and Krahl, and Jacek Cholewicki, Ph.D., assistant professor or orthopaedics and rehabilitation at Yale. Rear, from left: Yale Sports Medicine Center physicians Marc T. Galloway, M.D., John Daigneault, M.D., Patrick Ruwe, M.D., and Director Peter Jokl, M.D.

Honoring Paul Beeson

Those he trained, and those whose lives he touched, pay a lasting tribute to the distinguished chairman emeritus of medicine.

Photographs by Harry Bishop

The dedication of the Paul B. Beeson Medical Service at Yale-New Haven Hospital in May was a chance for many to pay homage to a consummate medical practitioner and researcher who influenced a generation of physicians, and whose values still shape the attitudes, decision-making and actions of physicians-in-training today.

"Naming the Medical Service at Yale-New Haven Hospital after Dr. Paul B. Beeson is a seminal event in our institutional history," reads the dedication. "Dr. Beeson, who unified and defined the position of chairman of the Medical School Clinical Department and chief of the Hospital Clinical Service during his 13 years at Yale, represents the values of professional integrity, educational dedication, and the primacy of patient care that are being emphasized throughout our medical service."

A Montana native, Paul Beeson graduated from McGill Medical School and completed a two-year rotating internship at the Hospital of the University of Pennsylvania before joining his father in general practice in Ohio. In 1939, Dr. Beeson became Dr. Soma Weiss' first chief resident at the Peter Bent Brigham Hospital, and in 1942 joined Dr. Eugene Stead at Emory University as an assistant professor of medicine. After Dr. Stead left for Duke in 1946, Dr. Beeson became professor and chairman of the Department of Medicine at Emory, where he studied the pathogenesis of fever and the dynamics of bacteremia in patients with subacute bacterial endocarditis.

Dr. Beeson was named chairman/chief of the Department of Medicine at Yale and Ensign Professor of Medicine in 1952. Dr. Beeson appreciated the importance of the dual roles of academic chairman and chief of service. His hospital rounds, which were visible and influential, conveyed the powerful image of an intelligent, prudent physician who was caring, polite and dedicated to his individual patients. When Dr. Beeson left Yale in 1965, the Department of Medicine at Yale was among the strongest in the country, and Yale-New Haven Hospital had become one of American medicine's most desired internships.

Dr. Beeson moved to Oxford as Nuffield Professor of Clinical Medicine in 1965. When he resigned his position in 1974, he accepted an appointment as Distinguished Physician of the U.S. Veterans Administration in Seattle. Dr. Beeson co-edited, with Walsh-McDermott, the *Cecil-Loeb Textbook of Medicine*, was an editor of *Harrison's Textbook of Medicine*, edited the *Journal of the American Geriatrics Society* and co-edited the *Oxford Companion to Medicine*. He is a member of the National Academy of Sciences, a master of the American College of Physicians, and recipient of diverse honors and awards. He has received honorary doctor of science degrees from Emory, McGill and Albany and is an Honorary Knight Commander of the Order of the British Empire.

Yale-New Haven Hospital officials say the Beeson Medical Service will play an essential role in meeting hospital goals by uniting community and university physicians in a common devotion to patients, students and physicians in training. In October, Dr. Beeson was named an honorary trustee of the Associates of the Harvey Cushing/John Hay Whitney Medical Library. ▪

Left: *Participants in the inaugural symposium come together for a photograph in the Medical Historical Library. Held for the first time in May 1996, The Beeson Symposium is planned as an annual event.*

Above: *Paul B. Beeson, M.D., who left an indelible mark at Yale as chairman of the Department of Medicine from 1952 to 1965, listens to the discussion at the first Beeson Symposium in the Historical Library of Harvey Cushing/John Hay Whitney Medical Library in May. Seated next to Dr. Beeson are his wife, Barbara Beeson, and Richard V. Lee, M.D. '64, now professor of pediatrics at Buffalo Children's Hospital.*

Left: *Yale professor John N. Forrest Jr., M.D., HS '64-70, who trained under Dr. Beeson and today heads the medical school's Office of Student Research, provides an overview for participants at the symposium.*

Above: *Martin Gordon, M.D. '46, left, chairman of the medical library trustees, and Alvan R. Feinstein, M.D. HS '52-57, Sterling Professor of Medicine.*

Left: *Ralph I. Horwitz, M.D. chairman of the Department of Medicine and the Harold H. Hines Jr. Professor of Medicine and Epidemiology, listens to Dr. Lee's comments on the language of the doctor-patient relationship.*

Above: *Yale professor Howard M. Spiro, M.D., recruited by Dr. Beeson in 1955 to start the department's section of gastrointestinal medicine, chats with Lewis Landsberg, M.D. '64, HS '65-70, a Beeson trainee who is now the chairman of medicine at Northwestern University in Chicago.*

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Thomas E. Hughes, Ph.D.

Thomas E. Hughes, Ph.D., assistant professor of ophthalmology and visual science, will serve as a member of the Visual Science C Study Section, Division of Research Grants, for a three-year period. Study sections review grant applications submitted to the National Institutes of Health.

Thomas R. Kosten, M.D., HS '81, professor of psychiatry and director of the division of substance abuse, has been named chief of psychiatry service at the VA Connecticut Healthcare System. In his new position, Dr. Kosten will be responsible for VA Connecticut's clinical, educational and research programs in psychiatry at both the West Haven and Newington campuses.

Marvin Moser, M.D., clinical professor of medicine, has been appointed a member of the Sixth Joint National Committee on the Detection, Evaluation and Treatment of High Blood Pressure of the National Heart, Lung and Blood Institute.

The Pew Charitable Trusts of Philadelphia has selected **Hong Sun**, Ph.D., assistant professor of genetics, as one of 22 Pew Scholars in the Biomedical Sciences for 1996. The $200,000 award, intended to encourage scholars to be innovative in their research, will support Dr. Sun's work in mitogen-activated protein kinases and cell signaling.

Jim Anderson

Stephen G. Waxman, M.D., Ph.D.

Yale neurologist elected to Institute of Medicine

Stephen G. Waxman, M.D., Ph.D., professor and chairman of neurology, has been elected to the Institute of Medicine, the health-care arm of the National Academy of Sciences.

In addition to serving as professor of neurology, neuroscience and pharmacology at Yale, Dr. Waxman founded and is the director of the PVA/EPVA Neuroscience Research Center, VA Connecticut Healthcare System on its West Haven campus. He is recognized internationally for elucidating the molecular architecture of nerve fibers and the glial cells that surround them, and the mechanisms by which nerve fibers in the brain and spinal cord adapt to injury.

He has published more than 300 scientific papers and edited five books on neuroscience. He is the author of *Spinal Cord Compression and Correlative Neuroanatomy*, and is the editor of *The Neuroscientist*.

Multivariable Analysis: An Introduction, by Alvan R. Feinstein, M.D., HS '52-54, Sterling Professor of Medicine and Epidemiology, Yale University Press 1996.

Facing Death, edited by Howard M. Spiro, M.D., professor of medicine; Mary G. McCrea Curnen, M.D., Dr.P.H., clinical professor of epidemiology and pediatrics; and Lee Palmer Wandel, associate professor of history and religious studies, Yale University Press 1996.

Children are ... Images of Grace: A Pediatrician's Trilogy of Faith, Hope, and Love, by Diane M. Komp, M.D., professor of pediatrics, Zondervan Publishing House (Mich.) 1996.

Dumplings: A Collection of Poems, by James W. Lancaster, M.D., HS '50-53, Lancaster (Fla.) 1996.

A Practical Approach to Cardiac Arrhythmias, by Stephen C. Vlay, M.D. '75, Little, Brown & Co. (Boston) 1996.

Clinical Management of Hypertension, by Marvin Moser, M.D., clinical professor of medicine, Professional Communications (N.Y.) 1996.

Now I Know Better, edited by David Bachman, M.D., director of pediatric emergency medicine at the Children's Hospital at Yale-New Haven, Millbrook Press (Conn.) 1996.

Dear Bruno by Alice Trillin, a volunteer at The Hole In The Wall Gang Camp affiliated with the Yale School of Medicine, The New Press (New York) 1996.

Sexual Harassment in the Workplace and Academia: Psychiatric Issues, edited by Diane K. Shrier, M.D. '64, American Psychiatric Press, Inc. (Washington) 1996.

A Primer of Gynecologic Oncology by Robert C. Wallach, M.D. '60, IDI Publications (Omaha) 1995.

Skin Changes and Diseases in Pregnancy by Robert C. Wallach, M.D. '60, and M. Harahap, Marcel Dekker Publisher (New York) 1996.

Women's Sexual Health by Ruth Steinberg, M.D., assistant clinical professor of obstetrics and gynecology, and Linda Robinson, Penguin (New York) 1996.

Treatment Planning for Psychotherapists by Richard B. Makover, M.D., assistant clinical professor of psychiatry, American Psychiatric Press Inc. (Washington) 1996.

Transjugular Intrahepatic Portosystemic Stent Shunts (TIPS), Harold O. Conn, M.D. '72, HS '51-56, was the coordinating editor with J. Palmaz, J. Rosch and M. Rossle as coeditors, Igaku Shoin Medical Publishers (New York) 1996.

Light for the new millennium

Class of 2000 a many-faceted group of students

The following is adapted from Director of Admissions M. Lynne Wootton's September report to the Medical School Council on the entering class.

Not long ago, the Thousand Points of Light program was established. I would like to share with you information on our own 101 points of light—a term you will see these first-year students in the Class of 2000 certainly deserve.

That light first shone in many different places—in this hemisphere as well as in Europe, Asia, the Middle East and Africa. Our entering students have won numerous awards, prizes, scholarships, grants and fellowships, and more than 70 percent have already published and presented research findings, on topics ranging from *Cloning the Whirligig Gene* to *The Disenchantment of Nature: The Naturalist Temper of Robert Lowell.*

They have given their time in shelters, nursing homes, cancer outreach centers, a home for pediatric AIDS patients, intensive care units, senior citizen centers, homes for teen-aged mothers and a domestic violence center here in New Haven. They have volunteered as emergency medical technicians (EMTs), translators, Big Brothers and Sisters, camp counselors for emotionally disturbed children, and firefighters. They have taught English to non-English speakers, jet skiing to 12-year-old campers and biochemistry to Yale students. One student helped start a program to provide cuddling and nurturing to newborns in overcrowded neonatal units. Another taught music to more than 400 inner-city children.

One student worked in a Chinatown health clinic, another in a medical clinic in Haiti. A third is a writer who has published two novels and is under contract for four more. They are composers and arrangers, ballet and ballroom dancers, and choreographers. They sing gospel and enjoy jazz. One performed in a summer-stock theater group, another is a cantor, still another paints. One student was drafted by the Boston Bruins—but chose to come to New Haven instead!

The story of one young man's road to Cedar Street helps to answer an often-asked question: What makes a Yale medical student? This medical student is exceptional, but no more so than his 100 colleagues.

He earned a 4.0 GPA as an undergraduate majoring in both economics and political science, then did his premedical work five years later. He authored a section for a Lonely Planet guide to Brazil, and was the recipient of Rotary, Elks, Masons and Presidential Leadership scholarships. He was an Eagle Scout and wrote a thesis on U.S.-Cuban relations during the Castro era.

While in college, he founded and owned a coffeehouse. He was one of three undergraduate students selected to teach and consult at the Wharton Small Business Development Center. An EMT, he volunteered as a victim's advocate for a Colorado county sheriff.

He organized a mountain-climbing expedition to Venezuela, and secured sponsorship from four companies. He is a board member of the Search for Genghis Khan Expedition—a non-profit corporation seeking the burial site of Genghis Khan and increase awareness of 13th-century and present-day Mongolia. He was nominated by undersea explorer Robert Ballard for membership in the Explorer's Club, and was accepted in 1994. He raised over $100,000 to help low-income families establish businesses in an economically depressed area of Philadelphia.

This aspiring physician volunteered in Ecuador with Amigos de las Americas after nine months of training in language, culture and public health. During his three-month stay, he traveled to remote villages and vaccinated over 600 people for yellow fever. He is now, together with 100 others, a first-year Yale medical student—all members of an extraordinary class—the Class of 2000. We welcome all of you with great pride.

more student news on page 48 ▸

Harry Bishop

Top: *Forrester A. Lee, M.D., associate professor of medicine and assistant dean for multicultural affairs, helps first-year medical student LaLisa Anderson into her white jacket during a ceremony welcoming the entering class to the profession of medicine.*

Above: *Stephanie Eisenbarth, a first-year M.D./Ph.D. student, walks across Harkness Courtyard after the White Jacket Ceremony.*

A welcome to medicine

The white jacket that 101 first-year medical students in the Class of 2000 donned during orientation in August symbolizes their entry into a rich and satisfying life of service to others. "I can't think of any better way to spend a professional life than as a physician," Robert H. Gifford, M.D., H.S. '66-67, associate dean for education and student affairs, told the new students, their parents and friends at the Harkness ceremony. "To be able to combine a love for science with a concern for people is the ultimate privilege for any individual." This ceremony was one of two major events for the new students. More than 90 percent of them and several of their spouses/significant others also attended an October retreat to enhance communication. They enjoyed being with colleagues in a relaxed atmosphere at the Heritage Inn, took part in activities to heighten knowledge of themselves and others, and participated in exercises to develop more effective communication skills with colleagues, partners and patients in the medical community. ▪

Below: *The presentation of jackets followed remarks by Associate Dean Robert H. Gifford, M.D.*

A runner's training inspires air-quality research in Iran

Peter Casolino

Maryam Asgari, left, now in her final year of medical school at Yale, stands next to the poster presentation of her air-quality research, conducted in Iran. With her is Aina Puce, Ph.D., Ms. Asgari's adviser for another research project on brain imaging and perception.

In 1979 at the age of 7, Maryam Asgari found herself far from her native Iran and unable to return.

When she did go back 14 years later as a Yale medical student, the purpose of the trip was to renew family ties. But she made an observation that resulted in a three-month study of air quality in Tehran and the surrounding countryside. Her research was the basis of her student thesis at Yale and for recommendations to scientists and officials in Iran.

Ms. Asgari, now in her final year of medical school at Yale, presented the findings of her study at Student Research Day last May, a year early. She also presented her research in poster form at the American Lung Association/American Thoracic Society International Conference in New Orleans.

Ms. Asgari came to the United States with her mother in 1979 at the age of 7 to visit her brother, then a student at the University of California at Berkeley. The revolution in Iran delayed their return for more than a decade. "We lived in California until I finished college at Stanford in 1992," says Ms. Asgari. Her mother returned to Iran as Maryam began medical school at Yale. In 1993, she returned to a much-stabilized Iran after 14 years abroad.

In New Haven, before the journey, Ms. Asgari had been running 6 miles a day to train for a marathon. Two miles in Iran was enough to leave her short of breath and wheezing. "If someone like myself, in fairly good health, was affected by the air quality," she asked herself, "what was it like for people who were breathing this on a daily basis?"

After that first visit, Ms. Asgari returned to New Haven and searched the literature for information on air quality and public health in Iran. She found very little.

In collaboration with Yale faculty Arthur B. Dubois, M.D., and William Beckett, M.D., physician-scientists in environmental health at the Yale-affiliated John B. Pierce Laboratory, Ms. Asgari embarked on her own study. She collected the necessary equipment and supplies and set off to Iran, from June to September of 1994.

Her father, a physician, made introductions at the University of Tehran School of Public Health, where she gained access to patients and won the support of Iranian researchers. They helped her navigate the politics of Iran's decentralized health system and its "houses of health," community-based clinics where research may be conducted if one knows how to go about asking.

Despite the doors opened to her as a native of Iran, Ms. Asgari encountered problems, starting at the airport with the confiscation of her air-monitoring equipment, which was held for a week, then returned to her. To conduct research in the houses of health, she was required to bring along an escort—married and male.

She believes that the effort was well spent. The results of the tests among 400 children in Tehran and in rural villages showed the poor air quality was clearly detrimental to the children's lung function.

"We looked at several different variables to explain the difference in lung function among the rural and urban children," says Ms. Asgari. "We analyzed their nutritional status and the overcrowding situation among urban kids, but the only constant we found to explain lung detriment was the difference in air quality."

While Ms. Asgari found slightly higher rates of detriment among children in urban areas, she discovered that all the children in the study were affected by the poor air-quality. She limited the research to children because their lungs are still developing, making it easier to measure the detrimental effects.

Tehran is one of the world's most polluted cities, she says, "but many things can be done to raise the air-quality standards—if the government would just pay more attention to this problem." She hopes that her work will interest and inspire scientists in Iran, and lead to air-quality controls for factories, cars, trucks and trains.

Ms. Asgari, who spent part of the summer on a clinical clerkship in obstetrics and gynecology in Ireland, will visit Surinam in South America this year for a primary care elective. She plans to train in dermatology and plastic surgery after graduating in May. ▪

Rosalind D'Eugenio

Immunobiology student awarded fellowship

Lynn Hannum, a third-year graduate student in the department of laboratory medicine, has been awarded the 1996-1997 Richard K. Gershon Fellowship to encourage biomedical careers.

Ms. Hannum, who works in the laboratory of Mark J. Schlomchik, M.D., Ph.D., assistant professor of laboratory medicine, concentrates her research on better understanding the conditions required to maintain immunity to diseases, known as immunological "memory." Memory cells develop during the initial immune response to an infectious agent and are responsible for rapid, effective clearance of that pathogen upon subsequent encounters. In particular, Ms. Hannum focuses on the memory in B lymphocytes, the cells that produce antibodies.

"We know that memory can be long-lasting," explains Ms. Hannum, "since vaccination as a child can confer life-long immunity to some diseases. Still, we don't understand the mechanism by which memory cells persist over such long periods of time."

One theory she is examining is that the antibodies produced during an immune response are retained in the spleen and lymph nodes, and that periodic encounter with these stored antigens is necessary to re-stimulate memory B cells. To test this hypothesis, Ms. Hannum developed transgenic mice which do not produce antibodies, and lack the proposed viral and bacterial fragments. "We are beginning to analyze immune responses in these transgenics to determine whether or not stored antigen is actually necessary for long-term maintenance of memory B cells."

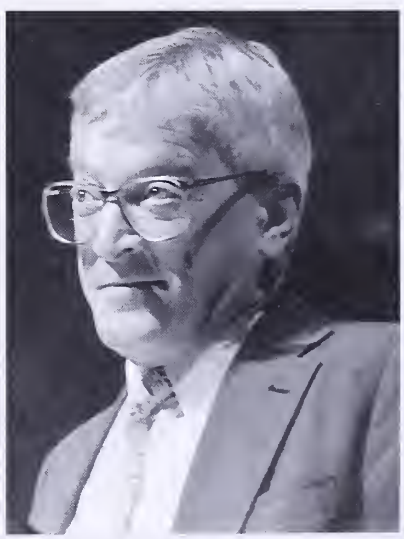
The fellowship is named in memory of Dr. Richard K. Gershon, a Yale professor of pathology, immunology and biology who died in 1983. He was a leader in the exploration of the immune system. The fellowship is funded by contributions from Dr. Gershon's family, friends and alumni.

Ms. Hannum received her B.S. degree in 1987 from Bates College in Lewiston, Maine.

Physician Associate Program graduates 32, honors first distinguished alumna

Left: *Dean Gerard N. Burrow, M.D. '58, and Elaine E. Grant, P.A., M.P.H, assistant dean for the PA Program, congratulate Burdeen Camp, P.A.-C, center, who received the program's first Distinguished Alumnus Award. Ms. Camp graduated with honors as a member of the program's first class in 1973, and today is manager of the hematology/oncology infusion therapy unit at the Hospital of St. Raphael in New Haven.*

She is one of 526 individuals who have completed the 24-month educational program in the medical model. Responsible to their supervising physicians, they practice in urban and rural settings in emergency rooms, hospitals, health maintenance organizations, clinics, and private and group practices throughout the United States. Thirty-two graduates received their certificates at Commencement this year.



Harry Bishop

Above: *Surgeon and author Richard Selzer, M.D., above, addresses graduates of the Yale Physician Associate Program at their Commencement in August. Dr. Selzer, author of the best-selling* Mortal Lessons *and* Down from Troy: A Doctor Comes of Age, *served on the medical school faculty for 25 years, spoke to the graduates about the language of medicine.*

Opportunities abroad

The new Office for International Health welcomes information from alumni/ae, faculty and friends of the School of Medicine on opportunities at international sites, ranging from clinical service opportunities overseas in developing countries to research projects to which students or faculty could provide assistance.

"The Office for International Health is committed to helping faculty and students network with overseas sites interested in Yale collaboration," says Michele Barry, M.D., HS '77-81, professor of medicine and director of this office. Any faculty, student or alumnus/a who has knowledge of a potential collaboration may contact Linda Limauro, the office's administrative manager, at (203) 785-5937.

This office, established in the spring of 1996, serves medical, nursing and public health students and faculty interested in global health issues. In September, a bimonthly seminar series was started. ■

Bradley R. Straatsma, M.D.

20s

Maxwell Bogin, M.D. '26, recently relinquished his position as class agent after decades of service, and now resides at the retirement community, 3030 Park [3030 Park Ave., Bridgeport, CT 06604]. While somewhat limited in his physical activities, he is mentally and psychologically as keen as ever. His daughter, Debby Bogin Cohen, of Boston, reports that a Bogin niece doing research in the Museum of the Jewish Diaspora in Tel Aviv found the citation that "among distinguished bearers of the Jewish family name Bogin includes the 20th-century American physician Maxwell Bogin." For decades, Dr. Bogin was chairman of pediatrics at Bridgeport Hospital, an affiliate of the School of Medicine. His wife, Edith, resides with him at 3030 Park.

40s

Morris A. Wessell, M.D. '43, HS '48-51, clinical professor of pediatrics, became the first recipient of the New London (Conn.) Native Son Award by his hometown Rotary Club. The club created this honor to recognize someone who grew up in New London and accomplished much in his professional life elsewhere. Dr. Wessell also received the Paul Harris Fellowship, the highest honor given by the Rotary.

R.M. Fasanella, M.D. '43, HS '43-44, chairman of ophthalmology at Yale from 1951 to 1961, writes to report on the careers of two of his former students: **Bradley R. Straatsma**, M.D. '51, has been named editor-in-chief of the *American Journal of Ophthalmology*. Dr. Straatsma formerly was director of the Jules Stein Eye Institute and professor and chairman of the department of ophthalmology at University of California-Los Angeles School of Medicine. **Javier Servat**, M.D., HS '62, a chief resident under Dr. Fasanella, has had a distinguished career in ophthalmology in Trujillo, Peru. A coincidental communication received from Dr. Servat is noted below.

B. Herold Griffith, M.D. '48, HS '48-49, retired from the practice of plastic surgery in March. Dr. Griffith was professor of surgery from 1959 to 1996, and chief of plastic surgery from 1970 to 1991, at Northwestern University Medical School in Chicago. He also was chairman of the American Board of Plastic Surgery from 1981 to 1982.

50s

Harry C. Miller, M.D. '54, of Great Falls, Va., and a summer resident of Canandaigua Lake, N.Y., is professor emeritus and former chair of the urology department at George Washington University Medical Center.

William H. Hindle, M.D. '56, has been appointed to the National Academy of Sciences' Institute of Medicine's Committee on Breast Cancer Research, the National Cancer Institute Breast FNA (fine-needle aspiration) subcommittee on training and credentialing, and the editorial advisory board of the medical journal *Cancer Cytopathology*. Dr. Hindle is professor of clinical obstetrics and gynecology at the University of Southern California School of Medicine and director of the Breast Diagnostic Center at Women's and Children's Hospital.

Brian Crowley, M.D. '57, president of the Washington (D.C.) Psychiatric Society, was recently named a life fellow of the American Psychiatric Association.

Marcia Kraft Goin, M.D. '58, Ph.D., HS '58-62, clinical professor of psychiatry at the University of Southern California (USC) School of Medicine, has been nominated as a trustee-at-large of the American Psychiatric Association. Dr. Goin is director of residency training in the psychiatric outpatient clinic at Los Angeles County/USC Medical Center, and is in part-time private practice.

Max Pepper, M.D., M.P.H. '59, of Montague, Mass., retired professor and founding chair of community medicine at St. Louis University, is clinical professor of family and community health at Tufts University Medical School and consultant to the community-oriented primary care training program for internal medicine residents at Baystate Medical Center in Springfield, Mass. Dr. Pepper also traveled to Ramallah, near Jerusalem, to help Palestinian colleagues launch a new graduate program in public health at Bir Zeit University for medical professionals from the West Bank and Gaza. He is also serving a two-year term as president of the Physicians Forum. His wife, **Anita Golden Pepper**, M.P.H. '60, Ph.D. '72, is also clinical professor at Tufts Medical School.

Leon G. Smith, M.D. '56, HS '59-62, chairman of medicine at Seton Hall University School of Graduate Medical Education, and director of medicine and chief of infectious diseases at Saint Michael's Medical Center in Newark, N.J., was voted one of the top five infectious disease specialists in a New Jersey statewide poll published by the *New Jersey Monthly*.

60s

Javier Servat, M.D., HS '62, in a recent letter to AYAM Vice President Nicholas Passarelli, M.D. '59, HS '59-65, reported on 34 years of practice and teaching at the Institute of Ophthalmology at the National University of Trujillo in Peru. As a tribute to his service and to his training of more than 80 residents in ophthalmology from all throughout Latin America, the institute was recently renamed the Javier Servat Univajo Institute of Ophthalmology. Dr. Servat remembers his years of training at Yale fondly and sends salutations to all of his old friends.

80s

Juan Larah, M.D. '82, was named director of Adult Medicine at the Mission Community Health Clinic, which provides care to the under served Hispanic community of San Francisco.

Heidi Boerstler, Dr.P.H. '87, M.P.H. '81, J.D., is department chair for health administration programs and a professor at the College of Business and Administration at the University of Colorado in Denver.

David Seifer, M.D., fellow in Ob/Gyn '89-91, has joined the Ohio State University College of Medicine as director of the division of reproductive endocrinology and infertility.

90s

John T. Chang, M.D., M.P.H. '95, has graduated from Northwestern University Medical School and is a housestaff physician in internal medicine at Georgetown University Medical Center in Washington. Dr. Chang published an article in the September 1995 issue of *CHEST*.

ALUMNI/AE ON CAMPUS

Alvin Friedman-Kien, M.D.

Alumni/ae of our medical school, achieving distinction in other academic centers, are frequent lecturers at department conferences on our campus.

We wish to report of such visits briefly in such a column in order to inform classmates and colleagues of these events. Department chairmen and alumni/ae speakers are urged to inform *Yale Medicine* of such visits so that this mission may be accomplished.

On April 25, Alvin E. Friedman-Kien, M.D. '60, presented medical grand rounds and subsequent house staff colloquies on *The Viral Etiology and Pathogenesis of Kaposi's Sarcoma*, and related aspects of the AIDS epidemic. Dr. Friedman-Kien is professor of dermatology and microbiology at New York University Medical Center. He is an international authority on Kaposi's sarcoma, and his research has centered on the pathogenesis of viral and infectious agents in dermatologic disease and oncology.

Dr. Friedman-Kien presented a comprehensive review of the history and pathogenesis of Kaposi's sarcoma (KS) with a summary of the evolution of our knowledge since 1981 in the era of AIDS. The association of this malignancy with the herpes virus and the ultimate identification of human herpes virus 8 (HHV8) as the probable etiologic agent of KS was described. The complex and enigmatic epidemiology and pathogenic elements in the expression of this malignancy were discussed.

Dr. Friedman-Kien is, coincidentally, a renowned and eclectic collector of modern art and authority on artistic antiquities. His collections are celebrated ones. A profile of Dr. Friedman-Kien on this subject appeared in the March 1996 issue of *Art and Antiques*.

Nicholas P.R. Spinelli, M.D. '44
Consultant, Alumni Affairs

Richard L. Frank

Richard L. Frank, M.D., died of a stroke in February in New York. He was 90.

Dr. Frank graduated from Yale College in 1926 and received a master's degree from Yale in 1930; he graduated from the Yale School of Medicine in 1931. Dr. Frank served in the Army during World War II. He completed his residency in psychiatry and child psychiatry at New York Psychiatric Institute at Columbia University, and from 1945 to 1946 he taught psychoanalysis at the Long Island College of Medicine.

Dr. Frank continued his training in psychoanalysis and child analysis with the New York Psychoanalytic Society. He later taught at Columbia University's Psychoanalytic Clinic. Dr. Frank joined the faculty at Mount Sinai School of Medicine in New York, where he led the work that established the adolescent service in psychiatry. He was also in private practice in Manhattan for more than 30 years.

William F. Stephenson

William F. Stephenson, M.D., died April 23 at his home in Denver. He was 72.

Dr. Stephenson served in the medical corps during World War II. He graduated from the University of Oklahoma, and received his medical degree from Yale in 1952. Dr. Stephenson completed an internship on Staten Island, N.Y., and at the Public Health Service in Fort Worth, Texas. He completed residency training in psychiatry at the University of Colorado Health Sciences Center.

Dr. Stephenson practiced psychiatry in Denver for more than 30 years and was a clinical instructor at the University of Colorado Health Sciences Center.

Raymond S. Duff

Raymond S. Duff, M.D., M.P.H., died on June 21 in Connecticut from complications from a stroke. He was 72.

Dr. Duff served in the Army from 1943 to 1946. In 1948, he received a bachelor's degree from the University of Maine. He graduated from the Yale School of Medicine in 1952. Dr. Duff served a pediatric internship and residency at Yale-New Haven Hospital from 1952 to 1955. In 1959, he received a master's of public health degree from Yale.

From 1955 to 1956, Dr. Duff was director of the Bureau of Medical Services for the New Haven Health Department. In 1956, he joined the Yale faculty as instructor in pediatrics and public health. He also was director of ambulatory services for Yale-New Haven Hospital. Dr. Duff retired from Yale in 1988 as professor emeritus of pediatrics.

George A. Carden Jr.

George A. Carden Jr., M.D., died at his home in New York City on Aug. 10. He was 89.

Dr. Carden received a bachelor's degree in 1931 and a medical degree in 1935, both from Yale. During World War II, he was a member of an American research team investigating tropical diseases, especially malaria, in both the laboratory and in the field. He served in 1945 as executive secretary to the Committee on Drugs and Medical Supplies of the National Research Council, and in 1946 was executive secretary to the National Academy of Sciences' Board of Coordination of Malaria Studies.

In 1948, Dr. Carden was presented with a presidential certificate of merit for outstanding service toward the war effort as chief of the wartime Office of Scientific Research and Development's malaria division. In 1982, he retired as a clinical professor of medicine at the Columbia University College of Physicians and Surgeons, after 36 years on the clinical faculty. He practiced medicine at Columbia-Presbyterian Medical Center from 1946 until his death.

Yale established the George A. Carden Jr. Fellowship for research in virology and immunology in his honor. Dr. Carden also received a Distinguished Service Award in 1992 from the Association of Yale Alumni in Medicine.

IN MEMORIAM

Robert M. Cushing, M.D. '32
June 20, 1996

Hugh Richard Hoopes, M.P.H. '79
April 22, 1996

Milton Malev, M.D. '26
November 16, 1995

Lucien M. Pascucci, M.D. '34
July 2, 1995

Milber Bedford Pope, M.P.H. '70
August 11, 1995

Donald H. Schultz, M.D. '52
May 23, 1996

Theodore H. Sills, M.D. '27
June 12, 1996

Marc A. Weisblatt, M.P.H. '91
December 12, 1995

Expanding on a happy tradition

What makes a great reunion program a little bit better? Feedback from alumni/ae that lets us try a few new ideas, plus two days of great weather. Thanks to the excellent response to our alumni/ae survey in late 1995 (not to mention blue skies), this past June's Alumni/ae Reunion Weekend program was a tremendous hit. As we plan the 1997 reunion, we would appreciate hearing more of your ideas and preferences for this special weekend in New Haven.

The 1996 reunion was a happy mixture of traditional and new activities. On the Friday night, after a day of meetings and seminars around the medical campus, a convivial reception in the Historical Library was hosted by Dean Gerard N. Burrow, M.D. '58, followed by a Mexican-themed buffet dinner in the Harkness Courtyard.

Shuttle vans whisked revelers to the Shubert Theater a few blocks away, to see comic legend Jerry Lewis in the touring musical production *Damn Yankees*. Other groups made their way from campus to Yale Field to watch the New Haven Ravens AAA baseball club play the Portland Seadogs, an experience made all the more exciting by the hooting and stomping of the Elm City's younger fans (a collection of glove-wielding, 12-year-olds hoping to catch a fly ball).

The next day we set up golfers with convenient tee-times at the Yale Golf Course and made free court time available at the Yale Tennis Center. And the weather was clear, hot and dry.

Alumni/ae *reunion* weekend **1 9 9 6**

These additions to the program were your suggestions and they complemented the traditional components of reunion—individual class programs, parties and seminars, as well as special presentations by faculty. As always, the Friends of the 50th Dinner, hosted by the Association of Yale Alumni in Medicine (AYAM) at the Graduates Club, was an evening of relaxation and good cheer—and very short speeches. The dean did stand up and thank the Class of 1946 for its record accomplishment of raising a reunion gift of more than $1 million.

Seafood Newburg, beef tenderloin and strawberry shortcake were also at their traditional places on the Saturday lunch buffet table—staples of comfort for many in this ever-changing world we live in! And while we can count on some familiarity in the menu this coming June, the backdrop for the meal will be dramatically different: The entire first floor of Harkness will be new, the result of a top-to-bottom renovation of the cafeteria into a food court with new seating, a private dining room and a reconfigured Spinelli Lounge.

An important tradition that was maintained in 1996 was the presentation of the Distinguished Alumni Service Award, to two recipients: Marie-Louise T. Johnson, Ph.D., M.D. '56, HS '56-59; and Dwight F. Miller, M.D. '56, HS '58-59. Both Drs. Johnson and Miller are former presidents of the AYAM, and have worked tirelessly for the good of the school and all its alumni/ae. Continuing a relatively new tradition started in 1994, Dean Burrow presented the Peter Parker Medal to Arthur Crovatto, M.D. '54, HS '54-61 who stepped down this summer as director of alumni affairs. Dr. Crovatto remains closely involved with students as instructor of anatomy.

Next year, Alumni/ae Reunion Weekend will be Friday and Saturday, June 6 and 7. Since we will not mail a survey this year, I would be very grateful to hear from people at any time, by mail, fax, phone or e-mail. We are especially interested in finding ways to meet the needs and expectations of younger alumni/ae to encourage their participation.

William K. Jenkins
Managing Director
Office of Alumni Affairs

Write to Bill Jenkins at the Office of Alumni Affairs, P.O. Box 7613, New Haven, CT 06519-0613 (Tel: 203-785-4674, Fax: 203-737-5153), or via e-mail at ***william.jenkins@yale.edu***

1941

55TH REUNION

By Willys M. Monroe, M.D.

Attending our 55th reunion, with spouses, were **Peter Duncan**, **John Fenton**, **Fred Glike**, **Willys Monroe** and **Ed O'Connell**. Willys, acting for class secretary **Bob Ollayos** (who was in northern Wisconsin at the time), took notes and reported on the activities of class members since our 50th reunion. He sadly announced the deaths of nine classmates since that occasion: **Acpua**, **Areson**,

Harry Bishop

Helen P. Langner, M.D. '22, responds to a gift of flowers from Arthur C. Crovatto, M.D. '54.

Cheney, **Ed Harvey**, **Lasell**, **Murfitt**, **Parrella**, **Simmonds** and **Rogers**, leaving 24 still alive. We understand that **Randy Bell** was unable to attend the festivities owing to failing health. It also appears that the only one of us still active professionally is Peter Duncan, who is pursuing a project in genetic research. If there are others, please make this known to Bob Ollayos or Willys Monroe.

In honor of the 55th anniversary of our graduation, despite our diminishing numbers (but under the persuasive leadership of Peter Duncan), our class subscribed its largest gift ever to the Medical Alumni Fund. Although most of the returnees came from nearby, Willys and Louise Monroe came from Virginia. In fact, Louise conducted pediatric cardiology clinics in Roanoke, Va., on Friday, June 7, until noon and still made it to the barbecue supper at Harkness Hall that evening. Saturday's activities for our class followed the traditional pattern of morning medical seminars and the meeting of the Association of Yale Alumni in Medicine, followed by sherry and lunch on the Harkness lawn. But the day culminated in the "attitude adjustment" hour at the Graduates Club, with plenty of good fellowship and nostalgic reminiscences of days gone by, followed by a sumptuous dinner with Friends of the 50th. After dinner we said our fond farewells, promising to keep in touch and to return, God willing, in 2001 for our 60th.

1946

50TH REUNION

By Franklin C. Behrle, M.D.

On Friday, June 7, the Class of 1946 assembled at the Colony Inn where an early afternoon cocktail party set the tone for a happy, hectic and high-calorie 50th reunion. Further fortified by the dean's reception in the Historical Library, we wove our way to the New Haven Hotel where we encountered our first of several sumptuous feasts, immediately followed by a smash performance by Jerry Lewis in *Damn Yankees* at the Shubert.

Saturday morning brought us up to speed on state-of-the-art radiology and the state of the School of Medicine. At noon, Dean Burrow, mind-boggled by the report of the windfall class gift, went for broke in providing the most lavish buffet the Harkness Hall tents have ever hosted.

After a brief session for the class picture on the steps of Sterling (marked by a not-too-successful attempt to place us in the identical positions of our original graduation shot), we embarked on a rollicking bus trip to the Gordon estate, the highlight of the trip being **Betsy (Reilly) Sullivan's** skirmish with a plate of buffet Newburgh, which inevitably ended up in **Jud Hoover's** lap. The afternoon at the Gordons' placed another jewel in the crown of this established tradition and provided a much-needed chance to renew old ties in a warm and relaxed atmosphere. Hoover was the solitary sampler of the lake, ostensibly to elute the remains of the Betsy buffet.

The class dinner on Saturday night at the Graduates Club was nothing short of gourmet and was a fitting climax to the air of gemutlichkeit prevailing throughout the weekend. Sunday morning rolled around with startling quickness. Amid parting salvos of "See you at the 55th," the party was over.

Those fortunate enough to make it were: **Molly Albrink**, **Joe** and Virginia **Arminio**, **Bill** and Joan **Banfield**, **Tim** and Phyllis **Beck**, **Frank** and Peg **Behrle**, **Sandy Bluestein**, **Linus** and Dusty **Cave**, **Tom** and Babette **Coleman**,

Harry Bishop

Left: *Members of the Class of 1946 visit together during the Dean's Reception in the Medical Historical Library, 50 years after their graduation from the School of Medicine. From right: Vincent Pepe, M.D., Julian A. Sachs, M.D., James N. Harten, M.D., and June Pepe.*

Below: *John L. Sullivan, M.D., left, and John V. Haxo, M.D., members of the Class of 1951, share a happy moment during their 45th reunion.*

Harry Bishop

Tom and Harriet **Doe**, **Marty** and Evelyn **Gordon**, **Jim** and Ruth **Harten**, **Jud Hoover**, **Jim** and Micki **Kleeman**, **Vinnie** and Rosina **Longo**, **Hugh McLane**, **Jack** and Laura **Neville**, **Bob** and Marge **Owens**, **Vinnie** and Babe **Pepe**, **Julie Sachs**, **Don** and Charlotte **Shedd**, **Dick** and Mitzi **Sisson**, **Bob** and Mary **Wagner**, **William P. Walsh** (Class of '43)and Frances, **Bill** and Midori **Wedemeyer**, and **Eli** and Emma Sue **Wing**.

We were most pleasantly surprised to welcome three widows: **Rosalie Collier**, **Muriel Murphy** and **Betsy (Reilly) Sullivan**. Sadly, the **Whelans** and their daughter, Sharon, **John Morton**, **Ruth (Sviborgsen) Kempe** and **Joe Morris** were all looking forward to coming but had to cancel due to unforeseen circumstances.

The class gift to Yale shot out all the lights—a grand total of $1,155,059 with 76 percent participation. The previous high had been $350,000. A class act?

1951

45TH REUNION

By John J. Sullivan, M.D.

It was 1951 all over again—Friday, June 7th, we had all assembled during the day, registered and had been greeted by Lycurgus Davey, our AYAM president and Gerard Burrow, our dean.

We had attended and enjoyed radiology chairman Bruce McClennan's presentation *The X-Ray: 100 Years Of Progress*, an in-depth historical study.

Now, conviviality took over and we were at the dean's reception. Our next stop was Mory's for cocktails and dinner. We were **John** and Ruth **Berg**, **Jocelyn Malkin**, **Sid** and Ina **Furst**, **John** and Betty Lou **Haxo**, **Wally Morgan**, **Mal** and Muriel **Bagshaw**, **Carrold** and Luanna **Iverson**, **Lowell** and Ione **Goodman**, **Tom** and Barbara **Amatruda**, **John** and Mary **Sullivan**, **Andy** and Irene **Wong**, and **Al** and Donna **Mowlem**.

It was a casual, happy evening. There were two long tables. At the one I was at, the old boys and girls were having a delightful time. I glanced happily at the other long table. The group was even more excited. It was just what a reunion should be!

The program on Saturday was again outstanding. Radiology was featured, all the way through the latest in teleradiology. It would make you proud of the old school.

Again, it was time for conviviality—libations and dinner at the Graduates Club! Our group was now joined by **Paul** and Polly **Bruch**, **Frank** and Dolly **Allen**, and **Brad** and Ruth **Straatsma**. This party was even better. As Ernest Hemingway said: "We ate well and we drank well."

Reunion on a small scale

The fourth, irregular, mid-term, New England mini-reunion for the Class of 1945 convened on Oct. 10, 1996, at the Publick House in Sturbridge, Mass. Eight classmates (**Atwood**, **Breck**, **Daniels**, **Gardam**, **Jenney**, **Jones**, **Naumburg** and **Reiner**) and six wives attended.

The class will hold its next mini-reunion April 5 to 9 at Howie-in-the-Hill, Fla. **Ray Gagliardi** has been planning this event for the entire class. Having celebrated our 50th reunion in 1995, the year 2000 looks a long way off—hence a mid-term meeting for this loyal and loving group.

R.W. Breck, M.D.

Sid Furst was the master of ceremonies. He remembered the 15 classmates we had lost, and added the name of **Mike Walken**, our almost-classmate. We had a moment of silent prayer for our old friends.

Sid reviewed our corres pondence from classmates unable to be with us. Tom Amatruda discussed plans for the 50th. We shall hear more from him later on this.

The 50th sounds great. The one and only Lowell Goodman is forming a class band for this one, so stiffen up your embouchure. We all want another great affair. You have to come back.

1956

40TH REUNION

By John H. Gardner, M.D.

Thirty-two of us gathered in New Haven for our 40th reunion. Forty-eight percent of the living members of our class attended, a pretty good record for a 40th reunion. It was good to see some old friends at the unstructured class gathering Friday afternoon, but it was not very well attended. A fair number of us attended the teaching sessions on the past and future of radiology, and the meetings of the Association of Yale Alumni in Medicine, but attendance was certainly best at the dinner meetings.

A high point of these reunions has always been the Friday evening informal dinner at Helen and **Steve Downing's** house in Guilford, when one gets to relax with old friends and suffer through slides and movies of previous reunions. The more formal cocktails and dinner at the New Haven Lawn Club on Saturday was somewhat better attended and the cuisine was very good, especially if one were lucky enough to obtain the entree requested through the alumni office. **Bill Lewit** and **Charlie Zigun** were only able to make it to the luncheon on Saturday—sorry not to have seen more of them.

This reunion was preceeded by a questionnaire which had been answered by 54 of us, or 81 percent—again an excellent record. Most of us are near or past the age of 65 and it is therefore not surprising that 20 of us have retired, 4 more are on the verge, and 10 more have sharply curtailed their professional duties, often by relinquishing department chairmanships, and sound as though they are enjoying the situation much better. That leaves only 20 of the respondents, 37 percent, who are still in the full-time active practice of medicine and planning to remain so. Perhaps the most thoroughly retired is **Bob McDivitt**, who gives his address as the yacht Charade, out of Trinidad. Many respondents commented on the excellence of a Yale medical education and the joys of practicing medicine tempered somewhat, however, by the current tendency to have one's practice run by insurance companies. In the same spirit, spurred onward by the uniquely generous matching grant offered by **Bill Hindle**, our class made a substantial contribution to the Yale Medical Alumni Fund. We left New Haven with rekindled warmth of spirit and a desire to return in another five years.

Harry Bishop

Commencement + 70

Elizabeth Ross Harrison, M.D. '26, attended reunion in June with her nephew, Ross G. Harrison III. Dr. Harrison's father, Ross Granville Harrison, M.D., Ph.D., was a leader in the field of tissue culture and the first to develop a method for growing tumor cells in flasks. When the elder Dr. Harrison moved his family to New Haven in 1907 from Johns Hopkins University in Baltimore, the family lived in the building on York Street that is now Mory's. Dr. Harrison celebrated her 97th birthday this year.

1961

35TH REUNION

By Sally L. Marchesi, M.D.

A dinner, hosted by **Vincent T.** and **Sally Lockwood Marchesi** and **Robert I.** and Ellen **Levy,** was held on Saturday evening at the Marchesi's Guilford home. Enjoying the evening were **Robert S.** and Joyce **Briggs**, **David W.** and Judith **Brook**, **Lawrence T. Chiaramonte**, **Royal C. Hudson Jr.**, **Joseph E.** and Joanne **Jasaitis**, **George M.** and Christa **Lordi**, **Anoush Miridjanian**, **Roy E. Ronke Jr.**, **Robert N. Taub** and **Warren D.** and Myra **Widmann**. **Elaine Pitt** sent her regrets.

A poem of thanks was sent by George and Christa Lordi reflecting the feelings of the evening.

Many thanks for
... the view of the ocean and the bay, the poppies on the driveway;
... the evening sun, many old friends for fun;
... a house of warmth and delight, where childrens' touches are still in sight;
... some tales of intervening years, some changes, disappointments and cheers;
... good cooking and great tastes, such organization didn't go to waste;
... these special moments we shall treasure, as proof of extending friendships' measure.

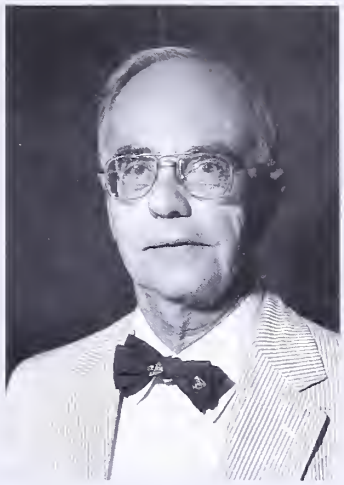
1966

30TH REUNION

By Arne Youngberg, M.D.

A small transcontinental contingent gathered in New Haven for our 30th. **Phil** and Arlene **Bernstein** flew in from San Francisco. **Gene Cassidy** drove cross-country from the Iowa heartland. **Joel** and Cynthia **Singer**, **Jim** and Victoria **Sansing**, **Jim** and Pat **Brown**, **Donald Cohen**, and **Arne** and Patti **Youngberg** popped in from various urban and rural areas in Connecticut.

Our class dinner was in the Library Room at the Graduates Club on the New Haven Green and we had laughs and fond memories, sharing news of all our classmates. Our 35th reunion in 2001 will coincide with Yale's 300th Anniversary—think about it.



Harry Bishop

Distinguished alumni/ae

Dwight F. Miller, M.D., and Marie-Louise T. Johnson, M.D., Ph.D., both members of the Class of 1956, received the Distinguished Alumni Service Award at reunion in June. Dr. Miller, a Connecticut pathologist, was president of the AYAM from 1984 to 1989. Dr. Johnson, a dermatologist who treated patients and conducted research in Hiroshima, Japan, during the 1960s, was AYAM president from 1993 to 1995.

1971

25TH REUNION

By Barry Perlman, M.D.

Graying but still largely unbowed, approximately 31 members of the Class of '71 celebrated their 25th graduation reunion. The class dinner, an excellent clambake, was held on Saturday evening, as it often has been in the past, at the beautiful home of **John** and Ellen **Ebersole** on Long Island Sound. A brunch was held on Sunday morning at the home of **Barbara Kinder**, who planned the class reunion along with Elton Cahow, her husband, and **Richard Moggio**. Many of those who enjoyed the festivities were "reunion groupies" who had attended most of the prior class gatherings. They were joined by several first-time attendees, including **Sten Lofgren**, **Stuart Phillips**, **Tim Jette** (who has left anesthesiology for psychiatry) and **Steve Moffic**. Geographically, too, the group arrived from all parts of the country and included **John Cieply** from Hawaii, **Andy Cook** from Maine, **Doug Schmidt** from Colorado, and **Paul Vignola** from Florida. As might be expected, the largest contingent in attendance was from Connecticut, Massachusetts and New York. They included **Albert Weihl** (who has founded an emergency medicine residency at Yale), **Richard Kaufman**, **Fred Cohn**, **Burns Woodward**, **John Patti** and **Barry Perlman** (who was appointed chair of the New York State Mental Health Services Council by Gov. George Patakai, himself a graduate of Yale

College). Others who made the pilgrimage to New Haven were **David Lippman** (who had just recently returned from a self-conferred sabbatical of a year's duration with his family, during which time he spent some months practicing in New Zealand and he visited with **Elizabeth Morgan**), **John Mills** (who regaled us with adventures from his continuing military involvement), **John Smiarowski** (who has infiltrated New England culture into rural Louisiana), **Rich Travers**, **Semeon Tsalbins**, **Lenny Eisenfeld**, **Jonathan Stewart**, and **Marian** and **Bruce Block** (the only intra-class marriage and still going strong).

Harry Bishop

Alumni/ae listen to a presentation on 100 years of radiology at Yale by Bruce McLennan, M.D., chairman of diagnostic radiology. In the front row, from right, are Robert R. Wagner, M.D. '46, Mary Wagner, Mimi Sisson and Richard G. Sisson, M.D. '46.

While the mood was bright, those who came together took the opportunity to offer condolences and support to Lenny Eisenfeld whose son tragically died in a terrorist bombing while studying in Israel earlier in the year. Long-term spouses were congratulated on their achievement and new spouses were warmly welcomed. Unlike prior reunions, proud talk was as much about the accomplishments of children who are beginning to take their place in the world as about the doings of the class members themselves. Beyond nostalgia, other prominent topics were news of those not present and changes in the landscape of medicine since graduation.

1976

20TH REUNION

By Alfredo Axtmayer, M.D.

Attending the 20th reunion were a select few, including **Roger** and Meredith **Boshes**, **Peter Swanson**, **Ken Dobuler**, **Cindy Mann**, and Pat and **Alfredo Axtmayer**. Quoting Roger: "I am completely bummed. Where are **Cullen** and **Schottenfeld**, **Kremer**, **Sladky**? The only good thing is the upgrading of the wine at dinner, which was a lively, albeit intimate, meal." He predicts the 25th will be big. He is practicing psychiatry and teaching psychiatry in Rhode Island.

Ken Dobuler and Sue report their daughter, Zoe, is now a year old. He is chief of medicine at Griffin Hospital, continuing his pulmonary practice. His newfound aspiration is to become an expert sea kayaker, which he is doing now with dedication.

Peter Swanson is still practicing family medicine in Shelton, Conn., and is searching for documentation of our second-year show to present at the 25th reunion. Last we heard, **Bob Taylor** had the sound and **Rick Morin** had the film, so maybe we can get these together.

Cindy Mann is still practicing pediatrics in New Haven at CHCP, which is no longer a closed-panel HMO. She is concerned now that she has to pay attention to the part of medicine she never liked. She is still in love with pediatrics and reports the adoption of her son, Michael, now 4 years old, from El Paso, who "is the light of my life." She also wants those who didn't show up this year to know the seven of us who dined together had a great time talking about the rest of you!

I keep wondering why I do this every five years, since we seem to be having diminishing returns. I continue to practice orthopaedics in the Meriden/Wallingford area, and do some limited work at Yale-New Haven and St. Raphael's. Am enjoying life with my wife, Pat, and my four children, Alfredo, Patrick, Aileen and Caitlin.

1981

15TH REUNION

By Barbara Ross, M.D.

Nine members of the Class of '81, along with spouses and friends, returned to New Haven for our 15th reunion. We got together for dinner at the Colonial Tymes restaurant, for what turned out to be great food and a comfortable place to catch up with each other.

As before, our New York contingent was well represented. **Dovelet Shashou** and husband, Jon Trambert, hail from Riverdale. Dovelet practices pediatric ophthalmology and is on the go with Steven, 6, and Emily, 3. **Ines Carrasquillo** is also back in New York, practicing plastic surgery, after a brief stint in Florida. She much prefers the Big Apple. **Frank Yeomans'** psychiatry practice in the city focuses on the borderline patient, and he's recently published a book on the subject. **David Lebwohl** and Sally have recently moved back to Connecticut and now live in the shoreline town of Madison—welcome to the suburbs!

Other classmates had to travel a bit farther to reunion. **Tony Urbano** and Camille came back from Bethlehem, Pa., where Tony is an interventional cardiologist. Their children are Angela, 7, Camille, 5, and Anthony, 3. **Susan Burdette** lives in Montreal with husband, Victor Radoux, and stepdaughter, Catherine, 11. Susan is a

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With honors

Arthur C. Crovatto, M.D. '54, awarded Peter Parker Medal

Arthur C. Crovatto, M.D. '54, who retired this year as director of alumni affairs, has been honored with the Peter Parker Medal for his service and special contributions to the school, and for his loyalty as an alumnus.

The Parker Medal is named for the Yale medical missionary who devoted his life's work to China, where his breakthrough achievements in transcultural relations wrought truly historic changes in the worlds of medicine, religion and international diplomacy in the mid-1800s. Peter Parker was a graduate of Yale College, Yale Medical College and Yale Divinity School.

"Dr. Crovatto has done a superb job in building alumni/ae relations and has been the architect of wonderful alumni/ae reunions during the past six years," Dean Gerard N. Burrow, M.D. '58, said as he presented the medal to Dr. Crovatto at reunion in June. "Arthur has been one of the driving forces in the anatomy lab and his anecdotes to the students have figured prominently in the second-year class show." The Class of 1999 honored Dr. Crovatto with his own song (*Art Crovatto*, to the tune of the Eagles' *Desperado*) in the 1996 show.

Born at home in Union City, N.J., Dr. Crovatto chose medicine as a goal early in life. Interviewed this summer, he recalled that his mother offered him two career choices—those of minister or physician. Possibly influenced by his godfather, a doctor, he chose the latter. From Union City, he was able to enjoy the pleasures of New York City for the cost of a 5-cent subway token, and recalls watching in fascination as the Lincoln Tunnel connecting New Jersey and Manhattan was excavated.

The first in his family to proceed beyond grammar school, he entered Columbia University in 1945, where he was a premedical student and a junior-varsity basketball player. He first visited New Haven for a game against Yale in the Payne Whitney Gymnasium. He returned again for football games at the Yale Bowl, filled to capacity, trolley cars running. In February 1946, he entered the Army.

When he later interviewed for admission to the School of Medicine, he was welcomed by Bill Whalen, then a first-year medical student, and spent two hours touring the school. The friendly and inviting atmosphere he found, and the *Yale System* of medical education, galvanized his love of medicine and of Yale. He participated in the Aesculapian Student Frolic Dance, the proceeds of which paid for the daily student-faculty teas (a wonderful aspect of the student life of the era), and he played on the medical school basketball team.

During his internship, Arthur met Janet Herrold, who was pursuing a master's degree at the Yale School of Nursing and graduated with the Class of 1955. They married in York, Pa., and moved there in 1961. He established a private practice as a urological surgeon, and served as chief of the division of urology at York Hospital. Dr. Crovatto was chairman of the York County Medical Society Scholarship Committee, which he and his colleagues founded in 1962. Free polio vaccinations were being offered at the time to the York community, and donations were collected in a bucket at the clinic. These proceeds became the core of the scholarship and loan fund which today makes annual awards of $30,000 to students aspiring to a career in medicine.

After 29 years in York, the Crovattos returned to New Haven in 1990, and Dr. Crovatto assumed the directorship of the medical school Office of Alumni Affairs. Working with the medical students as an instructor in anatomy, he has enjoyed connecting these future alumni/ae to the Association of Yale Alumni in Medicine (AYAM). He and his wife have four children, two of whom now live on the Upper West Side of New York City. From his son's apartment he can see his childhood home of Union City. Five young grandchildren keep the Crovattos busy, and Dr. Crovatto is devoting time to tennis, gardening, the appreciation of basketball, and weekends at his summer home on Martha's Vineyard. He remains connected to Yale and medicine, and to another generation of aspiring physicians, as an instructor of anatomy.

Harry Bishop

Arthur C. Crovatto, M.D. '54, left, receives the Peter Parker Medal from Dean Gerard N. Burrow, M.D. '58, at reunion in June.

Bonnie Sargent

Sharing light

Was the Greek inscription above the door to Sterling about the handing down of knowledge, or a more collegial enterprise? A search of the past suggests the latter.

Peter Casolino

Where the runners outwear each other
but running with lampless hands. No man takes light from his brother
till blind at the goal he stands.

Swinburne, *Hymn of Man*

As we crossed Cedar Street last fall on our way into Sterling Hall of Medicine, Bill Collins, M.D. '47, asked if I could translate the Greek inscription on the architrave over the entry portal to the rotunda. Knowing nothing of the history of the portal and its architecture, my rendition was: *Those having brightness (of knowledge) will pass it on to each other.* This idea of sharing seemed quite appropriate to the collegial atmosphere that most of us experienced and enjoyed at the Yale School of Medicine. Colleagues pointed out soon enough that the first word of the inscription referred not to *brightness* but to *torches.*

But of course, for there above the inscription was the symbol of the torch with the owl of wisdom behind it, sculptured in the frieze as in an ancient Aesculapian temple, clearly a fascination of the architect. This symbolism had to have an historical significance, so my answer to the original question only raised more questions.

A visit to the Yale Medical Historical Library produced two publications showing the entry portal: The *Yale Alumni Magazine* of January 1959 and the *Yale Memorials* from the Office of the Secretary, 1963. In both, the rendition of the Greek inscription in English was as follows: *Those who have torches shall pass them on to others.* This translation did not seem satisfactory, as the last word of the inscription, ΑΛΛΗΛΟΙΣ, means not "to others" but "to each other" or "to one another."

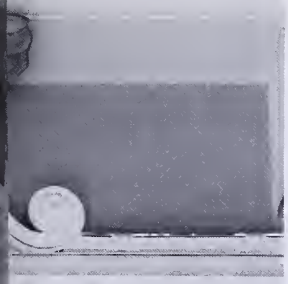
My next stop was at the Sterling Memorial Library on the main campus. There, the electronic text section provided, with just a few keystrokes on the computer, the source of the quotation. It flashed on the screen, identified as *Republic*, I 328 a 2. It was about horse racing! A novel idea it was, a relay race on horseback. Reference was made to the Jowett translation, which proved to be: ... *Will horsemen carry torches, and pass them one to another during the race?* This literary translation is quite appropriate to the context of the passage, but a review of the original Greek text would permit, if we remove the question mark, a more literal translation known to us today: *Those having torches will pass them on to one another.*

How were these words chosen for the entry portal of the Yale School of Medicine and the Institute of Human Relations? There had to be a story. Researching the files of Dean Milton C. Winternitz, the entire story of the portal was revealed, finally, in the folder labeled *Miscellaneous.*

Dean Milton Winternitz, who had instituted the medical school's full-time faculty system, had felt for some time that the medical school was carrying a disproportionate share of the social problems of the community. With his friend, the 28-year old dean of the Law School, Robert M. Hutchins, the dean embarked upon an effort to bring multiple disciplines, including law, sociology, psychology, psychiatry, medicine and even engineering, to share in these sociological endeavors. The president of Yale University, James Rowland Angell, described the project as a community of scholars. It was to be called the Institute of Human Relations, for which the dean had obtained a generous Rockefeller grant, both for its construction and its support for the next five years. Precursor to the the present-day Yale Psychiatic Institute, the Institute of Human Relations originally occupied the left side of Sterling Hall of Medicine.

The architect chosen for the project was Grosvenor Atterbury, a member of the Yale College Class of 1891 and a close friend and classmate of Harvey Cushing, M.D. Among the items found were a letter from Mr. Atterbury to Dr. Winternitz and a reprint of the architect's article, *Hospitals and Esthetics* (from the *Journal of the American Medical Association*, 1915).

Searching through these items, one uncovers a clear explanation for a choice of the inscription. To Mr. Atterbury, the esthetics of the hospital were more a function of the art than of the science of architecture. He believed that there was a human side to every medical problem and that this was epitomized by the sentence suggested for the entrance to the Virchow Hospital in Berlin:



Architect Grosvenor Atterbury's enchantment with the ancient Aesculapian temples of healing is seen in the sculptured frieze, above the inscription, at the portal to Sterling Hall of Medicine. The sculpture exhibits a small torch (the literal meaning in the singular of the first word of the inscription) behind which is the figure of an owl. The owl, the favorite bird of Athena/Minerva, was the bird of wisdom.

ΟΝΤΕΣ
ΛΗΛΟΙΣ

Corey Lowenstein

"In treating the patient, do not forget the man." His admiration of this inscription probably motivated him to have a similarly telling inscription over the portal of entry of the Institute of Human Relations.

In a letter to Dean Milton Winternitz dated November 13, 1930, Mr. Atterbury enclosed a copy of *Hospitals and Esthetics* and an explanation for the inscription. His translation of the quotation is close, but not quite literally correct: *Carrying torches they passed them on, one to another.* His interpretation was that there are "times when in the brotherhood of all the arts and sciences one profession should take the torch from another, as did the Greek runners ... eager to advance it toward the goal." This interpretation, like mine, implies a sharing or horizontal transmission of knowledge. He continues to say that the quotation is taken from a description of ancient Olympic Games. He was unable to recall the author and suggested that the dean inquire of "one of the Greek Professors in the University."

Dean Winternitz did write to Professor Austin M. Harmon, who replied promptly in a letter of November 18, 1930. Professor Harmon identified the source of the quotation and corrected Mr. Atterbury's translation thus: "Carrying torches, they *will* pass them on, one to another." He described torch races as a feature of the Panathenaic Festival at Athens as there were no torch races in the Olympic Games. The last paragraph of Professor Harmon's letter is worthy of quotation:

"Since the torch race was a relay race, in which each team of runners passed a torch from hand to hand precisely as modern runners pass a short staff, and since it was the duty of each runner in the relay to keep alight the torch which he received and passed, the transmission of the torch, by repeated figurative use, has come to be almost synonymous with the transmission of learning from one generation to the other. In that sense, the words of Plato are applicable to the activity of any school in the University. It is difficult, however, to share what seems to be the view of Mr. Atterbury that they adequately symbolize cooperation and are therefore especially applicable to the Institute of Human Relations. There was no *exchange* of torches in the race and the runner received from someone else the torch that he kept lighted and passed on."

Conclusively, then, Professor Harmon makes it clear that the passing of the torch is a vertical transmission of knowledge from one generation to another and not a sharing or horizontal transmission. To emphasize Professor Harmon's words that the object was that the torch "be kept lighted and passed on," I quote the definition of the quotation from Brewer's *Dictionary of Phrase and Fable* first published in 1870: "To maintain and transmit knowledge, learning, etc., to the succeeding generation."

Dean Winternitz accepted Mr. Atterbury's proposal and reasons for the inscription, but being dean of the medical school, he also accepted Professor Harmon's interpretation, which was so applicable to the medical school. He was right, for ironically the Institute of Human Relations exists historically in name only while the inscription persists as a fitting expression of the mission of the Yale Medical School.

Lycurgus M. Davey, M.D. '43
President, AYAM

hematologist-oncologist at McGill University. **Neil Gross** lives in Bethesda now, and has set his sight on business school in the fall. And **Alicia Barela** gets the "longest journey" award, having traveled from California where she is in Ob/Gyn with the Kaiser healthcare system. She was accompanied by her son Robb—many of us remember him as a toddler 15 years ago.

Many thanks to all who submitted information for our reunion booklet—watch the mail for your copy. And I hope to see all at the 20th reunion in 2001.

1986

10TH REUNION

By Eric P. Suan, M.D.

Fifteen members of the Class of 1986 returned to New Haven to celebrate the class's 10th reunion. Most of the activities centered around food, drinks and good conversation. A cool summer's night was perfect for the Friday evening barbecue on the patio of Harkness Hall. Kudos to **Mike Miller** for arranging a tour of his old Harkness dormitory room. A feast at Mory's on Saturday completed the weekend's events. Oh yes, the lectures were very stimulating as always. In attendance were **Catharine Arnold** (now in medicine in New Haven), **Cristina Brunet** (Class of '87) (medicine, New Haven), **Sophie Cole** (cardiology, San Francisco), **Colleen Collins** (primary care, Chelsea, Mass.), **Amanda Dill** (medicine, Danbury, Conn.), **Daniel Fierer** (research, NIH in Bethesda, Md.), **Jeremy Holtzman** (medicine, Minneapolis), **Betty Klein** (vitreoretinal surgery, Redding, Conn.), **Cynthia (Hall) McCraven** (Ob/Gyn, Cheshire, Conn.), **Tim McGowen** (pediatric orthopaedics, Winston-Salem, N.C.), **Michael Miller** (Pfizer, Alexandria, Va.), **Ilena Norton** (psychiatry, Denver, Colo.), **Eric Suan** (vitreoretinal surgery, Camp Hill, Pa.), **Miriam Tatum** (primary care, Derby, Vt.), **Julia Whiteside-Michel** (glaucoma, Little Rock, Ark.), and **John Wysolmerski** (endocrinology, New Haven).

Harry Bishop

John H. Gardner III, M.D. '56, and his wife, Anne L. Gardner, right, visit an exhibit on A.C. Gilbert, M.D. '09, at the Eli Whitney Museum in Hamden, Conn., on a tour added this year to the reunion weekend events. Guiding them is Helaine Patterson, president of the museum and director of public information at the School of Medicine.

1991

5TH REUNION

By Frank Lobo, M.D.

The Class of '91, encompassing not only those who actually graduated in 1991, but also some who arrived at YSM in 1987, reunited, in part, over Alumni/ae Reunion Weekend. At the dean's reception on Friday, **Funda Meric** (finishing research fellowship at NIH, returning to Michigan for chief year in general surgery), **Rick Ihnat** and **Denise Kung Ihnat** (attendings in internal medicine in St. Louis), and I congratulated each other on the kindness that time had shown us and traded any gossip that was available about our classmates. Rick already has turned down a chairmanship of a department—likely a '91 first! At the barbeque later that evening, the ever great-looking wife and husband **Gaetane Francis** (Ob/Gyn attending in Greenwich) and **Larry Hirsch** (epilepsy fellowship at Columbia) arrived. The evening was warm, and so was the food.

Saturday evening brought us together with the 50th reunion class for the Friends of the Fiftieth dinner at the Graduates Club. There we were joined by **Dan Saal** (finishing Ph.D. work in physiology, likely headed for psychiatry—behind the desk) and wife, Dr. Denise Alba. On the other side of the table, and just out of conversation range, was **Peter Bernstein** (perinatology fellowship at Einstein) and wife, Cathleen Bernhart. Peter and Cathleen economized on reunion expenses by attending three at once (Yale College, YSM, and along with Gaetane, Yale Ob/Gyn residency). The bar was welcoming, the food yummy and the company terrific, but the big hit was the Class of 1991 Update booklet, featuring bios on those who returned the forms and world-premiere cartoons by **Marc Agronin** (assistant professor of psychiatry at Minnesota). The enthusiasm for the Update has prompted a second mailing of forms, which should be arriving now, in order to make an addendum.

On Sunday, reunion attendees indulged me by coming to my house for brunch. Although described in the invitation as a "renovated" old house, it actually is somewhat short of that. Nonetheless, the yard was large enough to contain the crowd, which swelled with the arrival of **John Phillips** (chief year in urology at Yale), **Steve Ugent** (finished dermatology at Tufts, now assistant professor at Boston U.), and Steve's fiancee, Dr. Randy Berger. Finally, **Carl Henningson** (finished Ph.D., matched at Penn for internal medicine) brought his infectious smile to the brunch. Bernstein, Ihnat and Phillips' children were perfect angels and were overheard asking how old they would have to be to apply to Yale Medical School. Maybe by the 20th reunion.

Healing the world from home

Yale medical alumni/ae learned of an innovative way to develop world medical aid without leaving their own hospitals, in a reunion presentation by William H. Rosenblatt, M.D., assistant professor of anesthesiology and one of five winners of the 1996 International Rolex Awards for Enterprise.

Dr. Rosenblatt described the prize-winning REMEDY program, a system for recovering discarded surgical supplies from U.S. hospitals and donating the materials to developing countries. REMEDY, for Recovered Medical Equipment for the Developing World, was developed in 1991 at Yale and is now in place in more than 60 hospitals throughout the United States, including Yale-New Haven Hospital.

The program teaches hospitals a thoroughly tested protocol to recover discarded but unused operating room supplies in affluent countries and distribute them through well-known charities to the needy in developing countries. Physicians, nurses and technicians thereby contribute to global health care during their daily routine, Dr. Rosenblatt told returning alumni/ae gathered in a Jane Ellen Hope seminar room in June.

According to David G. Silverman, M.D., professor of anesthesiology and vice president of REMEDY, this program also includes a research component, whereby U.S. hospitals are able to learn cost-effective measures to save money and reduce waste. Drs. Silverman and Rosenblatt have published extensively on this issue, including articles in the *Journal of the American Medical Association*.

As standard practice, American hospitals throw away surgical supplies prepared for operating room procedures—even if they remain intact—because they are no longer covered under the manufacturer's single-use-only warranty. These supplies can then be sent to developing countries, which have extremely limited materials.

In addition, REMEDY is looking at effective methods to donate materials overseas and developing communication systems, including use of the Internet, about the materials that are available in the United States and that are needed in developing countries.

"REMEDY, in cooperation with the Yale Office of International Health, is developing AIREmail, Agencies for International Relief e-mail list. This list will be a free means by which not-for-profit agencies can offer donated goods or make urgent requests," Dr. Rosenblatt says. "REMEDY already has filled one urgent request for a skin graft mesher in Belarusk and has distributed items for which REMEDY had no overseas request," he adds.

"With funds from Rolex and other corporations, REMEDY is encouraging more hospitals to participate in this program," Dr. Rosenblatt says. In the past, hospitals had approached REMEDY for programmatic information, and now REMEDY is able to request hospitals to join this global effort. To extend REMEDY's work, the program has developed a linkage with the Albert Schweitzer Institute for the Humanities, based in Wallingford, Conn., to disseminate the REMEDY program more widely in the United States and elsewhere.

The Rolex awards program was created in 1976 to encourage a spirit of enterprise in individuals worldwide by providing them with the financial support and recognition that they need to bring their original ideas to fruition.

Dr. Rosenblatt and four others, selected from more than 2,500 applications in 116 countries, each received $50,000 cash awards and solid gold Rolex chronometers at ceremonies in Geneva and New York City in May.

Helaine Patterson

Max Aguilera-Hellweg

William H. Rosenblatt, M.D., holds a tray of disposable items—still intact and sterile—recovered from the operating room at Yale-New Haven Hospital and bound for Albania and Nicaragua. No longer covered by the manufacturers' single-use-only warranties, the items are used in developing countries with limited materials.

Reflections on the beginning of coeducation at Yale

By Vivian Reznik, M.D. '75

Vivian Reznick, M.D., a 1975 graduate of the School of Medicine, is professor and vice chair of pediatrics at the University of California, San Diego School of Medicine. She returned to New Haven in May for the 25th-year reunion of the Yale College Class of 1971, the University's first undergraduate class to include women. Yale School of Medicine has admitted women since 1916.

As I reflect on my history at Yale—as a transfer student to Yale College in 1969, four years at Yale School of Medicine and a marriage to someone in the class of 1970—what I remember best is that first year of coeducation.

I came to Yale College in the fall of 1969. I was one of 40 women at Davenport College, all transfers from some other college—Sarah Lawrence in my case. We all came to New Haven in the spirit of a great adventure, few of us with specific goals. I remember thinking it was better than a junior year abroad. (Imagine choosing New Haven over Paris!)

Some of us had lofty dreams—to become a Supreme Court justice, design great buildings, discover the bones of prehistoric man, win the Nobel prize. Others had more limited aspirations—to meet a nice guy, fulfill a family legacy, get a good education. We didn't immediately break any barriers that first year. We didn't run the *Yale Daily News*, or start our own sports program, or get membership to Mory's. Those changes would come from future classes. But we showed the institution that women could be productive, intellectual, interactive participants without diverting the men in some sexual frenzy.

We became lawyers (did we ever!), doctors, parents, writers, artists, filmmakers, judges, professors, scientists and CEOs. We changed history and the environment at Yale. The administration of Yale at that time should be congratulated not only for its vision but also for the way it achieved coeducation. Yale applied the same standards it used for men and admitted women who had the capacity, desire and talent to change the world, whether through leadership, scholarship or athleticism. Yale helped those women, as well as the men, discover their inner strength and taught them to use it productively.

At Yale College, I was swept away by the world of 19th-century French literature. It was romantic, expansive, beautiful and inaccessible. Did that help me become a better professor of pediatrics today? Maybe, because I remember how I felt daydreaming that I would never allow myself to become a Madame Bovary, or that I would always fight as did the revolutionaries in *Les Miserables*, or hoping that our world was not as suffocating as that of Stendhal's *The Red and the Black*.

My liberal arts education awakened in me the idea that change is possible and perhaps inevitable. But the critical lesson I learned at Yale was that individuals change society. Perhaps that idea has been germinating in me through my years of scrambling to succeed at academic medicine, raising children and surviving managed care changes in medicine. But hopefully I have imparted that lesson to my children, students, interns, residents, peers and superiors. I have proceeded through these past 25 years as if it is my birthright to succeed. That attitude came in part from my parents but was refined, ignited and nurtured at Yale.

I think about young people I see now growing up in San Diego who feel that they have no future. No one may have ever told them that they are important, that they have inner talents and strengths that should and will be cultivated. This lack of self esteem is critical in the epidemic of teen violence, pregnancy and drug addiction in our society. Perhaps a Yale education cannot be promised to this large, youthful population. But the lessons we learned at Yale and the way in which we were treated as women and students there—with respect, honesty, commitment and enthusiasm—should serve as a model for youth development and our individual interactions with young people in our communities. **YM**

Anatomy lesson

The problem: limited and antiquated laboratory space for the core course of a medical student's first year. The answer: a teaching center grounded in tradition and the best in new technology.

Frank Poole

Above: *This depiction of an anatomy lesson from a 15th-century work in Johannes de Ketham's* Fasciculus Medicinae *shows that dissection has been basic to medical education for centuries, although not always with the same attention to detail or degree of understanding. The picture of today's Yale students crowding around a cadaver will soon change. In the next century's anatomy laboratory, the scene will incorporate advanced computer simulation, integrated with traditional dissection of real cadavers.*

During an informal discussion at Alumni/ae Reunion Weekend this year, a group of alumni/ae from the '40s and '50s asked the dean what the school's most important needs are right now.

"Do you remember the anatomy laboratory when we were students?" Dean Gerard N. Burrow, M.D. '58, responded dryly. "Well, it hasn't changed a bit."

Each morning during the school year, more than 130 people can be found in the human anatomy laboratory standing elbow to elbow (or ulna to ulna), breathing in formaldehyde, squinting under old lamps, trying to get the most out of an important medical school rite of passage. Four or five students share each cadaver. The changing rooms are makeshift and shabby. The 101 medical students who entered Yale School of Medicine this fall are learning human anatomy in a laboratory that was originally built in the 1930s to accommodate a class of about 50. Add in the students from the Physician Associate Program, plus the faculty, and the lab on Sterling Hall of Medicine's third floor is crammed.

Furthermore, the other basic science teaching labs scattered throughout the school are also inadequate. Students and faculty need a central facility that is dedicated to teaching and learning, and which incorporates modern technology.

"It felt as if our medical education was being delayed by something other than our own ignorance," student Alicia Arbaje said at the end of her first year in June. "Don't get me wrong. I love it here. But honestly, the anatomy lab was hard to deal with. Just improving the ventilation would improve on student morale."

Dr. Burrow had more to say on the subject during a formal presentation at reunion weekend. "The old labs are beyond renovation," he told the returning alumni/ae. "We have plans to build a new Student Laboratory and Teaching Center. It will feature modern anatomy labs, computer workstations, conference space and a lecture hall. But we need to have the funding commitments in hand in order to build it."

Medical students have studied human anatomy since antiquity—often with great difficulty. Since before the time of Hippocrates, religious and cultural injunctions against dissection and autopsy have impeded the advance of the science

of medicine. Students at all medical schools in the early 1800s, including this one, paid grave robbers to obtain the cadavers they needed, causing more than a few conflicts with the local citizenry. In his book *Doctors, The Biography of Medicine*, Sherwin B. Nuland, M.D. '55, wrote that it was Galen, the second-century Greek physician who "introduced physicians to the anatomical concept . . . that a detailed knowledge of the body's structure is the foundation upon which understanding of disease must be based." Some 1,400 hundred years later in Italy, Dr. Nuland adds, Andreas Vesalius published *De Humani Corporis Fabrica*, and "paved the way for modern scientific medicine by presenting to the world the first accurate knowledge of human anatomy and a method by which it might be studied."

Today, in the *Yale System* of medical education, the study of anatomy, cell biology, microbiology, pathology, laboratory medicine and neurobiology provide the grounding for the clinical training that follows. Learning is driven by individual initiative and close cooperation with one's colleagues and mentors. While scalpels, probes and *Gray's Anatomy* are still in use, the teaching of anatomy and physiology is far from static. Technology is rapidly driving adaptation and change.

Three-dimensional models, video microscopy and interactive computer tutorials are already employed at Yale, enhancing and complementing traditional learning methods. They fit perfectly in the *Yale System* that fosters self-motivation and individual responsibility.

"When we weren't in the anatomy lab, our class invaded the library computers," says Ms. Arbaje, now a second-year student. "At peak time, that was difficult."

Experts now debate whether high-tech teaching methods of the future, such as virtual reality, will make the need for human cadavers and dissection labs obsolete. Most teachers agree that the human cadaver will never completely become superfluous. The new Student Laboratory and Teaching Center will include a discrete computer lab to incorporate new technologies to compliment the traditional cadaver dissection experience.

The proposed Student Laboratory and Teaching Center will bring together faculty, students and new technologies under one roof and ensure that Yale continues its leadership role in teaching and scholarship in the decades ahead. The center will be constructed within the shell of a former industrial building, and will cost an estimated $6 million to complete. These plans are part of Yale University's $1.5 billion capital campaign to restore and construct facilities throughout the campus.

If the funds are raised by the end of the capital campaign next June, it is expected that the new center would be in operation by the fall of 1999, in time for the anatomy lectures to the Class of 2003. Here is an opportunity for alumni/ae who are interested in making a major commitment to the campaign to designate their gifts to the new Student Laboratory and Teaching Center. ▪

David Davison
Director, Individual Major Gifts

Write to David Davison at the Office of Medical Development, 100 Church Street South, Suite 211, New Haven, Connecticut 06519, or via e-mail at ***david.davison @yale.edu***

The cadaver ceremony

At the end of the first year of study, in a ceremony that is both poignant and life-affirming, Yale medical students honor the people who helped teach them anatomy by donating their bodies to their medical education. They eulogize people they never met while they were alive, but whom they came to know in the most intimate detail through the tactile inspection of gallstones, coronary arteries, muscle fiber and arthritic joints. The dissection of each cadaver reveals much about that individual, and about humanity in general. A good physician must be trained to be responsive to both.

Campaign for the Student Laboratory and Teaching Center

Named Gift Opportunities

To Name the Student Laboratory and Teaching Center	**$6 million**
Anatomy and Experimental Surgery (laboratory facilities)	**$2.5 million**
Lecture Hall	**$1 million**
Exhibition Hall and Atrium Lounge	**$500,000**
Computer/Telemedicine Lab	**$250,000**
Basic Science Teaching Labs (6)	**$100,000** (each)
Cold Room	**$75,000**
Men's Locker Room	**$50,000**
Women's Locker Room	**$50,000**
Faculty Office	**$50,000**
Model Storage	**$25,000**
Dissection Tables (36)	**$15,000** (each)

Remembering Ray Duff

To the editor:

The death on June 21 of Raymond Duff, M.D. '52, HS '52-55 (pediatrics)—postdoctoral fellow in pediatric cardiology '54-55 and professor emeritus of pediatrics—terminated the career of a valiant leader in improving the welfare of children everywhere.

Few individuals delved into the intricacies of so many disciplines with the determination and respect as he did: clinical pediatrics, pediatric cardiology, hospital administration, neonatology, ethics, sociology, religion! He studied these diverse approaches. He was appreciated and respected by eminent members in each of these fields. He never shirked what he saw as his duty, which in essence was exemplified by his conviction that a "Responsible man does what needs to be done." His idea of what "needed to be done" was at a higher level than most of us ever dreamed of!

The book *Sickness and Society,* co-authored with Professor August Hollingshead of Yale Sociology Department and published in 1968, opened the door for consideration of "who gets what kind of care where." The conceptualizations are as applicable now as when the study was undertaken 30 years ago. *Assessing Pediatric Practice*, a study begun in 1970 and edited for publication in 1990 by Dr. C.D. Cook, deals with pediatric care in the New Haven community.

Ray Duff liked the term "physician of record." He always did what he thought was right and good for the patient and all concerned. Countless students, house officers and colleagues appreciated his "being there."

As a clinician, teacher, physician of record, social scientist and ethicist, Ray Duff led the way. I doubt that anyone can achieve the eminent way in which he assumed this role. The least we can do is to try.

Morris A. Wessel, M.D. '43, HS '48-51
New Haven, Conn.

No place for guns?

To the editor:

Dr. Sarah Knutti's seeing "... no excuse for guns in the hands of the ordinary citizen," (*Letters*, Spring 1996) puts me in mind of the following similar sentiment: "That ordinary persons of no official status be allowed to own firearms is antithetical to our new philosophy of freedom with order." Reichsfuhrer, A. Hitler.

Chester Johnson, M.P.H. '68
Santa Fe, N.M.

Zimmerman's day

To the editor:

I was very interested to read the obituary of Harry Zimmerman M.D. '27, HS '27-30, in your Fall 1995 issue because I feel that I owed him a debt of gratitude. I am a general surgeon, active in practice in Meriden and Wallingford 1946-1965 following completion of my graduate training that included two years as assistant resident at what was then Yale-New Haven Hospital. The pathologist at the Meriden Hospital was Dr. Rolf Katzenstein who had been a student of Dr. Zimmerman.

In my practice I was performing surgery, at that time chiefly radical mastectomies, on many women with breast cancer. To help determine prognosis for these women we counted the lymph nodes removed (as many as 100 in some cases) and determined the percent that showed microscopic evidence of metastasis since we felt that the outlook for more distant and undetected spread was dependent on the potential of the particular cancer for independent growth. Dr. Katzenstein suggested that there was an even better method to determine this potential that he had learned from Dr. Zimmerman. This was to take a small piece of the primary cancer and transplant it into the anterior chamber of a rabbit's eye. If the potential was sufficient it would grow there and this could be determined by examining the eye after seven to

Harry Bishop

Harry Zimmerman, M.D., center, watches a video presentation with fellow alumni/ae at reunion in 1994.

10 days. We began to perform this test, and if it proved positive it helped to make the decision to follow mastectomy with radiation therapy to the chest.

Our results persuaded me of the advantage of this post-operative irradiation which was confirmed by the collected follow-up study on the treatment of breast cancer which I performed for what used to be The Cancer Study Committee of the Connecticut Medical Society in conjunction with the State Health Department's long-term follow-up on the treatment of all types of cancer under the direction of Dr. Matthew Griswold. The 5- and 10-year survivals on my patients were better than those reported by Dr. Cushman Haagerson who was a great champion of extensive lymph node removal. Unfortunately because we did not have available the best technical management for the control of the radiation therapy that is now available we had some cases of complications that included degrees of pulmonary fibrosis. Some cases of lymphedemia in the affected arm were probably due more to the extensive dissection, which in my later cases included the internal mammary nodes.

Dr. Katzenstein died about 20 years ago, but if he were alive would, I feel sure, join me in this little tribute to a great man.

Allan J. Ryan, M.D., HS '43-45
Edina, Minn.

Dr. Kashgarian replies:

Dr. Katzenstein's advice to Dr. Ryan probably came not from Dr. Zimmerman but from Dr. Harry Sylvester Nutting Greene, Anthony N. Brady Professor and Chairman of Pathology at that time. It was in 1938 that Dr. Greene first published in *Science* the method of heterologous transplantation of mammalian tumors to the anterior chamber of the guinea pig's eye. He demonstrated that human malignant tumors, but not the normal tissue from which they were derived, were able to grow in an alien species and he reasoned that this was the biological demonstration of the autonomous growth that characterizes malignancy. Being a pathologist, he was aware of the vagaries that exist in attempting to identify malignant potential merely by peering through the microscope and he felt that heterologous transplantation could be a true biological test for malignant potential. It is of interest that transplantation of human tumors to sites other than the anterior chamber in alien species required treatment with radiation or corticosteroids. The anterior chamber provided a uniquely protective environment for tumors to grow since no adjuntive treatment was necessary. We now know that this is directly related to the cellular immune response to tumors. Thus these early (in this age of molecular biology some would say crude descriptive) experiments identified two of the most important characteristics of malignancy and its behavior, neither of which have yet been fully elucidated, even today nearly 60 years after its first observation.

How to reach us

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The Program for Humanities in Medicine

Listed below are the remaining lectures in the 1996-1997 Humanities in Medicine series, held Thursdays at 5 p.m. in the Beaumont Room at the School of Medicine. Refreshments at 4:30 p.m. Free and open to all.

January 9

HEALING ART: DOCTOR LOOKING AT SCULPTURES

Wayne O. Southwick, M.D.

Professor Emeritus of Orthopaedics & Rehabilitation, Yale University School of Medicine

January 23

FALSE CHILDHOOD MEMORIES: EPIDEMICS OR BACKLASH?

Sara Gamble, PhD

Staff Psychologist, Traumatic Stress Institute, South Windsor, Connecticut

January 30

THE NUREMBERG CODE 50 YEARS LATER

David J. Rothman, PhD

Bernard Schoenberg, Professor of Social Medicine, Columbia University, New York, New York

February 6

ART & THE CALLING: BEDSIDE STORIES

David J. Elpern, M.D.

Dermatologist, Williamstown, Massachusetts

February 20

"YOU LIE LIKE A DOCTOR!" PETRARCH'S ATTACK ON MEDICINE

George A. Trone, MA

Doctoral Candidate, Department of Italian, Yale University

March 6

BEING POSITIVE: THE LIVES OF MEN AND WOMEN WITH HIV

Robert Klitzman, M.D.

Assistant Professor of Psychiatry, Columbia University, New York, New York

March 13

HUMANISTIC CHALLENGES FOR THE PHYSICIANS OF THE 21ST CENTURY

Lester Feldman, D.O.

Retired Community Physician & Amateur Historian, Hamden, Connecticut

March 20

FROM PHARAOH TO DNA: CHANGING VIEWS OF CANCER

David J. Leffell, M.D.

Professor of Dermatology, Yale University School of Medicine

April 3

MEDICINE FOR FUN, NOT FOR FUND: WORKING FOR A HEALTHY WORLD FOR CHILDREN

Patch Adams, M.D.

Founder/Director, Gesundheit Institute, Arlington, Virginia

April 17

MYTH, LITERATURE & THE EXPERIENCE OF SCHIZOPHRENIA THE ROBERT PENN WARREN LECTURE

Anne Hunsaker Hawkins, PhD

Associate Professor of Humanities, The Penn State University College of Medicine, Hershey, Pennsylvania

May 1

NO COLOR IS MY KIND: FIGHTING MENTAL ILLNESS & CIVIL RIGHTS THE McGOVERN LECTURE

Thomas R. Cole, PhD

Professor of Preventive Medicine & Community Health, University of Texas, Institute for Medical Humanities, Galveston, Texas

May 8

COLOR OF WATER: GROWING UP WITH A JEWISH MOTHER

Andrew McBride, M.D.
Director of Health
Stamford City Health Dept.
Stamford, Connecticut

William McBride, M.D.
Senior Medical Director
Merck Corporation
Atlanta, Georgia

May 15

HEARING THE S.O.S. OF A YOUTH IN DISTRESS

Ghislaine Godenne, M.D.

Professor of Psychiatry, Pediatrics & Mental Hygiene, Johns Hopkins University, Baltimore, Maryland

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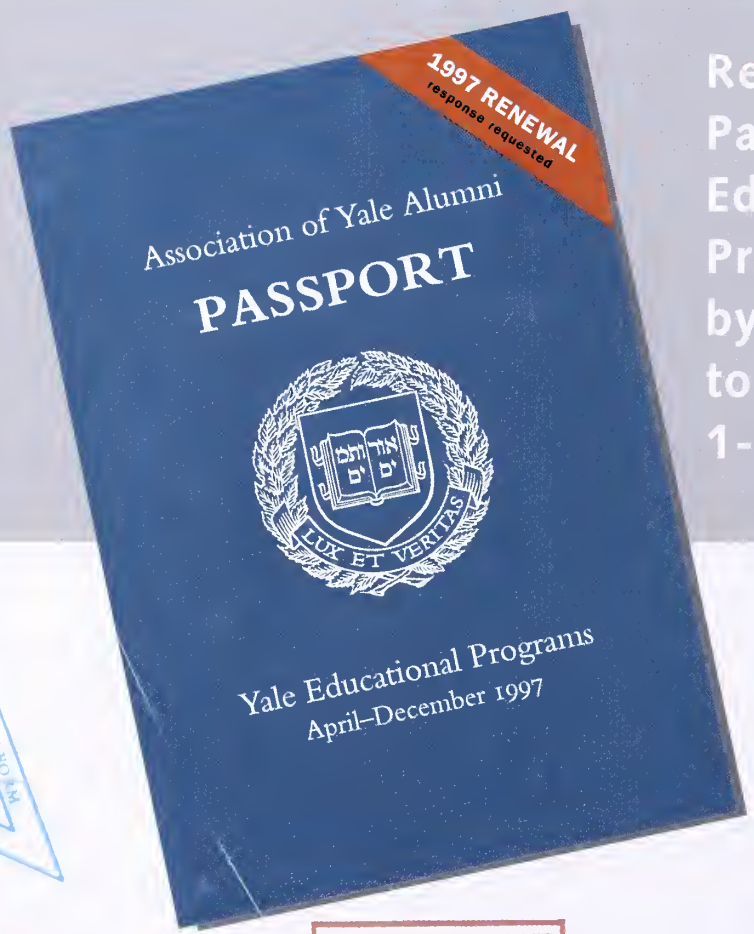

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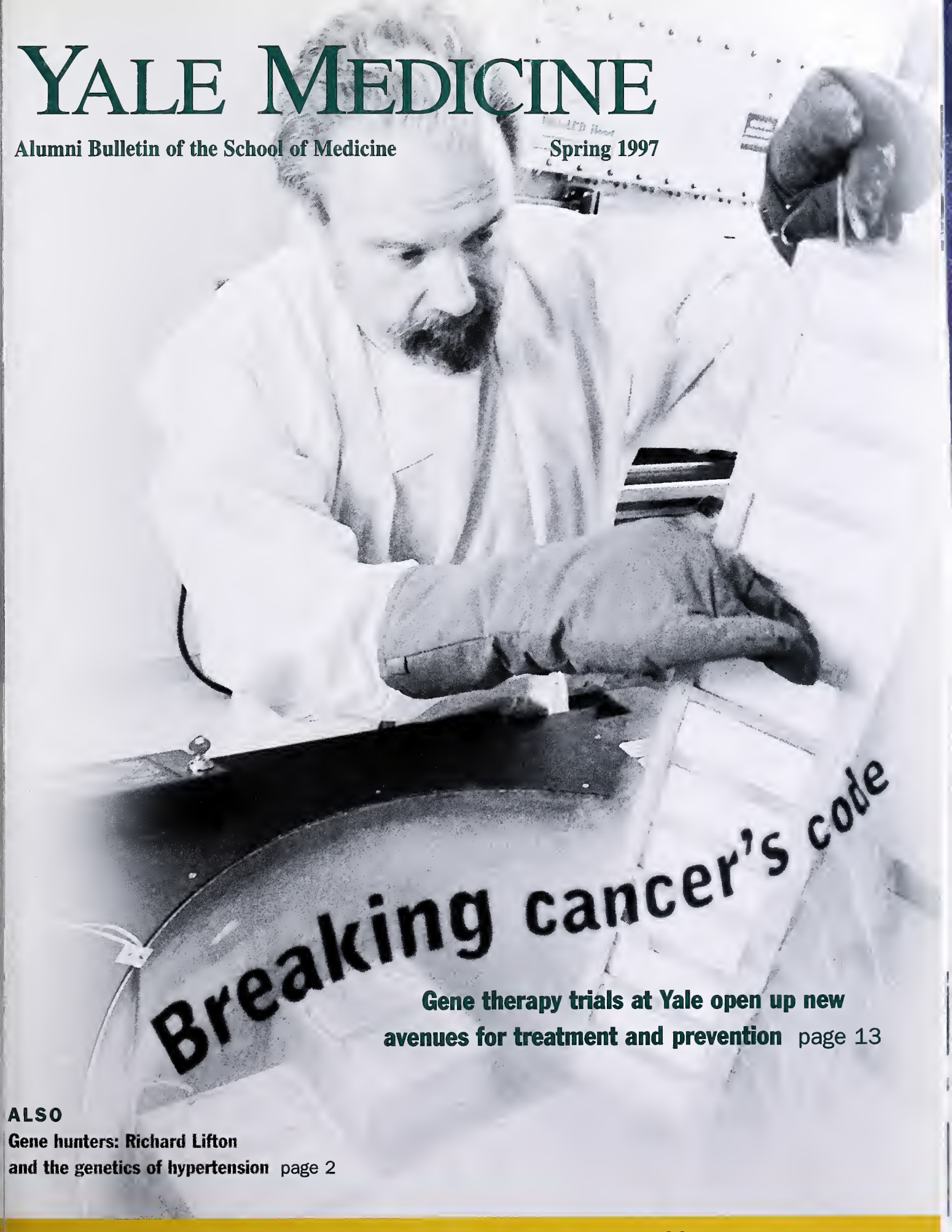


Breaking cancer's code

Gene therapy trials at Yale open up new avenues for treatment and prevention page 13

ALSO

Gene hunters: Richard Lifton and the genetics of hypertension page 2

FDA Commissioner David Kessler is named dean page 29

AYAM Outreach Program

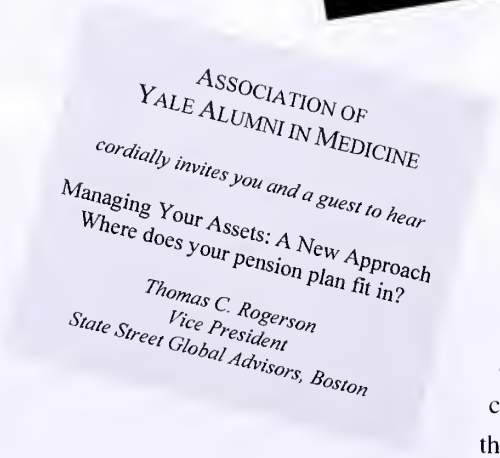
To better communicate with our alumni/ae, the AYAM is pleased to announce **The Outreach Program**, an effort to enhance and expand direct contact with our members.

REUNION WEEKEND

Save the date: **June 6 and 7** for the **1997 Alumni Reunion Weekend**. Yale University President Richard C. Levin will address alumni/ae at the Saturday annual meeting. Albert B. Deisseroth, M.D., Ph.D., chief of medical oncology, will make a presentation on new gene-therapy initiatives in cancer treatment. See page 39 for details.

NEW DIRECTORY

Soon, locating fellow alumni/ae will be easier with an updated **Yale School of Medicine Alumni Directory**, last published in 1992. Those who ordered the new directory will receive it soon by mail. New orders may be placed while supplies last by calling Harris Publishing at 1.800.877.6554.



REGIONAL EVENTS

Meet fellow alumni/ae face-to-face at a series of receptions around the nation. A May 17 wine-tasting and tour of North Salem Vineyard in Westchester County, N.Y. (hosted by George W. Naumburg Jr., M.D. '45) follows recent events in Washington, San Diego, San Francisco, New Haven and Boston.

MINI REUNIONS

Members of the Class of 1945 are meeting for an informal April reunion in Florida. If you and classmates are planning a similar event, please call the **Office of Alumni Affairs at 203.785.4674**.

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CONTENTS

On the cover: *Gene therapist Albert Deisseroth handles racks of viral samples in the Yale Cancer Center's new vector production facility.*

Cover photograph by Frank Poole/design by Jack* Design

YALE MEDICINE

Please recycle

The Alumni Bulletin of the School of Medicine ◆ Spring 1997; Volume 31, Number 2

Michael Kashgarian, M.D., professor of pathology and biology, is editor of YALE MEDICINE. **Robert Feldman,** director of external relations, is publisher. The quarterly magazine is designed and produced by the Yale University School of Medicine Office of Public Information: **Helaine Patterson**, director; **Michael Fitzsousa**, publications editor; **Claire M. Bessinger**, office manager, editorial assistant; and **Cheryl R. Violante**, senior administrative assistant.

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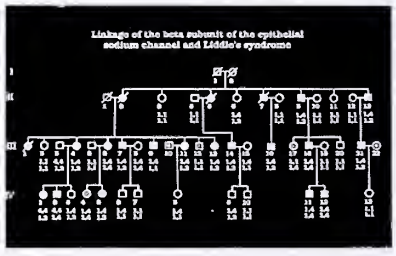
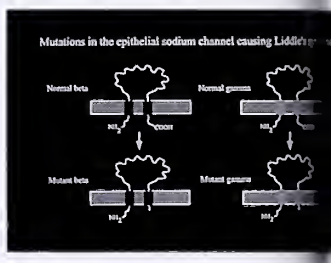
Gene hunters

Richard Lifton's search for the genes behind rare forms of hypertension is good news for more than 50 million people with high blood pressure.

By Julie Miller

Photographs by Peter Casolino





Fifteen years ago, Richard P. Lifton, M.D., Ph.D., was puzzled by an observation he made while visiting a dialysis unit at Stanford University, where he was a third-year medical student. Although 99 percent of Palo Alto's population was white, all of the patients in the dialysis unit younger than 40 were African American.

"In the back of my mind, I wondered whether or not there was an inherited susceptibility among African Americans to end-stage kidney disease," says Dr. Lifton, now associate professor of medicine and genetics at Yale School of Medicine and investigator at the Howard Hughes Medical Institute.

Scientists at the time did not have the knowledge of human genetics that would have allowed them to explore possible links between genes and hypertension, which can cause kidney failure. But Dr. Lifton's experience at Stanford fed his curiosity and planted a seed that has led to important discoveries during the past five years about the genetic basis of hypertension.

Today, armed with the powerful tools of molecular genetics, he leads a team of researchers who since 1992 have found mutations in eight genes that alter blood pressure by changing salt and water reabsorption in the kidney. They have looked specifically at rare forms of disease, where blood pressure is remarkably high, with the strategy of applying these lessons to more common forms of hypertension affecting large numbers of people. And they are applying the same reasoning to better understand rare types of low blood pressure.

Fifty million Americans age 6 and older suffer from hypertension, according to the American Heart Association. Although the cause of most hypertension is unknown, it may lead to heart attack, stroke or kidney failure. In February of last year, Dr. Lifton was awarded a $4.5 million grant from the National Institutes of Health (NIH) to fund a specialized center of research in the molecular genetics of hypertension.

Scientists have long recognized a predisposition in some families to hypertension and other diseases affecting the heart, the kidneys and the cardiovascular system. Only in the last five years have they been able to use that information to identify the origins of those diseases, says Dr. Lifton.

Using blood samples and a technique known as positional cloning, in which a gene causing a disease is identified by genetic mapping, Dr. Lifton's team tracked the inheritance of the rare hypertension genes through approximately 300 families from around the world participating in the studies. In the last two years, Dr. Lifton's research team has received 2,500 blood samples from 40 states and 17 countries, including Saudi Arabia and Israel.

Richard P. Lifton, M.D., Ph.D., has focused attention on rare and severe forms of hypertension, with the ultimate goal of finding better treatments for the millions of people with more common types of high blood pressure.

Julie Miller is a free-lance writer in North Stonington, Conn.


UNEQUAL CROSSING OVER BETWEEN ALDOSTERONE SYNTHASE AND 11-OHase GENES RESULTS IN A CHIMERIC GENE DUPLICATION
Aldosterone synthase
11-OHase
Unequal crossing over
Aldosterone synthase
Chimeric Gene
11-OHase

Identifying the rare genes that cause severe disease can provide key insight into the molecular causes of more common forms of the same disease. These findings, Dr. Lifton says, will allow scientists to develop genetic tests that identify people with inherited susceptibilities to hypertension and specific treatments to prevent the disease.

At 42, with an occasional fleck of gray in his light brown hair, Dr. Lifton is again pursuing the question he pondered 15 years ago at Stanford and searching for genes that contribute to the development of end-stage kidney disease among young African Americans. Thus far, he and colleagues have located a large number of families with two or more members with end-stage kidney disease and have begun genetic analysis.

The research team has identified genes linked to two uncommon types of severe hypertension, glucocorticoid-remediable aldosteronism (GRA) and Liddle's syndrome. GRA is the result of expression of a key gene in the wrong part of the adrenal gland, leading to high levels of aldosterone, a steroid hormone that regulates the balance of salt and water in the body. Richard Shimkets, a graduate student in the lab, identified the gene mutation in Liddle's syndrome, which activates the epithelial sodium channel in the nephron of the kidney, increasing the reabsorption of salt and water and thus raising blood pressure.

The nephrons, responsible for removing waste from the body's blood supply and regulating the composition and volume of blood, are central to the hypertension studies. The outer cortex of the kidney contains more than a million nephrons, each made up of convoluted tubules and a glomerulus. The glomeruli, spheres of coiled blood vessels inside a thin, membranous sac, act as filter units. The arrangement of nephrons in the kidney, resembling the kernels of corn on a cob, forms a large surface area for collecting fluid.

The focus on severe hypertension is highly useful to researchers because the effects of therapy are dramatically apparent in patients with high readings. "We're cutting our teeth," Dr. Lifton says, "on these relatively simple forms of high blood pressure." Now, new findings suggest that variants in the gene encoding angiotensinogen contribute to more common forms of hypertension in the general population as well.

Angiotensinogen is a protein secreted by the liver that causes blood vessels to constrict. Changes in its level can raise or lower blood pressure. The identity of the functional variants, the magnitude of their effects on blood pressure, and their mode of action have not yet been defined.

Above left: *Blood samples are cataloged by research associate Carol Nelson-Williams, right. Graduate student Traci Mansfield, left, prepares patient DNA for analysis by polymerase chain reaction, a technique used to narrow the chromosomal location of suspected gene mutations.*

Left: *The painstaking process of identifying genes responsible for disease often begins with a single patient and widens to a study of the person's extended family. Anita Farhi, R.N., right, who oversees patient recruitment for Dr. Lifton's studies, and Janet Budzinack hold a family tree outlining an inherited predisposition to Liddle's syndrome, a rare form of hypertension.*

Most cases of hypertension are probably due to a combination of genetic and environmental factors, including diet and salt intake, Dr. Lifton says. "Our early ancestors evolved in the interior of sub-Saharan Africa, an extremely salt-poor environment," he adds. "Genes that promoted the body's conservation of salt and water conferred a selective advantage." Today, in the salt-rich environment of industrialized societies, those same genes now may contribute to hypertension and other disease.

Genetic susceptibilities to hypertension help explain why some people who eat salt do not develop high blood pressure. "We're spending a lot of money in public health getting people to stop eating too much salt," Dr. Lifton says. "We believe there are many people for whom it doesn't matter, as well as a subset in whom it may be a matter of life and death.

Advances in genetics, says Dr. Lifton, have made "this phase of the understanding of human disease one of the most productive in the history of medicine."

"If we learn more about genetic susceptibility, then we can say, 'You, feel free to eat the nachos (fat-free, of course). But you, stick to the carrots.'"

But are high-blood-pressure genes entirely responsible for that susceptibility? Among the families participating in Dr. Lifton's studies, some members who inherited the mutated genes were nonetheless free of hypertension. The clustering of these patients within particular families suggested that they might also have inherited genes that protect them from developing hypertension. These observations prompted efforts to identify such blood-pressure-lowering genes. The researchers began with diseases causing life-threatening low blood pressure in children.

Sue Chang, a nephrology fellow in the lab, found that PHA-1, which causes life-threatening

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An ethical paradox

While better understanding of the genetic basis of disease holds the hope of new diagnostic tests to identify people at risk early in life, it also raises complicated, troubling questions.

"We need to consider whether making a genetic diagnosis will do more harm than good," says Richard P. Lifton, M.D., Ph.D., associate professor of medicine and genetics at Yale School of Medicine and investigator at the Howard Hughes Medical Institute. A person whose genetic test for Huntington's disease is positive, for example, faces a slow death at a young age. "There's slow deterioration in physical and mental capabilities. At present, we can't do anything about it."

People who learn they have the disease through genetic screening at least have time to plan and put their lives in order. Some may decide not to have children. There may be enormous disadvantages, however, because the genetic information may be used against those who are seeking jobs or applying for health and life insurance.

By contrast, patients with GRA (glucocorticoid-remediable aldosteronism), an inherited type of severe hypertension, face the same risks but have the benefit of available treatment. They, too, may have difficulty obtaining insurance. "You may be able to give patients information beneficial to their health," Dr. Lifton says. "The paradox is that until recently this information could be used against the interests of the patient."

Some progress has been made in finding solutions to these problems. Health insurance should be easier to obtain and keep under a law signed recently by President Clinton. The Health Insurance Portability and Accountability Act of 1996 prevents the loss or denial of insurance coverage due to pre-existing medical conditions. "One important message is that we all have inherited susceptibilities to one disease or another, and we shouldn't decide who is insurable and who is not on the basis of this kind of information," Dr. Lifton says.

Another question that arises is whether or not to inform participants in scientific studies that they have inherited susceptibilities to fatal diseases. "We look to the individual for guidance," says Maurice J. Mahoney, M.D., professor of genetics, pediatrics, obstetrics and gynecology. Dr. Mahoney is a member of the medical school's Human Investigation Committee, which approves clinical research projects and handles issues involving the protection of human subjects. "If there are no benefits in the immediate future, we have to decide how important it would be to their health to know. We often will say there is no reason to inform them, although we give some leeway if they want the information." ▪

Building on a tradition of kidney research

Left: *Richard P. Lifton, M.D., Ph.D., talks with colleagues Gerhard H. Giebisch, M.D., and Peter S. Aronson, M.D. Dr. Lifton's work has provided a clinical link for more than 70 years of kidney physiology research at Yale, says Dr. Aronson, the chief of nephrology.*

One reason scientists at Yale have embraced the work of Richard P. Lifton, M.D., Ph.D., is that it links a tradition of world-renowned research in kidney physiology directly to patient care. Dr. Lifton became associate professor of medicine and genetics at the medical school in 1993 and investigator at the Howard Hughes Medical Institute the following year. His collaboration with the Yale physiology group made it possible for him to identify gene mutations that alter blood pressure by changing salt and water reabsorption in the kidney.

In discovering a number of the inherited factors that affect blood pressure, Dr. Lifton is building upon more than 70 years of excellence in kidney research at Yale. In 1921, John Peters, M.D., came to Yale from the Rockefeller Institute in New York to establish a research program in metabolism. In the years that followed, the program attracted many gifted young investigators, who were inspired by Dr. Peters' leadership in metabolism studies and skill in the laboratory.

"Every medical student, whether he knows it or not, is a student of Peters," wrote Donald D. Van Slyke, a chemist, who worked with Dr. Peters at the Rockefeller Institute in the 1920s and enjoyed a friendship and collaboration with him for decades. "His contributions to the pathologic physiology of the circulatory, respiratory, excretory and endocrine systems, of the metabolism of proteins, fats, carbohydrates, electrolytes and water have been integrated into the science of medicine."

Dr. Peters played a primary role in the development of kidney research in America. He was at the forefront in applying basic science to problems in clinical medicine, a practice that continues at Yale today. His research group developed new techniques of analyzing body fluids to measure the changes brought on by metabolic disorders. Of particular interest were nutritional and endocrine disturbances, kidney disease and toxemia of pregnancy. Along with his investigative work and teaching, Dr. Peters also devoted much of his attention to the overall care of his patients.

As more was learned about metabolism during the 30 years after Dr. Peters' arrival at Yale, it became clear that the kidney was crucial in maintaining the balance of fluids and electrolytes in the body. In addition to excreting waste products, the kidney controls acid/base balance and regulates transport of a number of electrolytes, such as sodium, chloride and potassium.

The period from the 1930s to the 1950s marked the beginning of quantitative kidney physiology, which involves measuring the amounts or proportions of substances that are excreted. A parameter of kidney function known as "clearance," first introduced in 1928, was used to characterize the excretion of urea by the kidney. Clearance studies by scientists including Robert W. Berliner, M.D., professor emeritus of physiology and medicine and former dean of the medical school, laid the foundation for the knowledge of renal transport of salt, water, bicarbonate, acid and potassium. Dr. Berliner conducted studies at the National Institutes of Health on the handling of potassium in the kidney and trained many people who later became section chiefs in nephrology across the nation.

According to Dr. Giebisch, Dr. Lifton's patient-focused research "gives us a new direction in which to look at a basic research level."

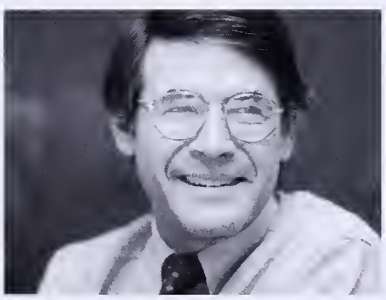
Studies of the processes within the kidney that account for renal excretion, namely the transport of fluid and electrolytes across cell membranes along the nephron, began in the late 1950s. Gerhard H. Giebisch, M.D., Sterling Professor of Cellular and Molecular Physiology, who came to the medical school in 1968, has spent his career studying renal function in single cells. Turning to molecular mechanisms, he is now examining the effect of genetic manipulation on the transport of ions across the cell membrane.

In 1971, the medical school's section of metabolism in the Department of Internal Medicine was divided into two parts, nephrology and endocrinology. Nephrology, a subspecialty developed in the 1960s along with dialysis and kidney transplantation, encompasses faculty interested in kidney function and disease. John P. Hayslett, M.D., HS '60-65, professor of medicine, became the first nephrology section chief.

Research is progressing in a number of other areas of kidney physiology. As an example, Dr. Hayslett is studying sodium transport and sodium channels in the distal portion of the nephron. Peter S. Aronson, M.D., professor of medicine and cellular and molecular physiology and the present chief of nephrology, is characterizing some of the proteins that transport sodium and chloride across cell membranes in the proximal tubule of the kidney.

"I can envision a day when newborns are screened for genes that cause susceptibility to different sodium transport disorders, such as hypertension, and we develop interventions to prevent these," says Dr. Aronson.

The traditions established by Dr. Peters continue in kidney research today. Several current faculty members—Drs. Berliner, Giebisch, Aronson and Emile L. Boulpaep, M.D., professor of cellular and molecular physiology—have been recipients of the most prestigious research honor in kidney physiology, the Homer Smith Award. Dr. Lifton is taking the research in a new direction, as he unravels the mystery of the role that genes encoding renal transporters play in clinical disorders.



Says Dr. Aronson: "I can envision a day when newborns are screened for [disease-susceptibility] genes ... and we develop interventions to prevent these [disorders]."

For example, "one of the potassium channels Dr. Giebisch has been working on we have just implicated in Bartter's syndrome," Dr. Lifton says, referring to a disease in children that causes potassium wasting and lowers blood pressure. Adds Dr. Giebisch: "In this case, there is some aspect of the disease that we cannot explain with the current state of knowledge. This [information from the Lifton lab] gives us a new direction in which to look at a basic research level." ▪

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dehydration and low blood pressure in newborns, is caused by mutations that decrease activity of the same sodium channel mutated in Liddle's syndrome. David Simon, M.D., a nephrology fellow and now assistant professor of medicine, found that Gitelman's and Bartter's syndromes, diseases that also cause low blood pressure, are caused by mutations in three different genes that are also involved in the reabsorption of salt by the kidney.

"When we started work in this area," says Dr. Lifton, "hypertension was variously proposed to be a disease arising from primary abnormalities in the brain, the heart, the blood vessels, the kidney or the adrenal gland. Intriguingly, all the mutations identified thus far change blood pressure by altering how much salt the kidney retains. These findings place renewed emphasis on the role of the kidney in blood pressure regulation."

"Dr. Lifton has done groundbreaking work in identifying the genetic causes of the extremes of blood pressure," says Francis S. Collins, M.D., Ph.D., director of the National Human Genome Research Institute in Bethesda, Md. "Thanks to his efforts, we are dramatically closer to a complete explanation of the heritable factors that determine blood pressure." Dr. Collins was a postdoctoral fellow in genetics and pediatrics at the School of Medicine from 1981 to 1984.

"Dr. Lifton's findings may allow diagnostic tests to identify people at highest risk early in life, as well as new treatments based on a better understanding of the regulatory pathways in the kidney," adds Dr. Collins, who heads the Human Genome Project to map and sequence each of the approximately 100,000 human genes.

The genetic studies reflect a blending of clinical investigation, molecular genetics and collaboration with a close network of colleagues in kidney research, includ-

The genetic studies reflect a blending of clinical investigation, molecular genetics and collaboration with a close network of colleagues in kidney research.

While working as a nephrology fellow in Dr. Lifton's laboratory, David Simon, M.D., identified three gene mutations responsible for rare forms of low blood pressure.

ing John P. Hayslett, M.D., HS '60-65, professor of medicine in the section of nephrology; Peter S. Aronson, M.D., professor of medicine and cellular and molecular physiology and chief of nephrology; and Gerhard H. Giebisch, M.D., Sterling Professor of Cellular and Molecular Physiology.

"I have a wonderful opportunity here at Yale to collaborate with the physiology groups," Dr. Lifton says. "One consequence of the revolution in human genetics will be a renaissance in both basic and human physiology. We will be able to identify specific causes of diseases, make animal models of them, study their physiology in extensive molecular detail and bring this to the bedside."

For many years, Yale has been recognized as one of the world's premier research centers in the basic science of kidney physiology, particularly the mechanisms by which the kidney regulates body salt content, says Dr. Aronson. "This research has now been linked by Dr. Lifton's work to human disease."

Dr. Lifton came to Yale from Harvard in 1993 as an assistant professor of medicine. He became an associate professor and a Howard Hughes Medical Institute investigator in 1994 and this year was named director of cardiovascular genetics at the medical school's Boyer Center for Molecular Medicine and director of the Department of Internal Medicine's Program in Molecular Genetics. He serves on NIH advisory committees on large-scale sequencing of the human genome and the special emphasis panel for the study of the genetics of heart, lung and blood disease. He has published more than 50 journal articles, reviews and textbook chapters.

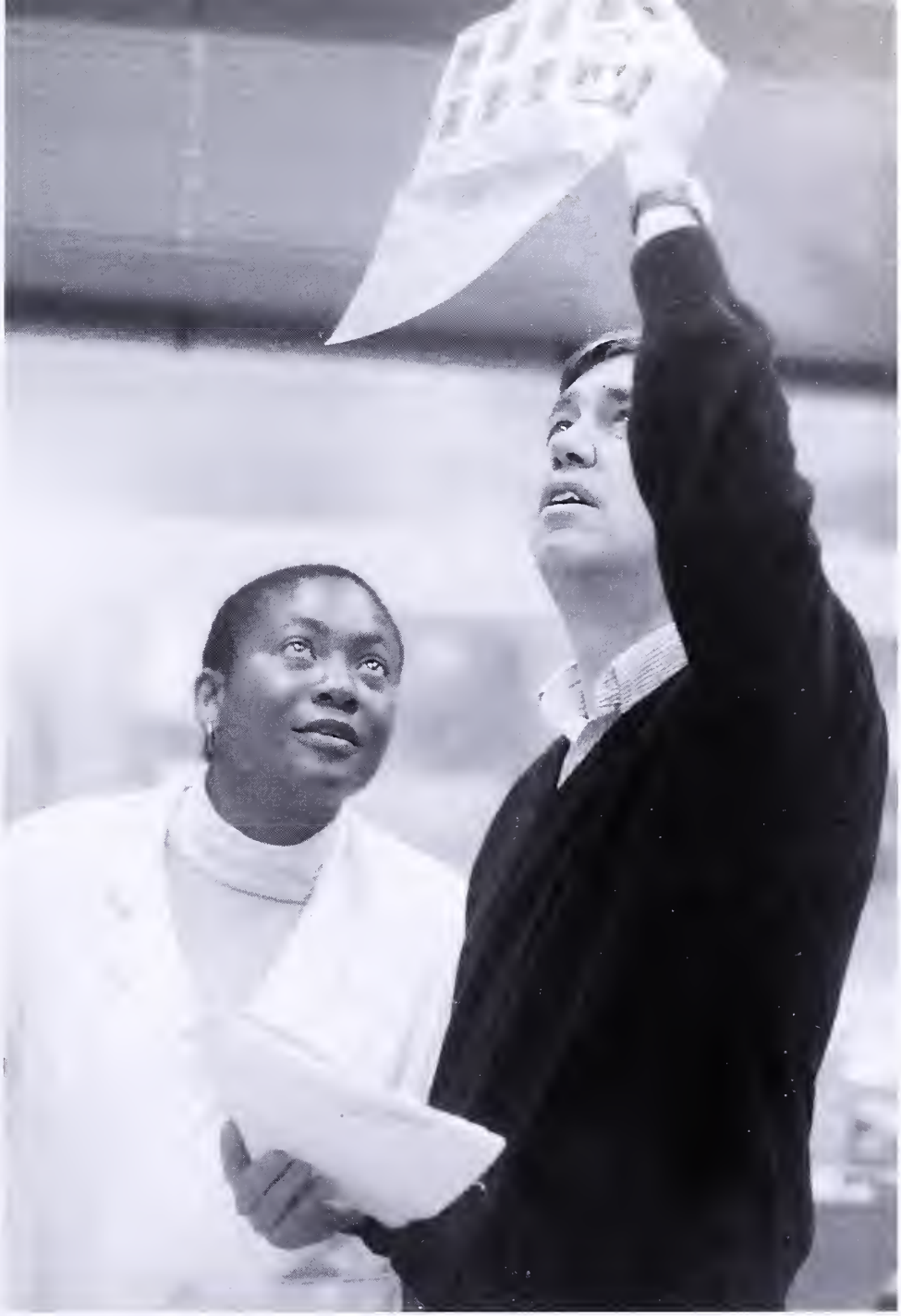
At Yale, his teaching style is immensely popular. Rather than delivering a talk, he leads a discussion by constructing a problem and calling on his listeners to suggest answers. "When he's discussing his research, he has tremendous enthusiasm," Dr. Aronson says. Adds Dr. Simon: "Even though I've heard the same talk many times, it's always fresh."

The same energy is in the air in Dr. Lifton's laboratory. His button-down shirts and khaki trousers blend with the informal dress of students who stop to talk with him. He listens intently as Holly Duncan Craig, a student in the M.D./Ph.D. program, brings him up-to-date on her work on genes related to vascular malformations in the brain, which can cause stroke. Delighted with her progress, Dr. Lifton smiles and peppers his comments with, "That's incredibly exciting ... that's great ... fantastic."

His fascination with genetics grew out of a curiosity about heredity that began in high school in suburban Washington, D.C. In college and later in graduate school, he began to understand that there were things to be learned from genetics that could be applied to human disease. "The union between science and medicine seemed a very natural route to take," he says.

After receiving a bachelor's degree with highest distinction in biology from Dartmouth College in 1975, Dr. Lifton focused his graduate study on the genetics of the fruit fly *Drosophila melanogaster*. He earned his medical degree in 1982 and a doctorate in biochemistry in 1986 from Stanford before training as a resident at Harvard Medical School and Brigham and Women's Hospital in Boston.

From the time he first became fascinated by heredity in a high school biology lab until he completed his medical residency in 1987, major changes had taken place in genetics. These started with the introduction of recombinant DNA technology in the early 1970s by Stanley Cohen, M.D., and Herbert W. Boyer, Ph.D., the former Yale postdoctoral fellow who endowed the molecular medicine building in which Dr. Lifton now pursues his research. The revolution in human genetics accelerated in



Dr. Lifton and research associate Carol Nelson-Williams study photographs of children for signs of bone malformation that may be due to renal tubular acidosis. Dr. Lifton's team is working to identify a gene mutation that may be linked to the disease.

the early 1980s with new techniques for mapping genes.

The human genome consists of 3 billion base pairs of genes, resembling beads on a string. Although the sequence of the beads, or their locations on the chromosomes, is remarkably similar from one person to the next, the exact sequence can vary, Dr. Lifton explains. Comparison of the DNA sequences of two unrelated people will reveal differences in the DNA sequence in approximately one of every 1,000 positions. While all people share similarities, the cumulative effects of these small differences are believed to account for the diversity among humans.

"These differences in DNA sequence permit us to follow the inheritance of any segment of the human genome through families," says Dr. Lifton. "I had been interested in heredity for a long time. Now, I had training in medicine and the knowledge of molecular genetics that I could apply to the investigation of common diseases that I saw in the hospital every day."

Dr. Lifton collaborates with scientists and clinicians worldwide, who help him locate the families who participate in his studies. DNA for the studies is extracted from blood samples from family members. Using detailed genetic maps, Dr. Lifton compares the inheritance of the disease to the inheritance of genetic markers spanning the genome, and looks for the portion of the genome that travels with the disease. Relatives who are healthy are as important to the studies as those with hypertension, he says. "You get information from knowing what gene they didn't inherit."

An especially rewarding aspect of the research, he adds, is the contact with families who appreciate the search for solutions to these rare diseases. An 8-year-old girl had been suffering for three years from what her physician thought were migraine headaches. Another doctor who examined her questioned that diagnosis and attributed her headaches to hypertension. "With genetic testing, we diagnosed her as having GRA, a rare form of severe hypertension. We went back through the family and found more relatives with this disease," Dr. Lifton says. The girl and her relatives were treated with medication that counteracts the effects of the high levels of aldosterone in GRA, and they responded well.

Genetic clues to a brain disorder

L.K. was 40 when she suffered a stroke. She had complained of headaches for some time, but none were as bad as that day when she could no longer move her left arm and leg. She felt numbness throughout her body and experienced double vision. She always feared she might suffer a stroke at a young age, especially since strokes seemed to run in her family.

Her father, grandfather and two uncles also experienced severe headaches. Her four cousins had strokes when they were in their 30s, and one died at the age of 38. The teen-age children of two cousins were diagnosed with epilepsy. L.K.'s brother had a mild stroke and experienced double vision and difficulty walking a few weeks before her own stroke. Her sister was diagnosed as harboring a brain lesion, and she, too, suffered from severe headaches.

Neurosurgeon Issam A. Awad, M.D., has collaborated with Dr. Lifton in genetic studies of cerebral cavernous malformation, an inherited disorder that can precipitate stroke in young adults.

Yale physicians used magnetic resonance imaging to diagnose her condition as cavernous malformation, an inherited vascular disease of the brain.

Six months after brain operations for resection of the two cavernous malformations which had hemorrhaged, L.K. is able to play the organ and ride her exercise bicycle. She spends much of her time caring for and counseling numerous relatives with cavernous malformations.

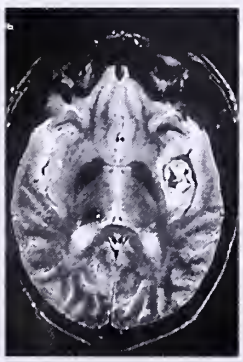
A team of researchers led by Richard P. Lifton, M.D., Ph.D., has identified a gene linked to this devastating disease. Dr. Lifton's studies of cavernous malformation were conducted in collaboration with Issam A. Awad, M.D., professor of neurosurgery, and Murat Gunel, M.D., a resident in neurosurgery and research fellow at the Boyer Center for Molecular Medicine.

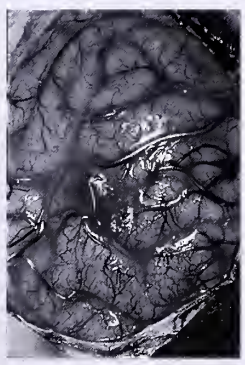
"We found that this type of lesion exists in one out of every 200 people. Some have symptoms, and others do not," says Dr. Awad. "It's important for us to understand who will have this lesion and, of those people, who will bleed from it."

The researchers found that Hispanic Americans have a higher incidence of cavernous malformation than do other ethnic groups. In fact, all cases among Hispanic Americans of Mexican descent were traced to the same mutation from an apparently common ancestor. The gene is probably related to abnormal formation of blood vessels in the brain, Dr. Awad says. The next step is to determine how the abnormal vessels occur and whether or not there is a second gene that makes some lesions bleed.

Cavernous malformations cause headaches, seizures and cerebral hemorrhage. They account for up to a third of hemorrhagic strokes in young people. Ultimately, these lesions can cause disability and death.

"Identifying the gene provides a model for understanding, in biological terms, how some patients are predisposed to stroke," Dr. Awad says. "In a practical way, it will enable population screening for this lesion, with the aim of preventing stroke in these patients."■





Cavernous malformations in the blood vessels of the brain are depicted in an artist's rendering, a magnetic resonance image and a photograph. One in every 200 people is likely to have the disease, and many will not have warning symptoms. Identification of the gene mutations responsible will allow those at risk to receive preventive treatment.

Another participant in the studies, a 13-year-old boy, had lived with severe hypertension since infancy. He came to the hospital because of a seizure at the age of 6 weeks. His blood pressure was found to be 240/120, one of the highest ever recorded in a child of that age. The boy had been treated with enalapril and nifedipine, both medications for hypertension, but neither controlled his blood pressure effectively.

Genetic studies showed that he had the characteristic mutation causing GRA. The genetic studies of his family revealed 24 relatives with the disease, six of whom had cerebral hemorrhages before age 45. "This was the first case in which genetic testing was used to diagnose a specific cause of hypertension," Dr. Lifton says. Affected family members have been successfully treated.

A year after this discovery, Dr. Lifton gave a talk on GRA to a group of physicians at the University of Toronto. Some of them had described the disease 25 years before. Also in the audience was the physician who had reported the first known case of GRA. Dr. Lifton came full circle at this meeting, first finding a patient with GRA and performing a clinical investigation and then contributing the results to the molecular basis of the physician's disease.

"It was a lovely experience to listen to the people who had done a careful investigation 25 years previously," Dr. Lifton says. "We were able to bring new information to bear on problems that have been recognized for years."

When he began his work in genetics, Dr. Lifton says, many colleagues doubted that he would find genes that affect blood pressure, since there are so many systems in the body that interact with one another. "Our understanding of physiology takes us only so far in identifying the fundamental mechanisms of disease.

Top: *Dr. Lifton listens to a progress report from researchers in his Boyer Center lab.*

Right: *He leads a seminar on human genetics for internal medicine residents at the West Haven campus of the VA Connecticut Healthcare System.*

"If we learn more about genetic susceptibility, then we can say, 'You, feel free to eat the nachos ... but you, stick to the carrots.'"

Richard P. Lifton, M.D., Ph.D.

"It's exciting to know that many diseases have an underlying genetic basis," he adds. "Now we can identify their specific causes. That's what makes this phase of the understanding of human disease one of the most productive in the history of medicine."

Dr. Lifton's pioneering work in molecular genetics has placed him in high demand, but he has resisted offers to move on. When he was invited to head a new cardiovascular research program on the West Coast earlier this year, he declined. Taking on an administrative role at this point in his career, he says, would take him away from the work that drew him into the field—seeking answers to some of the fundamental problems in clinical medicine. "This job is the one I always wanted," he says. "The outstanding clinical medicine, genetics and physiology at Yale make the environment perfect for what I want to do." **YM**

New rules *of engagement*

By altering cell-to-cell communication, gene therapy has the potential to wage an information war against cancer at the molecular level.

By John Green

Photographs by Frank Poole

Twist slowly … He's a runner, so he's got hard bones, so you're going to have to twist. Just slowly pull back the trochar … otherwise we're going to get a shooting pain."

Clad in a white coat, Albert Deisseroth is watching over a young cancer patient as a resident physician extracts a sample of bone marrow. The marrow will be tested to see whether the young man's leukemia has resurfaced after a period of remission.

The patient gets a liberal dose of local anesthetic before the resident draws the marrow out through a rather wicked-looking needle inserted in the hipbone. In relaxed fashion, Dr. Deisseroth accomplishes at least three things at once:

He imparts good biopsy technique to the resident, who is new to the procedure, gently prefacing each suggestion with the words: "What I usually do is ..."

He steadily solicits the patient for feedback: "How are you doing, Mike? … If you feel the faintest hint of any pain, let us know. If we do it slowly, there's no pain."

And he keeps one eye on the lab technician to make sure she prepares the blood and marrow samples as he wants them: "Squirt it in. Shake it up. I'm afraid it's gonna clot."

At the end of the session, Mike, a Yale graduate student who has endured the procedure in a variety of other clinics, hops off the table almost smiling. Today's ordeal, the relief in his face suggests, was easier than it could have been.

Albert Deisseroth's enthusiasm for gene therapy is tempered by the day-to-day hurdles of its development, yet he can't help being excited by the future: "We have powerful new tools that will allow us to help people in ways we couldn't before."

Dr. Deisseroth, Yale's newly arrived chief of medical oncology and the Ensign Professor of Medicine, acquired this gentle efficiency by performing bone marrow harvests for transplants six or seven times a week over a period of years. What he sees in the faces of patients and their families motivates him in his search for new cancer treatments, especially in the fast-growing field of gene therapy. "We are painfully aware of the importance of minimizing the time for implementing new therapies," he says, "especially those that can help people who are facing potentially fatal diseases. It's a major driving force."

A HISTORY OF INVENTION

Albert B. Deisseroth, M.D., Ph.D., has come to Yale to implement gene therapy, giving the university a major stake in an exciting and controversial new approach to cancer treatment. Recruited in 1995 by Vincent T. DeVita Jr., M.D., HS '66, director of the Yale Cancer Center, and Ralph I. Horwitz, M.D., chairman of the Department of Internal Medicine, Dr. Deisseroth came to New Haven from the M.D. Anderson Cancer Center in Houston. There he served as chief of hematology and was principal investigator in a variety of promising gene therapy trials for patients with leukemia and cancers of the ovary and breast.

Dr. DeVita offers unqualified praise. "He's an outstanding scientist and doctor, and a very inventive person who is always on the edge of the envelope," he says. "Every time something new is happening, if you pick up the literature you'll see Dr. Deisseroth's name."

Dr. DeVita, director of the National Cancer Institute (NCI) from 1980 to 1988, recalls that Dr. Deisseroth was involved in hemoglobin synthesis in his early career, while training in molecular biology.

John Green is a free-lance writer in New London, Conn.

Then he became "very much involved in chronic leukemias and the effect interferon had on them."

Dr. DeVita, who has known Dr. Deisseroth for two decades and worked with him at the NCI, recalls how some 20 years ago Dr. Deisseroth was the first person to set up autologous bone marrow transplantation—first in lab animals and then in humans. The procedure, says Dr. DeVita, "sat around a while before people picked up on it, and it's now become a very useful tool." The procedure preserves a quantity of the cancer patient's stem cells through a bone marrow harvest, saving the cells from destruction by chemotherapy. Stem cells are progenitor cells which develop into the variety of blood cells that comprise the immune system.

After the toxic effects of chemotherapy have diminished, the stem cells are reintroduced to restore the patient's immune system. The technique allows much-higher-than-normal doses of chemotherapy agents, thereby increasing the survival of patients who would not benefit from conventional doses. This early work done with stem cells is the springboard to a number of the strategies Dr. Deisseroth and his team are developing for clinical gene therapy trials at Yale.

Three new clinical gene therapy studies to be launched this spring at Yale will target prostate, breast and ovarian cancers.

OPENING THE DOOR

Gene therapy is a rapidly evolving approach to medicine that makes use of more than 20 years of genetic engineering techniques to attack disease in new ways. By altering cell-to-cell communication, gene therapy has the potential to wage an information war against cancer at the molecular level. Initially conceived of as a means to treat inherited disorders—either by replacing or inactivating harmful gene mutations—gene therapy is now being researched in trials for a wide range of diseases, including cancer, vascular disease, arthritis, neurodegenerative disorders, AIDS and other acquired diseases. There are currently more than 150 clinical gene therapy trials worldwide, including 125 protocols approved by the National Institutes of Health's (NIH) Recombinant DNA Advisory Committee (RAC), which monitors gene therapy research in the United States. At the beginning of 1996, more than 1,000 patients had been treated with some form of gene therapy.

An example of a trial with encouraging results is Dr. Deisseroth's own work begun at M.D. Anderson. The trial tested a strategy for improving the body's ability to tolerate extremely high doses of chemotherapy agents used to

treat breast and ovarian cancer. The method involves making an ally of a gene known to foil chemotherapy, the multi-drug resistance gene type 1. The MDR-1 gene produces a kind of "molecular pump" that has enabled cancer cells to rid themselves of the toxic drugs.

One important key to the process of gene therapy is engineering a means of transmission, or vector, to carry a particular gene to the target cells. For the breast and ovarian trials, Dr. Deisseroth's team engineered a vector that transfers the MDR-1 gene to healthy bone marrow cells, making them less vulnerable to the toxic effects of chemotherapy. "Albert's study with the MDR-1 gene into stem cells in fact works," Dr. DeVita says. "He shows that you can make the marrow resistant to chemotherapy."

Dr. Deisseroth brought two active gene therapy treatment protocols with him to Yale from M.D. Anderson. In late January, he and colleagues were finishing the work necessary to launch three new clinical studies this spring. One of the new treatments being evaluated promises to make radiation therapy more effective in patients with prostate cancer. The second is designed to selectively kill off malignant cells in the marrow of patients with breast cancer, while the third would similarly cleanse tumor cells from the abdominal membrane of patients with ovarian cancer. Corresponding studies in laboratory animals were nearing completion in January, with especially promising results in the prostate cancer trial, according to Dr. Deisseroth, who was preparing to seek approval for human trials from the Food and Drug Administration and Yale's Human Investigation Committee.

In the "clean room" where viral vectors are designed for new treatments for prostate, breast and ovarian cancer, Dr. Deisseroth confers with post-doctoral fellows Thanyaphong Nanakorn, M.D., left, and Lianhua Yin, Ph.D. The racks contain frozen common cold viruses, altered so they cannot spread disease. Instead, these vectors are used to deliver a therapeutic gene to its target inside the body.

Thanyaphong Nanakorn, M.D., cultures cells in a flask as part of the development of a vector for prostate cancer therapy.

THE NECESSARY VISION

For the gene therapy field as a whole, Dr. Deisseroth says, the qualified successes of some of the early trials are only small steps toward a much larger goal. "For the past 50 years in cancer treatment," he says, "we have been limited to basically destructive treatments: We cut things out, burn them [with radiation] or destroy them with toxic chemicals. The problem is that these destructive treatments are not very selective, so they're very toxic to the normal tissues."

Genetic therapy, Dr. Deisseroth explains, has very different goals. "We want to use genetic modification to protect the normal tissues of the body, or to sensitize the tumor cells to the therapy, thereby improving the performance of existing methods of therapy. And ultimately we want to develop genetic therapy as a primarily corrective approach to treatment—without harm to patient."

Driving this, in his mind, are the dramatically rising costs of health care. By the year 2000, cancer will be the leading consumer of the health care dollar in the U.S., he says, adding that much of the cost of cancer therapy is spent bringing patients through the very difficult, sometimes life-threatening complications of therapy.

Advances in molecular biology, genetics and bioengineering, he says, have "opened the door for corrective therapies—not only for cancer, but for all human diseases.

"In terms of the national budget, nothing could be more useful than to convert very expensive chronic therapy into single decisive therapeutic interventions that have a lifelong impact and that can be carried out simply—even outside the hospital."

In the future, Dr. Deisseroth can imagine traditional lab tests being replaced by a profile of what he calls "the parts of the machinery," the genes of the cell and their products. "If the products are not being produced normally, one could say, for example, 'Element B is not working, we're going to replace it.' You give somebody a nose spray, and in goes a vector and takes care of it. In this vision of the future, the vectors, or whatever methods of delivery are being utilized, can target themselves to specific cells or to specific locations or addresses within the cells or within the genome and just replace the problem elements."

This kind of future-gazing inspires the progress of scientists who solve the day-to-day problems of gene therapy development and negotiate its inevitable blind alleys, but such vision may also cause problems. Patients and their families may grasp it as a promise of something just around the corner. And entrepreneurs of startup biotech and drug companies under pressure to raise millions in venture capital are tempted to oversell the promise and understate the dif-

At a weekly lab journal club, Dr. Deisseroth and his research team report on recent findings relevant to their oncology work.

Eight days a week

Albert Deisseroth brings a record of innovation, passion and scientific rigor to Yale's application of gene therapy.

Albert Deisseroth was born and raised in Middletown, N.Y., where he remembers "a distinguished family physician who came to the house with a bag of pills and a three-piece suit and made me feel good." His friendship with the family doctor kindled an interest in medicine.

Dr. Deisseroth earned his undergraduate and medical degrees at the University of Rochester, where he also received a Ph.D. degree in biochemistry. He then served his residency at Harvard's Beth Israel Hospital in Boston. From there he went to the National Institutes of Health as a clinical trainee and then chief resident physician in the National Heart Institute. It was during his sojourn there that Yale first came calling in the form of biology and genetics professor Frank H. Ruddle, Ph.D.

Recalls Dr. Deisseroth: "I was sitting there—just a young investigator in the lab—and in walks Frank Ruddle, and says, 'I read one of your papers. I've got things that we've made that could be useful to you in the project you're working on. Let's collaborate.' And we did over about a three-year period."

So began a key period of accomplishment in Dr. Deisseroth's career. During this time he moved to Harvard's Dana Farber Cancer Center as a clinical fellow while continuing the collaboration at Yale. "Each week I'd complete all my clinical duties at Farber. Then I'd hop on the train on Friday night and come down from Boston to New Haven. And I'd work in Frank Ruddle's biology lab all weekend and then go back on Sunday night to Boston. My wife and three children would see me off on the train every Friday night. This went on for a whole year."

The work paid off: "It was a major breakthrough in mapping the elements of the genetic material. Together we opened up a new way of mapping."

Dr. Deisseroth calls that early work at Yale "a very vivid imprinting experience." And it was definitely part of what drew him back. "Life is a struggle. When you get a chance to revisit an important period in your life, that's always a very attractive option."

After the Farber, Dr. Deisseroth was offered a job running a section at the National Cancer Institute, then headed by Dr. DeVita. Dr. Deisseroth worked in bone marrow transplantation and intensive therapy, and began experiments introducing genetic elements into cancer and normal cells to make therapy work better.

A seven-year stint followed at the University of California at San Francisco, where a colleague was Harold Varmus, M.D., now a Nobel laureate and current head of the NIH. Dr. Deisseroth's last stop before his new post at Yale was the M.D. Anderson Cancer Center at the University of Texas in Houston, where he served as chief of hematology.

Dr. Deisseroth's wife, Louise, is a high school science teacher, and their three children have also all become scientists: Kate works at a Silicon Valley biotech company in California, Karl is a medical student at Stanford, and Karen is a graduate student in clinical psychology at Ohio State University.

Reflecting on a life in science, Dr. Deisseroth recalls the opening of the Henry James novel *Washington Square*, and the notion that "a physician is an individual grounded in the practical but touched by the light of science." He decided early on that "I wanted my life to not be directed to possessing things, but to be a vehicle through which things of value were created for others."

In response to a question about what he does to relax, Dr. Deisseroth replies, "I'm relaxed all the time. I'm so interested in what I'm doing that it becomes the central focus. When I wake up, no matter how late I've been up the night before, I drag myself out of bed, and I'm so interested in pursuing what I've been working on that every minute of life is exciting for me. I don't have to worry about going on vacation. My life is a vacation. There's no downtime, [although] I've been stumped a lot of times by problems I couldn't solve.

"I've been lucky to live my life in a time of great and momentous change. And that change is continuing, and has driven my work forward from the very day I first set foot in medical school." ▪

In the future, Dr. Deisseroth can imagine traditional lab tests being replaced by a profile of what he calls "the parts of the machinery," the genes of the cell and their products.

ficulties and timeframe of a new approach. So as with all new treatments, gene therapy is a source of controversy both within and outside the research community.

"There is no question that gene therapy will eventually prove itself as it matures over a period of years and decades," says Dr. Deisseroth. "We have powerful new tools that will allow us to help people in ways we couldn't before. However, years of basic research and careful clinical trials will be required before these new treatments will be beneficial."

As for potential hazards, Dr. Deisseroth says the therapies he envisions will be safer than existing treatments. "We're interested in replacing a therapy [current chemotherapy] that is mutagenic and highly toxic and invasive with a harmless intervention that has a lifelong impact and no risk," he says.

"None of these vectors go into cells used in reproduction and fertilization; they go into the differentiated cells," he adds. "There is no risk to the evolution of the human species because these interventions are not transmitted from generation to generation."

"WE HAVE EVERYTHING"

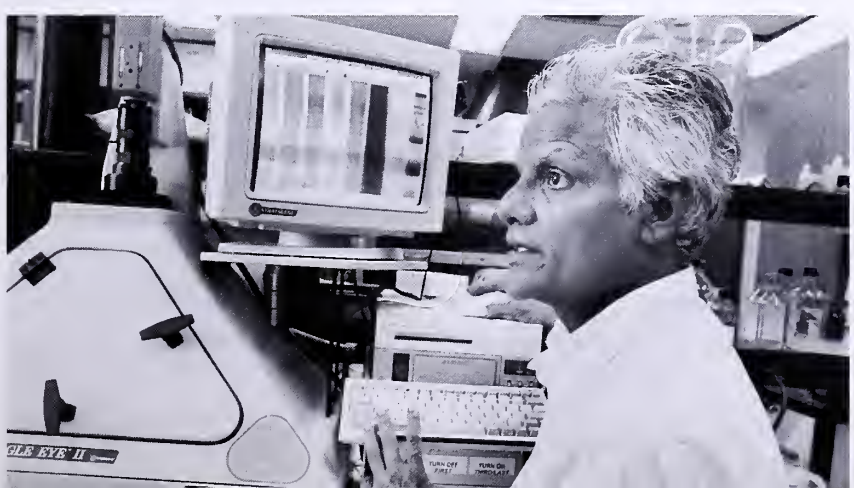
Gene therapy by its nature must involve a wide-ranging team of clinicians and research scientists. And Yale has strength in many of the required disciplines. A team might include oncologists, molecular and structural biologists, geneticists, immunologists, pharmacologists, structural chemists, X-ray crystallographers and a variety of other bioengineering and biotech specialists.

Says Dr. DeVita: "I think what attracted Dr. Deisseroth to Yale is similar to why I came: The science base here is extraordinary. We have a large number of very talented scientists in molecular biology and structural biology." Dr. Deisseroth agrees: "You want to be at an institution where the best minds, the leading minds are available in the areas that are needed—and we're basically there. We have everything."

How will these intellectual resources be applied to gene therapy? During the first half of 1997, a team will be working on what Dr. Deisseroth refers to as the "sensitization" or "pro-drug activation" trial, a pre-clinical trial targeting breast cancer cells. One problem of treatments today involving autologous bone marrow transplants is that in advanced breast cancer patients, tumor cells have metastasized to the marrow. So when harvested stem cells are reintroduced, so may be the cancer. To combat this the team has designed a virus that infects the breast cancer cells *in vitro* but not the hematopoeic cells (stem cells). The introduced gene produces an enzyme and a protein which convert a fairly harmless drug (5 fluoro cytosine, or 5FC) that normally is used to treat fungal infections into a highly toxic substance—all within the genetically altered cancer cells. As Dr. Deisseroth puts it, "you just flood the petri dish culture with the drug and only the cancer cells will convert it to a deadly toxin." Although this trial takes place outside the body, its implication could be "broad and profound." Says Dr. Deisseroth: "We're thinking ahead to how we can develop something like this for the whole body and avoid all harmful therapies."

He immediately, though, offers the caveat: "It sounds great, but it's tough to implement." One problem is producing enough of the viral particles to get the element in all the cancer cells in all parts of the body. Another problem is that this particular vector, although it doesn't infect stem cells, would infect other cells of the body *in vivo*. Dr. Deisseroth, though, looks forward to a successful *in vitro* trial that would offer a "proof of principle."

Another trial will target ovarian cancer, and a more specific viral vector has already been designed. When an ovarian cancer is removed, some microscopic amounts of the tumor cells remain in the peritoneum, the membrane that lines the walls of the abdominal cavity. The viral vector developed for this trial infects the normal peritoneal cells as well as the ovarian cancer cells. But it will not produce the converting enzyme that changes the non-toxic drug to the toxin—unless it's inside the



Srinivasan Srimatkandada, Ph.D, develops a gel image as part of a related study. Much of the current work is directed toward making existing therapies function better.

Special delivery, with the help of a virus

Broadly defined, gene therapy sounds simple: alter a patient's genes to achieve a therapeutic benefit. If you're dealing with a genetic disorder, replace the mutated gene with the correct gene. If you want to cure a cancer, make a change in the cancer cell genes that allows you to kill them with a drug that's harmless to normal cells.

The hard part is applying the theory to patients, but already there have been some qualified successes and the techniques are rapidly evolving. W. French Anderson, M.D., is a gene therapy pioneer in whose NIH laboratory Albert Deisseroth worked early in his career and whom he credits for kindling his interests in the field.

In 1990, a team led by Dr. Anderson performed the first federally approved gene therapy, an effort to help a 4-year-old girl with a genetic disorder that blocked production of a vital enzyme. The team genetically altered some of her white blood cells outside the body to produce the missing enzyme and then transfused the white cells back into her bloodstream. The treatment worked and she now leads a normal life, although she needs regular treatments as the altered white cells die off.

Siqing Fu, M.D., Ph.D., an expert in the design of viral vectors, came to Yale with Dr. Deisseroth from the M.D. Anderson Cancer Center in Houston.

At Yale, gene therapy researchers hope to improve treatments for cancer—either by increasing the efficacy of current therapies or developing new ones.

All strategies of gene therapy require a means of altering genetic material in target cells. To do this, researchers have made an ally of an ancient enemy, the virus. Viruses are tailor-made for the job because they have evolved to invade cells and then commandeer the cells' genetic material for the manufacturing of more viruses.

The process of tailoring viral vectors is an art in itself. At Yale's new viral-vector production lab, postdoctoral associate Siqing Fu, M.D., Ph.D., is the vector designer who presides over the process. Dr. Fu came with Dr. Deisseroth from M.D. Anderson Cancer Center in Houston to continue their collaboration.

Dr. Fu uses a variety of biochemical processes and gene splicing techniques to both cripple the virus so that it can't replicate, and to attach to it the gene that will be delivered to the target cell. The viruses most often tapped to be vectors are the adenoviruses, associated with colds, and retroviruses.

Yale's vector production facility was created last year in two rooms in Sterling Hall of Medicine, with an elaborate filtering apparatus and positive- and negative-air-pressure systems to keep dust out and vector material in the lab. The FDA considers viral vectors to be drugs and tightly regulates the process. As a result, Dr. Fu says that developing a vector can take as little as six months or longer than a year. ▪

ovarian cancer cells. Developed at Stanford University, the vector is called a "tumor-specific transcriptional promoter."

Dr. Deisseroth sums up: "The gene doesn't read out its product unless it's in the cancer cell. So this is good, it's another step forward."

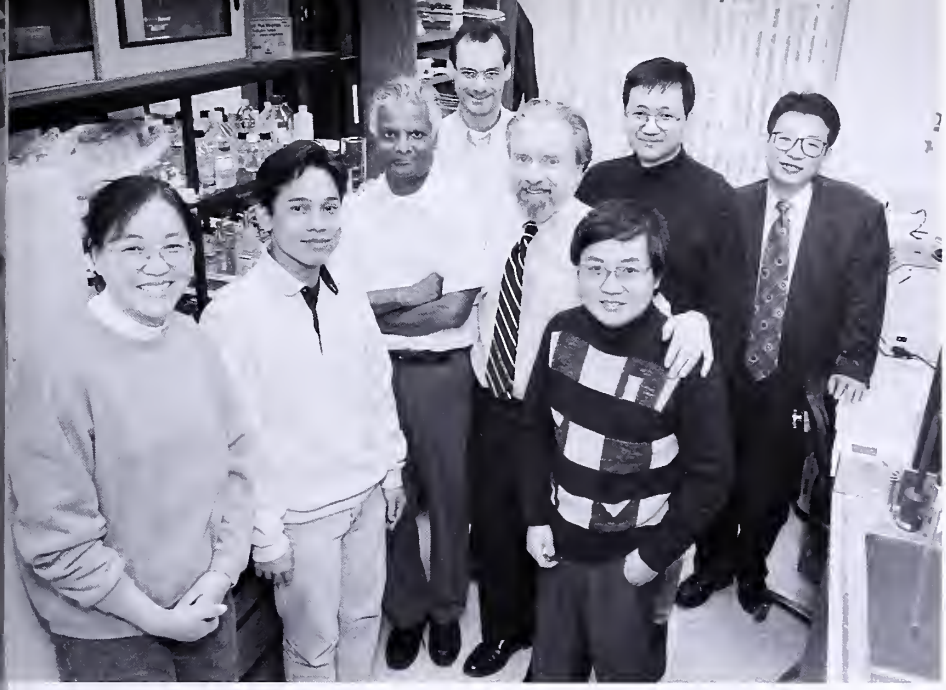
The third trial will target prostate cancer, also by using a viral vector to infect tumor cells. With the insertion of a new gene into the tumor cell, the drug 5FC is converted to the more toxic 5FU, making the cell more susceptible to radiation therapy.

MELANOMA RESEARCH

Yet another gene therapy team at Yale is targeting one of the fastest rising and deadliest of cancers. According to Sancy Leachman, M.D., Ph.D, if melanoma is detected early it is nearly 100 percent curable. Once it metastatizes to other parts of the body, the 10-year survival rate drops to between 5 and 10 percent. That's why, Dr. Leachman says, "you can't find a more rewarding or important area of research in dermatology than melanoma." Dr. Leachman, a molecular biologist who worked in Dr. Deisseroth's laboratory last year, is an NIH fellow in dermatology at Yale.

Dr. Deisseroth and other senior investigators are attempting to harness the patient's own immune system to fight metastatic melanoma. They designed a protocol for bone marrow transplantion with the desired effect of inducing a "graft-versus-tumor" reaction against the spreading melanoma cells. According to this protocol, not yet tested, immune cells from the donor marrow would attack the melanoma. By modifying the foreign immune cells genetically before transplantation, researchers also might be able to tag the foreign cells and selectively destroy them once the job is done.

Dr. Leachman, who was involved in the design of the



Dr. Deisseroth with his laborary team: "There is no question," he says, "that gene therapy will eventually prove itself as it matures over a period of years and decades."

melanoma protocol, says that Dr. Deisseroth "is one of the few people who really bridge the gap [between laboratory and clinic]," she adds. "You know you actually have the potential to treat patients with some of the most exciting and potentially helpful treatment regimens that are becoming available."

As to the quality of the research team: "The higher caliber principal investigator you have in a lab, the higher caliber postdocs you recruit, that's just the way it works, so of course he's got an excellent group of people working with him." They have come to New Haven from as far away as China, Thailand, Spain, India and Korea.

Among the gene therapy group's members are Injae Chung, Ph.D.; Takuma Fujii, M.D., Ph.D.; Siqing Fu, M.D., Ph.D.; Thanyaphong Nanakorn, M.D.; Felix Garcia-Sanchez, Ph.D.; Srinivasan Srimatkandada, Ph.D.; Lianhua Yin, Ph.D.; and medical students Michael Wang and Matt Cooperberg. Dr. DeVita credits Dr. Deisseroth as being a key factor in the recent recruitment to the Cancer Center of Edward Chu, M.D., "an outstanding molecular pharmacologist," and Frank Hsu, M.D., an immunologist who has developed a new approach to vaccination.

HOPE, HYPE, HELP

For a number of reasons, not the least of which is that it alters the genetic code in human cells, gene therapy is under intense scrutiny from the NIH and the Food and Drug Administration (FDA). The FDA, for instance, has developed stringent guidelines for the production of viral vectors to be used in humans. Yale has built for Dr. Deisseroth's team a vector production facility (one of the few at an academic institution) according to the FDA guidelines.

Last year, a scientific advisory panel convened by NIH Director Harold Varmus, M.D., reported that a swirl of hyperbole and exaggeration has created "the mistaken and widespread perception that gene therapy is further developed and more successful than it actually is." As co-chairman Stuart Orkin, M.D., told a reporter, "this is a young field with much in front of it, but there is no established efficacy of any gene therapy today."

Dr. Orkin and his colleagues questioned the efficacy of the gene viral vectors currently being used, saying "none is ideal or perhaps even nearly ideal" in its ability to transfer genes into the target cells. They criticized redundancy in experiments and "a lack of suitable controls," while saving some of the harshest rebukes for the biotech industry: "Uncritical gene therapy reports [from companies] are used by industry to promote investment and perceived research dominance."

Nonetheless, the group sees "extraordinary potential for the long term" in gene therapy. The NIH currently grants about 2 percent, $200 million, of its annual budget to gene therapy projects and is a funding source for a portion of the work at Yale. What, if any, effect the recent critique will have on current grant proposals is still unknown.

As far as the criticism within the research community goes, for Dr. DeVita it's a case of deja vu. "There is usually about a decade of controversy surrounding [new fields in medicine], even the most promising of them," he says. "In the case of gene therapy, there are people who say, 'Well it can't work, we shouldn't do it now, we

Felix Garcia-Sanchez, Ph.D.

should wait until we know more before we do it.'" When Dr. DeVita and collegues introduced a new chemotherapy for Hodgkins disease two decades ago, critics were equally skeptical. But the four-drug combination known as MOPP raised the survival rate for patients with advanced disease from near zero to 65 percent. "So we've faced the same sort of thing in the past," Dr. DeVita says.

At the same time, neither he nor Dr. Deisseroth downplays the challenges, hurdles and overall difficulty of the work ahead to realize even a small part of the promise of gene therapies. As Dr. Deisseroth puts it, "In the beginning of a field like this, the number of things that you don't know is very high and so the chances that you'll not have a perfect system the first time out are also very high."

The hurdles facing gene therapy are not trivial, agrees Maurice J. Mahoney, M.D., professor of genetics, pediatrics, and obstetrics and gynecology. "The basic biologic problems are quite significant—inserting a gene at a place where it will be expressed and ensuring that expression continues over some reasonable length of time, and then perhaps having to repeat the therapy at intervals," he says. "It seems very unlikely if you only transform one percent of cells that you are going to affect the course of a disease—at least for most disease states. But if you affect 10 percent you may be able to."

Will gene therapy research pay off? Dr. DeVita, while emphasizing that gene therapy is only one approach to cancer research and treatment at Yale, says, "Things are moving very fast and the tools are extraordinary. You can do things that are really quite unbelievable. When you used to make predictions—if you were enticed to make a prediction—it usually took longer. These days when you predict something it usually takes less time, not more. So my guess is that we'll be able to find ways to make gene therapy a useful tool." **YM**

Eight questions

Francis S. Collins, M.D., Ph.D., earned his doctorate at Yale in 1977 and spent three years at the medical school as a postdoctoral fellow in genetics and pediatrics. Today he heads the National Human Genome Research Institute (NHGRI) in Bethesda, Md., the federal institute overseeing the effort to map the human genome.

In November, Dr. Collins spoke at the annual meeting of the Association of American Medical Colleges in San Francisco on *The Ethical and Social Implications of the Human Genome Project.* "It's exciting to have the ability to predict who is individually at risk for which diseases. That is the kind of opportunity for individualized preventive medicine that we have dreamed about," he told the gathering of more than 3,000 academic physicians and medical administrators from around the nation. But he posed a further question: "Are we ready for the consequences of that revolution?"

To consider the question carefully, Dr. Collins offered eight more:

1. Will the complexity of whole genome biology overwhelm us?

2. Will we successfully shepherd new genetic tests from research into clinical practice?

3. Will effective legislative solutions to genetic discrimination be found?

4. Can health care providers and the public become genetically literate in time?

5. Will the therapeutic promise of genetics be realized?

6. Will the benefits of advances in genetics be available only to a privileged few?

7. Will we succumb to genetic determinism?

8. Will we arrive at consensus on the limits of genetic technology?

In his discussion, Dr. Collins offered some answers and a hint of things to come as researchers around the world endeavor to record more than 3 billion bits of information about the estimated 100,000 human genes. He said that many physicians may not be equipped to implement sophisticated new tests now available for susceptibility genes such as BRCA1 and BRCA2, which indicate a higher risk for developing breast cancer, and that many doctors are currently quite uncomfortable providing genetic counseling to their patients.

To increase the genetic literacy of both health care professionals and the public, Dr. Collins said that a coalition convening this spring will help substantially by providing a clearing house for educational materials. He expressed concern about genetic determinism, as science offers more evidence for the biological causes of both illness and behavior: "We have to work at not slipping into that narrow slot, the idea that 'genes are us.'"

Finally, Dr. Collins spoke eloquently of the need for laws to protect individuals from genetic discrimination. "We are all walking around with four or five seriously misspelled genes," he said. "We are all at risk of having that information used against us." ■

75 years of Yale *pediatrics*

Medical school marks the occasion with dedication of new research center.

Photographs by Peter Casolino

A century ago, the industrial building at the corner of Howard and Congress avenues in New Haven was a rubber factory. A generation ago, it was the place women shopped for a bargain on coats.

In November, a portion of 464 Congress Ave. reopened as a dynamic new facility for research in pediatrics. Five state-of-the-art laboratories provide new space for eight principal investigators and their research teams, who are probing research questions in areas from cancer genetics and genetic imprinting to the developmental biology of the immune system.

The 17,000-square-foot Yale Child Health Research Center was dedicated Nov. 1 with a ribbon cutting by the mayor, medical school and hospital administrators, and community leaders from the Hill neighborhood that surrounds the new facility.

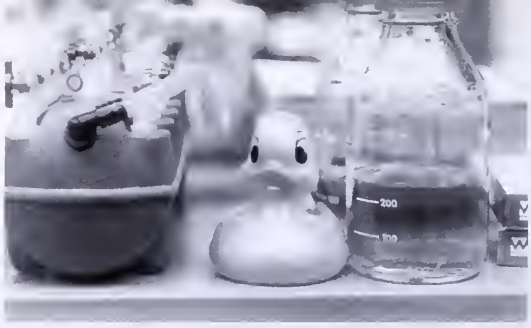
The dedication also marked 75 years of pediatrics at Yale.

"The center will take an interdisciplinary approach to improving the understanding of normal development and the abnormalities that continue to result in injury, handicaps and death to children," said Joseph B. Warshaw, M.D., chairman and chief of pediatrics at Yale. Scientists in the Department of Pediatrics will interact with colleagues in the departments of Biology, Cell Biology, Genetics, and Cellular and Molecular Physiology, the sections of Immunobiology and Neurobiology and other basic science programs, participating in research designed along programmatic lines. Yale medical faculty are pursuing pediatric research projects:

- advancing our understanding of information processing in children with learning disabilities, using functional magnetic resonance imaging, and functionally defining male and female brain differences
- pioneering, using imaging technologies, the diagnosis in congenital heart disease prenatally
- carrying out molecular studies to define cystic fibrosis
- attempting to identify the gene that is defective in the disease hemochromatosis, a common

Top: *Tours of the Child Health Research Center were a hot ticket in November, when the 17,000-square-foot facility was dedicated during an open house and scientific symposium.*

Above: *Immunology fellow Jose Calderon, M.D., and research assistant Beth Cooper are among two dozen people engaged in research in the center's five state-of-the-art laboratories.*



A history of advances in children's health

Seventy-five years ago last November, Yale launched one of the first departments of pediatrics in the country. Its mission was to increase clinical scholarship in pediatrics and to decrease the vulnerability of children to injury and disease.

From the beginning in 1921, the Yale Department of Pediatrics has done a remarkable job of carrying out that mission. "It's always had an impact, far out of proportion to its size, on American pediatrics," says Howard A. Pearson, M.D., who chaired the department from 1972 to 1985.

Today, many once-devastating diseases are under control, and effective programs that were once unheard of are standard. As the department marks its 75th anniversary, Dr. Pearson notes some of the ways in which, over the decades, department members have indeed had an impact. For instance, they:

- conducted **pioneering work** on the causes, prevention and treatment of rickets, a disease that in the 1920s affected thousands of American children, especially in cities like New Haven.
- encouraged the State of Connecticut to **build a residential facility**, the Southbury Training School, for mentally retarded youngsters.
- **refined fluid and electrolyte therapy** for diarrhea, long a major killer of children.
- brought about a **better understanding of polio**.
- helped produce a **vaccine against German measles**.
- showed that the practice of pediatrics should include **attention to psychological and social issues.**
- demonstrated that **rooming-in arrangements for new mothers** and their babies served both better than did the long-standard practice of separating newborns from their mothers.
- revolutionized the **care of premature infants** by showing that they could be safely cared for in nurseries that let staff and parents have more access instead of isolating them in cubicles, and established the country's first modern intensive-care unit for premature infants.
- helped establish separate, appropriate **hospital facilities for children**.
- helped to start and maintain New Haven's **Hill Health Center**, where pediatrics is an important part of medical services for urban residents.
- launched the country's first comprehensive program for **testing for sickle-cell anemia in newborns** and demonstrated that mortality from the disease could be reduced.
- advanced knowledge in pediatric research through work at the **Children's Clinical Research Center** and in other major programs at Yale.

Joseph B. Warshaw, M.D., who has chaired the department since 1987, calls it "poised to advance even further in the next 75 years." The current explosion in molecular science, coupled with new technologies, is giving pediatric researchers and practitioners "an improved understanding of what's going on," he says.

Recent work in the department has helped make it possible to diagnose many cases of congenital heart disease prenatally. Current topics under study include the molecular mechanisms of cystic fibrosis. "These projects and others," he adds, "will be in the forefront as the growth of knowledge in pediatrics increases logarithmically." ■

genetic disease that can cause liver and heart problems, arthritis and diabetes
- developing experimental models to examine gene therapy of a rare immune deficiency disease and examining the effect of this genetic defect on immune function
- studying the regulation of expression of interferon-gamma, a key factor in the immune response that is poorly produced by lymphocytes in newborns, in order to understand the basis of the susceptibility of newborns to severe infections

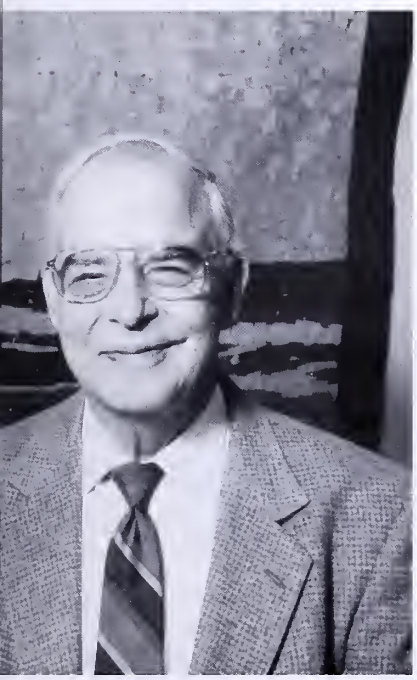
Above: *A view of the building at 464 Congress Ave. as it appeared in the 19th century, when it was a rubber factory. Later the building became an outlet for women's apparel. The Child Health Research Center occupies renovated space on the second floor.*

■ studying how different proteins are transported to different areas within the cell, and attempting to dissect out the mechanisms by which protein trafficking is achieved in health, disrupted in disease states, and restored during recovery

■ studying how the expression of some genes is determined by whether they are inherited from the mother or the father and how this regulation may affect organ development, as well as the development of inherited diseases. **YM**

Above: *Myron Genel, M.D., associate dean for government and community affairs, greets Courtland Seymour Wilson, executive director of the Hill Development Corp.*

Right: *Mayor John DeStefano and other community leaders, including U.S. Rep. Rosa DeLauro, Alderman Tony Dawson and Hill Development Corp. Chairwoman Cathy Sutton Dawson, spoke at the dedication.*



Above: *Joseph B. Warshaw, M.D., left, and Howard A. Pearson, M.D., are among the physicians who have chaired the department during its 75-year history. They are pictured before one of the center's six murals created by New Haven public school students. Fourth-graders at the Lincoln-Bassett School made this colorful mosaic reproduction of Edward Hopper's* Railroad Sunset.

John M. Leventhal, M.D., HS '73-76, left, stands with the participants in the scientific symposium he organized to mark 75 years of pediatrics at Yale. From left: Dr. Leventhal, professor of pediatrics and in the Child Study Center; Richard P. Lifton, M.D., Ph.D., associate professor of medicine (nephrology) and genetics at Yale and a Howard Hughes Medical Institute investigator; Nancy C. Andrews, M.D., Ph.D., assistant professor of pediatrics at Harvard Medical School; Michael S. Kramer, M.D., professor of pediatrics, epidemiology and biostatistics at McGill University School of Medicine; and Leon E. Rosenberg, M.D., HS '73-76, former dean of the Yale School of Medicine and senior vice president, scientific affairs, at Bristol-Meyers Squibb.

All the *right moves*

Yale Sports Medicine Center moves to expanded quarters at One Long Wharf.

With fanfare, food and an *a cappella* performance by a group of Yale undergraduates, the Yale Sports Medicine Center opened its doors in a new facility in November at One Long Wharf Drive in New Haven.

The new location has expanded clinical facilities, including specialized athletic splint, brace, orthotic and casting rooms, and on-site X-ray. A bioskiils laboratory and sports medicine library complement the new center, which has twice the space of the previous Sargent Drive location.

"The new sports medicine center allows us to provide state-of-the-art specialized medical care for all athletes at one location," says Peter Jokl, M.D. '68, HS '69-73, chief of sports medicine at both at the Yale School of Medicine and Yale-New Haven Hospital. Dr. Jokl served as medical commissioner for the 1995 Special Olympics World Games.

Four full-time physicians at the Yale Sports Medicine Center provide treatment for men and women who suffer musculoskeletal injuries, both athletes and non-athletes alike. In addition, trainer O. William Dayton serves a vital role in this comprehensive program.

High school coaches, athletic directors and school health-care providers in the Greater New Haven area got to see the new center first-hand at a seminar in December, taught by the sports medicine staff.

Dr. Jokl says the program is "especially fortunate to be located adjacent to the physical therapy services of Gaylord Hospital," which are next door. "Since rehabilitation is often a key to recovery in orthopaedic injuries, it is great to have an outstanding physical therapy program so available." ▪

Photographs by Peter Casolino

Above: *John Daigneault, M.D., shows a series of magnetic resonance images to Linda Fischer, an athletic trainer who visited the Sports Medicine Center during a December seminar for coaches and trainers in the community.*

Left: *The center's four full-time faculty physicians, from left: John Daigneault, Director Peter Jokl, Patrick Ruwe and Marc Galloway.*

Left: *The Yale Sports Medicine Center's new home is on the sixth floor of the renovated One Long Wharf building, overlooking Long Island Sound.*

Above: *Dr. Jokl greets Joseph A. Zaccagnino, center, president and chief executive officer of Yale-New Haven Hospital, and Paul H. Johnson, president and chief executive officer of Gaylord Hospital in Wallingford, Conn.*

Above: *Ceremonies during the Yale-Princeton weekend also marked the retirement of Carm Cozza, the legendary Yale football coach. At the Sports Medicine Center opening, he spoke appreciatively of the long relationship between the center and Yale athletics. Behind him is a sculpture by former chairman and professor emeritus Wayne O. Southwick, M.D., which Dr. Southwick dedicated to the center.*

Left: *At the opening reception, Gary E. Friedlaender, M.D., chairman of orthopaedics and rehabilitation, spoke of the center's growth and success since its founding a decade ago by Director Peter Jokl, M.D. (standing to his left).*

Above: *The Yale College* a cappella *group Whim'N Rhythm sing a football fight song at the opening, which coincided with the Yale-Princeton game.*

Right: *Coach Cozza with O. William Dayton, Yale's former head athletic trainer, who sees patients at the Sports Medicine Center.*

Painless

150 years ago, the use of ether brought a fundamental change to medicine.

By Marc Wortman

Top: *Wick vaporizers controlled the respiratory volume passing through the vaporizer and thus the concentration of ether. This instrument was widely used for surgery during the 1940s and '50s.*

Above: *The first public demonstration of surgery performed on an etherized patient was a "thunderclap" in medical history. Surrounded by colleagues, Boston dentist William Thomas Green Morton gives the patient ether.*

How much will it hurt? These days, surgeons can answer their patients' standard question precisely: not at all. But until Oct. 16, 1846, any invasive procedure was likely to hurt very much indeed. That was the day on which surgeons first demonstrated the use of inhaled ether as a general anesthetic and liberated the surgical patient from pain—at least until the effects of the magic vapors wore off.

This past Oct. 16, an international meeting in Boston marked the 150th anniversary of that historic moment, now celebrated as Ether Day. On that date a century and a half ago at Massachusetts General Hospital, surgeon John Collins Warren, M.D., operated on a patient anesthetized by Boston dentist William Thomas Green Morton using inhaled ether. "That was a thunderclap in medical history," says Yale clinical professor of surgery and medical historian Sherwin B. Nuland, M.D. '55, HS '55-61, author of *The Origins of Anesthesia*. "Nothing was the same afterwards."

Above: *A young Hartford dentist, Horace Wells (1815-1848), received scant credit for his use of nitrous oxide for dental operations.*

Not only for the surgeon. Prior to the first use of ether, alcohol and the proverbial biting the bullet were the only weapons in the pain-fighting arsenal. Any surgery required a number of strong men on hand to restrain the patient. Needless to say, delicate surgery was inconceivable under such circumstances.

Nicholas M. Greene, M.D., professor emeritus and former chairman of anesthesiology at Yale, organized a milestone exhibit on anesthesia's history this fall at the Harvey Cushing/John Hay Whitney Medical Library.

While Dr. Morton is credited with introducing inhaled ether's anesthetic properties to the world, Dr. Greene points out that Crawford W. Long, M.D., of Georgia began using ether in his surgical practice four years earlier, but did not publish his findings until after Drs. Warren and Morton had made their demonstration in 1846. In fact, Hartford dentist Horace Wells should also be credited for the advance, since he had previously experimented with nitrous oxide inhalation in his practice. He shared the concept of inhalation anesthesia with Morton, who then brought it to the

BOSTON MEDICAL AND SURGICAL JOURNAL.

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INSENSIBILITY DURING SURGICAL OPERATIONS PRODUCED BY INHALATION.

Read before the Boston Society of Medical Improvement, Nov. 9th, 1846, an abstract having been previously read before the American Academy of Arts and Sciences, Nov. 3d, 1846.

By Henry Jacob Bigelow, M.D., one of the Surgeons of the Massachusetts General Hospital.

Left: *The publication of the report of the first use of inhaled ether as an anesthetic, written by Henry Jacob Bigelow, M.D., a Harvard colleague of surgeon John Collins Warren, M.D., brought worldwide attention.*

attention of Dr. Warren. Dr. Warren's announcement of the successful surgical use of inhaled ether brought tremendous worldwide attention. It is regarded as the first major American contribution to medicine.

The immediate effect of the discovery of anesthesia was in fact limited and sometimes downright dangerous. It would be another 40 years before the germ theory was propounded, and many operations undertaken with the new freedom permitted by anesthesia resulted in deadly infections and some wildly speculative surgical experiments. Wide objections to its use quickly arose. Other anesthetics were tried. Chloroform was discovered as an anesthetic in 1847, but quickly demonstrated the potentially lethal quality of a deep sleep as a number of early fatalities were reported.

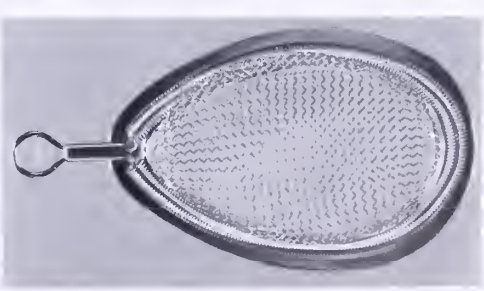
However, the great medical value of anesthesia was readily apparent and its use spread rapidly. Peter Parker, M.D., a Yale-trained physician and minister, went to China in 1837. Only a year after inhalation ether was first used by Dr. Warren at Massachusetts General, Dr. Parker performed an amputation in Canton using the general anesthetic. This is believed to be the first use of anesthesia in Asia.

By the turn of the century, new forms of anesthesia were being developed. Cocaine was first used by Sigmund Freud's assistant, Karl Koller, M.D., as a local anesthetic and alternative to ether and chloroform. (Dr. Freud himself eventually would be proclaiming the wonderful pain-relieving qualities of cocaine.) Procaine, the first synthetic local anesthetic, was introduced in 1902. Thiopental became the first widely used intravenously administered general anesthetic, beginning in 1935, allowing for much more precise monitoring of the anesthetic effect.

While these landmark events have revolutionized the operating room, anesthesia as a medical specialty was much slower in developing. Only during the past half-century did it become a recognized medical specialty. Yale appointed Dr. Greene as its first professor of anesthesiology in 1955. He guided the field toward its emergence as an intellectual discipline in its own right. At the Boston Ether Day celebration, he was given the Massachusetts General Hospital Trustees Medal to honor his contributions to the field. While the section of anesthesiology didn't become a department until 1971, it has since been recognized as among the best in the country, with 58 attendings, 56 residents, six fellows and five nurses, in a program credited with numerous scientific and medical advances. "Finally," says Dr. Nuland, "anesthesia has taken its place among our most meticulous specialties and the most technologically advanced of all." ▪

Above: *Surgery was quick and brutish before the advent of anesthesia. As this 18th-century engraving from the Clements C. Fry Print Collection at Yale shows, it took muscle to get the job done.*

Below: *Dripping ether or chloroform on a cloth or mask such as these held over a patient's mouth and nose was the most widely used form of inducing anesthesia during the first century of its use.*



Images from the Harvey Cushing/John Hay Whitney Medical Library

Harold Shapiro

Students sang at a ceremony marking the agreement, signed by (from left) Linda Lorimer, Charles Williams, Reginald Mayo, Gerard Burrow and Judith Krauss.

Yale expands partnership with New Haven city schools

Leaders from the New Haven Public Schools and Yale University signed an agreement in early December establishing a formal partnership to enrich educational opportunities for New Haven students.

The partnership builds on work initiated in recent years between the Yale schools of medicine and nursing and Career High School, which in 1998 will open a new regional facility on the Route 34 connector near the Yale medical complex. The high school offers concentrations in allied health, business and computing.

"In creating this partnership, we recognize our common interests and shared educational responsibilities to our students, and today join together to form one intergenerational community of learners," said Reginald Mayo, Ph.D., superintendent of schools in New Haven. He was joined by Yale Secretary Linda K. Lorimer, medical school Dean Gerard N. Burrow, M.D. '58, HS '58-66, nursing school Dean Judith B. Krauss, R.N., and Career High School Principal Charles Williams.

Since January of 1995, anesthesiology professor J.G. Collins, Ph.D., has coordinated an effort to identify ways to share University resources with Career faculty as they move forward in their efforts to revise curriculum. Medical librarians at Yale have trained Career High teachers, students and the school librarian in use of the Internet and other electronic information reference tools. The library training program will continue during the coming school year, and Career faculty now have full borrowing privileges at the medical library.

"The partnership was designed to encourage more contact and informal communication between the students and staff at Career with medical and nursing students and faculty," says partnership coordinator Claudia R. Merson. To that end, the Yale Medical Shuttle will expand its route to include regular stops at the new Career High School when it opens, and Yale participants will have access to the high school swimming pool and other sports and recreation facilities.

Career students also have had opportunities to learn about a variety of career options through participation in a medical careers course at the high school and internships at the medical and nursing schools, where Career students observe medical faculty and other health professionals in research and clinical areas. Yale medical faculty and postdoctoral fellows also lecture at the high school on career options and paths.

An educational program started in 1993 continues to best exemplify the kinds of enrichment that this partnership has been designed to produce. Career students come to the medical school for an innovative human anatomy program, conducted in the medical school's human anatomy laboratory and taught by medical students and William B. Stewart, Ph.D., associate professor of surgery and chief of the gross anatomy section, and his colleagues at Yale. The highly motivated Career students have learned more about human anatomy, earned higher grades and increased their interest in the sciences by participating in this program.

Dr. Kessler's appointment as dean was made as *Yale Medicine* was going to press. Additional coverage of the announcement is included in a *Yale Medicine Bulletin* mailed in early March.

Photographs by Peter Casolino

FDA commissioner becomes 15th dean

President Richard C. Levin announced on Feb. 13 that David A. Kessler, M.D., J.D., commissioner of the U.S. Food and Drug Administration, will become dean of the Yale University School of Medicine, effective July 1.

Dr. Kessler is a graduate of the Harvard Medical School, the University of Chicago Law School and Amherst College. Appointed in 1990, Kessler served as FDA commissioner under Presidents Bush and Clinton. Before that, Dr. Kessler was medical director of the Hospital of the Albert Einstein College of Medicine from 1984 until 1990.

During his six-year tenure at the FDA, Dr. Kessler successfully tackled difficult issues as he sought to meet critical public health needs. Under his leadership, the FDA's accomplishments were wide-ranging, from the introduction of the Nutrition Facts food labels to tobacco regulation, and from mammography standards to world-record times for drug approvals. During his tenure, the FDA reduced by 50 percent the median time required to evaluate new drugs it approved.

"This is one of the great days of my life," Dr. Kessler told more than 450 people who filled Mary S. Harkness Auditorium for the announcement. "This is one of the world's great institutions and it is a high honor to be your dean." In his comments in Harkness and at a press conference that followed, Dr. Kessler repeatedly stressed the importance of delivering world-class care to people who cannot receive it elsewhere. "What is magic at other places," he told a room full of reporters, "they have to be able to do here every day."

President Levin introduced the school's 15th dean with the observation that medicine is simultaneously facing enormous challenge and opportunity. "It is a perfect time for us to have a dean with Dr. Kessler's vision and intelligence, and openness to new ideas," said President Levin. "I think this is the right man at the right time for taking the school forward."

To more applause, President Levin vowed that "the provost and I are going to make it possible for Dr. Kessler to do these things. We are supplying him with ample resources to develop new educational programs, to take new clinical initiatives, to recruit new and outstanding faculty, and to improve the quality of our laboratory facilities."

Gerard N. Burrow, M.D. '58, dean of the School of Medicine since 1992, will return to the medical faculty and will serve as special advisor for health affairs to President Levin. He will also write a history of Yale medicine for the University's 300th anniversary celebration in 2001.

Dr. Kessler completed his internship and residency training in pediatrics at The Johns Hopkins Hospital. He has been elected a member of the Institute of Medicine, which is part of the National Academy of Sciences. Dr. Kessler's many honors have included the American Cancer Society's Medal of Honor, the American Heart Association's National Public Affairs Special Recognition Award, the American Federation for AIDS Research Sheldon W. Andelson Public Policy Achievement Award, the American Academy of Pediatrics Excellence in Public Service Award, and the March of Dimes Franklin Delano Roosevelt Leadership Award.

Dr. Kessler is married to Paulette Kessler, a lawyer, and they have two children, Elise, 14, and Ben, 11. ▪

Top: *Dr. Kessler addresses a packed Harkness Auditorium on Feb. 13.*

Above: *Dr. Kessler and President Levin at a press conference following the announcement.*

Frank Poole

Christopher J. McDougle, M.D.

Yale contributes to new advances in autism research

Three new studies, including two by Yale researchers, are opening the door to significant advances in the understanding and treatment of autism, according to an editorial in the November issue of the *Archives of General Psychiatry*.

In the first of the three studies, Christopher J. McDougle, M.D., associate professor of psychiatry and in the Child Study Center, and colleagues studied 30 adults with autistic disorder. Half were given placebo, the other half were given a potent and selective serotonin reuptake inhibitor called fluvoxamine maleate.

After 12 weeks, eight (53 percent) of the 15 patients in the fluvoxamine-treated group showed improvement, compared to none in the placebo group.

The authors concluded that "fluvoxamine was superior to placebo in reducing repetitive thoughts and behavior, maladaptive behavior, and aggression, and in improving some aspects of social relatedness, especially language use."

Other than mild sedation and gastrointestinal distress in a few patients, fluvoxamine was well tolerated, according to the researchers. They say their results warrant controlled studies using fluvoxamine and other drugs of the same class in children and adolescents with autism.

A second study, also by Dr. McDougle and colleagues, confirms a dysregulation in serotonin function in some patients with autism.

The synthesis of serotonin is dependent upon the dietary intake of the essential amino acid tryptophan, according to information cited in the study. Seventeen drug-free patients with autistic disorder received a 24-hour, low-tryptophan diet followed the next morning by an amino-acid drink. A second test was conducted with placebo in a randomized order.

Other Yale authors of the two papers were Susan T. Naylor, R.N., M.S.N.; Donald J. Cohen, M.D. '66; Fred R. Volkmar, M.D.; George R. Heninger, M.D.; and Lawrence H. Price, M.D., HS '78-82.

In the third paper, researchers at Stanford University studied the involvement of the X chromosome in the etiology of autism. They found that while there was no moderate to strong gene effect causing autism on the X chromosome, smaller gene effects could not be excluded.

Women's Health Program at Yale designated a center of excellence

The Women's Health Program at Yale has been designated by the U.S. Department of Health and Human Services (HHS) as one of six National Centers of Excellence in Women's Health to serve as models for improving the health care of American women.

"This new center will strengthen and expand the Women's Health Program at Yale that was established in 1992," says program and center director Janet B. Henrich, M.D., associate professor of medicine and of obstetrics and gynecology.

"Our program strives to improve the quality of health care for women, foster and generate research in women's health, better integrate women's health and gender-related concepts into the medical school curriculum, and enhance the education and training of physicians in women's comprehensive care," she says.

With the national designation and $330,000 in federal support for women's health, the Yale program will initially concentrate in two main areas:

- Expansion of the interdisciplinary training and service model of comprehensive, integrated patient care for New Haven-area women that started in 1995 in Yale-New Haven Hospital's Primary Care Center. Physicians in internal medicine, obstetrics and gynecology, and psychiatry will collaborate on this project.
- Development of a framework to facilitate interdisciplinary research on women's health.

Coordinating the program's research component is Carolyn M. Mazure, Ph.D., associate professor

Janet B. Henrich, M.D.

of psychiatry and editor of the book *Does Stress Cause Psychiatric Illness?* Dr. Mazure will help stimulate research in women's health that will encompass the fields of clinical medicine, basic science, public health and behavioral science.

According to HHS Secretary Donna E. Shalala, the national centers, announced Oct. 1, "are just one step in a broad cooperative effort to improve our health research and services for women, and to improve the career prospects for women in the health professions."

Surgical technique may prompt heart disturbance

Certain surgical techniques appear to increase the risk of atrial fibrillation in patients after coronary artery bypass graft surgery (CABG), according to a study conducted at Yale and 23 other university-affiliated medical centers across the United States.

In a study of 2,417 patients undergoing CABG surgery, an average of 27 percent of them experienced this common heart rhythm disorder. The condition more likely occurs in older male patients with a history of heart failure, says Joseph P. Mathew, M.D., assistant professor of anesthesiology at the School of Medicine and the study's first author. Dr. Mathew and his colleagues reported the findings in the *Journal of the American Medical Association.*

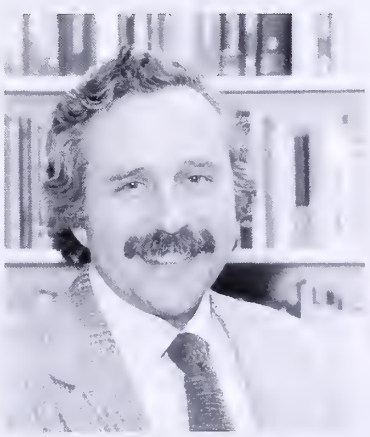
"In an effort to decrease costs, people who have had CABG surgery often are discharged from the hospital as early as three to five days after their surgery, which is just about the same time that this common rhythm disturbance shows up," says Dr. Mathew. "The occurrence of atrial fibrillation will limit these cost-containment efforts. In this era of decreasing reimbursement for medical costs, it is important that this heart rhythm

Yale one of three centers testing new HIV therapy

Yale physicians have begun clinical research on an anti-HIV therapy that uses a novel approach to fight the AIDS virus. Yale is one of three sites in the United States to study this new medication that a Japanese pharmaceutical company has developed.

"This drug may provide an additional new treatment to the expanding and exciting array of HIV therapies," says Gerald Friedland, M.D., director of the Yale AIDS Program and its Clinical Trials Unit.

Researchers now understand that the virus that causes AIDS multiplies in the human body even early on in HIV infection, according to Dr. Friedland. Millions of viruses are produced daily in the human body and eventually render a person's disease-fighting immune system helpless against infections.



Gerald Friedland, M.D.

Previous anti-HIV therapies, like AZT or the new protease inhibitors, act by interrupting one of two enzymes that help the virus multiply. The new therapy that Yale physicians are evaluating acts by preventing the virus from fusing with uninfected cells in the body and by preventing infected cells from fusing to uninfected cells, thereby limiting the ability of HIV to spread. The medication accumulates in the lymph nodes where the highest level of virus replication and infection of new cells occurs.

In the Yale study, patients are being given the new medication once or twice a month in addition to their other HIV therapies, and health professionals are monitoring certain lymphocytes and viral counts.

A yardstick for HIV prevention

A team of Yale researchers will play a major role in a comprehensive analysis of programs designed to halt the spread of HIV, in an effort to test the effectiveness of different approaches to AIDS prevention.

A novel component of the five-year project will be its reliance on techniques from operations research, statistics and economics to create mathematical models of the impact of HIV prevention programs, according to School of Management professor Edward Kaplan, Ph.D. Dr. Kaplan will collaborate with David Paltiel, Ph.D., assistant professor of health policy and management in the Department of Epidemiology and Public Health, and other Yale management and public health faculty, as well as colleagues at two other universities.

"Decisions regarding how much money to spend on HIV prevention programs are made haphazardly," Dr. Kaplan says. "Most prevention programs are not evaluated at all, those that are studied typically do not involve serious attempts to estimate the number of new infections prevented, and precious few studies report the actual costs of intervening. Yet, given that the goal of HIV prevention is, in fact, to prevent HIV infections, one would think that a wiser approach would be to figure out how prevention dollars can be spent more effectively." ■

disturbance be identified and the patients treated before they go home," Dr. Mathew says.

Patients who develop atrial fibrillation after CABG surgery spend an average of 13 extra hours in the intensive care unit and two extra days in the hospital. The extra time is usually needed to control the fast heart rate, to treat patients with blood-thinning medication, or to treat the complications associated with this condition. The current study indicates that the occurrence of atrial fibrillation after surgery was strongly associated with neurological injury.

Using approximate estimates of cost, the occurrence of atrial fibrillation after this type of surgery increases the overall cost of surgery by at least $1,616, the researchers found. In the United States, where 350,000 CABG surgeries annually are performed, the additional costs of the prolonged hospitalization, excluding treatment costs, is $153 million per year.

Prognosis excellent for children with Lyme disease

Two Connecticut researchers reported in the *New England Journal of Medicine* that the prognosis is excellent for children with Lyme disease who are promptly treated with antibiotics.

Results of the study should put to rest many parents' fears that their children who have Lyme disease will suffer chronic disease or disability—even after treatment with antibiotics.

The research was conducted by Eugene D. Shapiro, M.D., professor of pediatrics and of epidemiology at Yale, and Michael A. Gerber, M.D. '74, professor of pediatrics at the University of Connecticut School of Medicine and director, Division of Pediatric Infectious Diseases, Connecticut Children's Medical Center.

The study was conducted over 20 months in five pediatric practices in southeastern Connecticut. Children who went to the physicians' offices and were diagnosed with Lyme disease were eligible for inclusion in the study. Two hundred and one patients enrolled in the study, which was reported in the journal's Oct. 16 issue.

All but four of the children were treated with a single course of conventional antibiotics for two to four weeks, and almost all began to feel better shortly after beginning therapy. At a two-month checkup, 94 percent were free of Lyme disease symptoms. About two years later, all patients were free of any objective evidence of either chronic or recurrent Lyme disease.

Drs. Shapiro and Gerber said the non-specific symptoms associated with Lyme disease play a role in the reactions of parents to the disease. Many fear that a short course of oral antibiotics—daily dosages for two to four weeks—is insufficient. Later, if the children complain of headaches, tiredness or aches and pains, the parents often believe the cause is recurrent or chronic Lyme disease. The scientific evidence shows these concerns are unfounded.

Yale biochemists report new role of enzyme activity

Two medical school biochemists have reported a new role for changes in the activity of the enzyme glycogen synthase (GSase) that reverses a long-held belief about its function.

The Yale scientists have shown that the well-known changes in activity of GSase do not control the flow of carbohydrate synthesis through the enzyme, as has generally been assumed, but instead help the enzyme to control the concentrations of small molecules in the cell. The enzyme is changed when the flow through it changes in order to keep the other molecules in the cell at a constant level.

This work has significant implications for other changes in enzyme activity, such as those stimulated by genetic engineering, the Yale researchers believe. In providing an additional role for the binding of phosphates to enzymes which changes its activity, this new

Robert G. Shulman, Ph.D.

research provides a base for understanding the numerous phosphorylations being reported.

Robert G. Shulman, Ph.D., and Douglas L. Rothman, Ph.D., presented their findings in the *Proceedings of the National Academy of Sciences*. Dr. Shulman is professor of molecular biophysics and biochemistry, while Dr. Rothman is associate professor of research in medicine. In conducting their research, they employed magnetic resonance spectroscopy techniques and mathematical models.

"We showed that the enzyme GSase does not control the rate of carbohydrate synthesis, as scientists have long believed, but rather that the flow is controlled at the first step, when glucose enters the muscle cell," Dr. Shulman explains. "The activity of GSase is itself controlled by phosphorylation in order to maintain constant concentrations in the cell."

Edward Chu, M.D., associate professor of medicine (oncology), has been named director of the newly established VA Cancer Center at the VA Connecticut Healthcare System in West Haven. Dr. Chu is chief of medical oncology-hematology at the VA and co-director of the Developmental Therapeutics Program at the Yale Cancer Center.


Frank Poole

Michael S. Conte, M.D., associate research scientist in surgery, received the fellowship award of the American Surgical Association Foundation for his research proposal on *Endothelial Restoration and Vascular Remodeling*. This national two-year fellowship is presented annually to new faculty.


Frank Poole

James P. Comer, M.D., HS '64-67, Maurice Falk Professor in the Child Study Center and Psychiatry, whose School Development Program has become a model for improving the quality of American education, has received the 1996 Heinz Award in the category of the Human Condition. Dr. Comer's program, which addresses the inner-city problems of drug abuse, teen-age pregnancy and crime, has made a decisive difference in the role of public schools in many communities. The Heinz Awards were established in memory of the late U.S. Sen. John Heinz and measure the excellence of an individual's achievements, as well as less tangible qualities such as intellectual curiosity, willingness to take risks, concern for humanity, optimism and commitment to making the world a better place. Dr. Comer also was presented an award for outstanding serviee to the field of education at Lehigh University's College of Education Alumni Day, held in October in Pennsylvania.

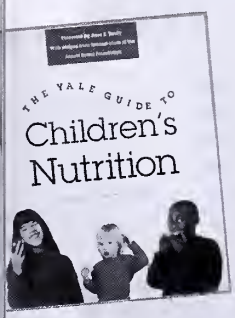
Joseph S. Elman, M.D., clinical instructor in ophthalmology and visual science, has been elected president of the Connecticut Society of Eye Physicians.

Michael D. Ezekowitz, M.D., Ph.D., professor of medicine (cardiovascular), addressed the International Symposium on Atrial Flutter and Fibrillation in September in Heidelberg, Germany. His topic was *Prevention of Stroke in Patients with Atrial Fibrillation*.

Frank Hsu, M.D., assistant professor of medicine (oncology), has been appointed co-director of the Immunology Research Program at the Yale Cancer Center. Dr. Hsu's research interests focus on immunotherapy of malignancies, especially regarding lymphoma. Much of his work centers on the use of vaccine therapies for various forms of cancer.

The National Institutes of Health (NIH) working group on new investigators met in September for the first time. **John Krystal**, M.D., associate professor of psychiatry, is one of the eight-member group designated to review the current policies and practices of the NIH for new investigators.

NEW BOOKS



The Yale Guide to Children's Nutrition, William V. Tamborlane, M.D., professor of pediatrics, editor-in-chief, et al., Yale University Press 1997.

Return from Madness, by Kathleen Degen, M.D., assistant clinical professor of psychiatry, and Ellen D. Nasper, Ph.D., assistant clinical professor of psychiatry, Jason Aronson Inc. (Penn.) 1996.

Critical Operative Maneuvers in Urologic Surgery, by Harry C. Miller Jr., M.D. '54, and George W-K. Yu, M.D., Mosby (St. Louis, Mo.) 1996.

The Prostate Cancer Answer Book: An Unbiased Guide to Treatment Choices, by Marion Morra, associate director of the Yale Cancer Center and associate research scientist in epidemiology and public health, and Eve Potts, Avon Books (New York) 1996.

Harlan M. Krumholz, M.D., assistant professor of medicine (cardiology) and epidemiology, and director of the Center for Outcomes Research and Evaluation at Yale-New Haven Hospital, received a William Harvey Award for excellence in magazine writing on the subject of high blood pressure. The award is sponsored by the American Medical Writers Association, the National Heart, Lung, and Blood Institute of the National Institutes of Health, and Bristol-Myers Squibb Co.

Marion E. Morra, M.A., associate director of the Yale Cancer Center, received the American Cancer Society's Distinguished Service Award for her writing and production of several publications on cancer topics, and for her numerous contributions in relation to quality-of-life issues for cancer patients.

Howard A. Pearson, M.D., professor emeritus of pediatrics, received the Distinguished Career Award from the American Society of Pediatric Hematology/Oncology at its ninth annual conference in Chicago in October. Dr. Pearson was recognized for his career in pediatrics and his identification of two diseases: chronic neutropenia, a congenital form of anemia; and Pearson syndrome, a blood disorder caused by mitochondrial disease. Pearson syndrome appears in infancy and is usually fatal. There have been 30 to 40 cases diagnosed around the world.

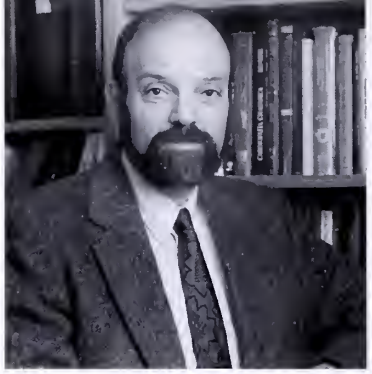
Robert A. Rosenheck, M.D., HS '73-77, clinical professor of psychiatry at Yale and director of the Northeast Program Evaluation Center of the VA Connecticut Healthcare System in West Haven, has been honored by the Vietnam Veterans Assistance Fund for his distinguished service to homeless veterans and veterans with serious mental illness.

Tracy A. Smith-Leiker, Ph.D., postdoctoral fellow in genetics, was honored in November at the Zeneca Pharmaceuticals Life Science Symposium. Dr. Smith-Leiker was a winner in the Burroughs Wellcome Fund Life Science Research Fellowship program, which recognizes the achievements of young scientists, for research on a protein involved in intercellular transport during *Drosophila* oogenesis.

Merle Waxman, associate dean for academic development, received the Association of American Medical College's (AAMC) 1996 Women in Medicine Leadership Award in November. She is the first non-physician to receive the award since it was established four years ago. Ms. Waxman, who also serves as director of the Office for Women in Medicine and ombudsperson, was recognized by the AAMC for her institutional leadership at Yale, and for her role throughout the country as an advocate of women in medicine and science.

Eiji Yanagisawa, M.D., HS '56-59, clinical professor of otolaryngology, was the guest speaker at the 97th annual meeting of the Otorhinolaryngological Society of Japan held last May in Fukuoka. His presentation was titled *Video Documentation in Otorhinolaryngology*.

Lorrin Yee, M.D., associate research scientist in medicine, has joined the Yale Cancer Center's developmental therapeutics team.



Barry L. Zaret, M.D., Robert W. Berliner Professor of Medicine and Diagnostic Radiology, and his son, Elliot, were one of two pairs of Yale father-and-son exhibitors at the Greene Art Gallery & New England Sculptors' Guild in Guilford, Conn., in September. The exhibit benefited the Neighborhood Music School of New Haven.

ACE appointments

Michael B. Bracken, Ph.D., professor of epidemiology and obstetrics and gynecology, was installed as president of the American College of Epidemiology in Baltimore. At the college's recent annual meeting, fellowship status was conferred upon **Robert W. Ryder**, M.D., the John Rodman Paul Professor of Epidemiology and Medicine, and **Susan T. Mayne**, Ph.D., assistant professor of epidemiology. **Audrey F. Saftlas**, Ph.D., associate research scientist in epidemiology, was elected as a member of the college. At the same meeting, **Lisbet Lundsberg**, Ph.D. '95, associate research scientist in epidemiology, was awarded the Student Prize for her doctoral thesis, *Low to Moderate Drinking During Pregnancy and Intra-Uterine Growth Retardation, Low Birth Weight and Preterm Delivery.*

Yale alumnus takes the reins at Tufts

John T. Harrington, M.D. '62, a nephrologist who has served as interim dean of Tufts University School of Medicine for the past year, has been appointed the 15th dean of the 103-year-old medical school by the university's Board of Trustees.

Dr. Harrington, who has been professor of medicine at Tufts since 1979, was chosen after a year-long search. Before being appointed the medical school's dean ad interim in November 1995, he had served as the school's academic dean since 1994.

Tufts President John DiBiaggio called Dr. Harrington "uniquely qualified" to strengthen the university and the medical school's relationship with its teaching hospitals.

He received his undergraduate degree from the College of the Holy Cross in Worcester, Mass., in 1958. A beloved teacher and mentor, Dr. Harrington has been cited for teaching excellence by seven of the medical school's graduating classes and received the school's Distinguished Faculty Award in 1994. The new dean and his wife, Gertrude R. Harrington, live in West Roxbury, Mass., where they raised seven children.

Rocko M. Fasanella, M.D. '43, HS '43-44, chief of ophthalmology at Yale from 1951 to 1961, was honored with a video tribute outlining his contributions to medicine and the American Society of Ophthalmic Plastic and Reconstructive Surgery as part of the society's 27th annual scientific symposium held in October. The purpose of the annual video tribute is to introduce a society colleague who has made major contributions to his profession.

Edith M. Jurka, M.D. '44, was the keynote speaker at an international conference on the application of the arts in psychiatric therapy in August. Her topic was *Pathways Through the Brain Which Lead to Enhancement of Intuition and Creativity*. The group of international therapists, which included six from the United States, met in St. Petersburg, Russia; Vilnius, Lithuania; and Prague, Czech Republic.

continued on next page ▶

Alumni/ae on campus

On May 30, 1996, Robert A. Chase, M.D., the Emile Holman Professor of Surgery at Stanford University, presented surgical grand rounds at Yale. The presentation was done in 3-D and was entitled *Stereoscopy: History and Medical Applications*. Dr. Chase graduated in the Class of '47 at the School of Medicine and completed his specialty training in surgery at the Yale-New Haven Hospital in 1954. After military experiences in reconstructive and plastic surgery, he completed further training in that specialty and returned to Yale in 1957 to initiate its first Division of Plastic and Reconstructive Surgery.

In 1963, Dr. Chase was appointed chairman of the Department of Surgery at Stanford and became the Emile Holman Professor of Surgery. He has spent the rest of his surgical career at Stanford, except for three years during which he served as president and director of the National Board of Medical Examiners. Currently, Dr. Chase serves as a professor in the anatomy division at Stanford. During his Yale visit, he had the opportunity to carry on seminars with housestaff and to visit with medical school faculty members from several departments.

Dr. Chase is currently working on the development of computer-assisted interactive educational programs within the computer laboratories which he helped to develop at Stanford.

Nicholas P.R. Spinelli, M.D. '44

David A. Page, M.D. '56, writes to say that he is semi-retired in Savannah, Ga., "part time at the Georgia Eye Institute and part time on a golf course."

Charles Zigun, M.D. '56, is resuming his long career in private psychiatric practice after a five-year appointment with the Connecticut Department of Mental Health as an attending psychiatrist in the psychiatric intensive care unit.

George E. Vazakas, M.D., HS '61-63, retired in July after 29 years in private practice in urology. Dr. Vazakas will continue teaching University of Massachusetts medical students and surgical residents at Berkshire Medical Center in Pittsfield, Mass.

Joseph F.J. Curi, M.D. '64, of Torrington, Conn., writes with news of his four children. His two oldest daughters, Anne and Sarah, are practicing attorneys in Boston. His younger children, Katheryn and Michael, both made U.S. Rowing's 1996 Collegiate All-America Team. Katheryn is an adolescent counselor and women's novice crew coach at the University of Vermont. Michael is a senior at Yale College and varsity heavyweight crew captain. He was accepted early admission to the University of Connecticut School of Medicine.

Overseas reunion

Members of the Class of 1954 met in Cambridge, England, for an interim reunion and conference in September. Their headquarters were in Lucy Cavendish College, just a short walk from the Backs of Cambridge colleges, where the group is pictured with King's College Chapel (A.D. 1485) in the distance. There was a meeting at the university's hospital and, on one evening, Cambridge general practitioners and hospital specialists joined the group at a buffet supper. The Yale classmates toured the Cambridge colleges and gardens and made day trips to London, Ely and Lavenham, in addition to journeys to Bath, Scotland and Paris. In the picture are, seated left to right: JoAnn Vosskuhler, **Eva Henriksen**, Barbara Olson, **John Rose**, Barbara Pullen, Audrey Nora and Jeanne Davis. Standing, left to right: Phyllis Paule, Esther McMillin, **Lowell Olson**, Elizabeth Lockett, **Donald Davis**, **Jack Vosskuhler**, **Richard Pullen**, Janet Crovatto, **Arthur Crovatto**, **James Nora** and **William Paule**.

M. Harvey Brenner, Ph.D. '67, professor in behavioral sciences and health education at the Johns Hopkins University School of Hygiene and Public Health, was presented the American Public Health Association's Award for Excellence at the annual meeting in November in New York City. Dr. Brenner was recognized for his studies on relationships between economic factors and public health.

Patricia D. Mail, M.P.H. '67, writes to say, "Never give up!" Twenty-nine years after earning her master's degree, she finally—on the third try—received a Ph.D. degree from the University of Maryland. Her research on *American Indians and Alcohol* began at Yale and was her dissertation topic.

Sidney C. Smith Jr., M.D. '67, professor of medicine, chief of cardiology and director of the Academic Center for Cardiovascular Disease at the University of North Carolina at Chapel Hill, was guest speaker at a special American Heart Association (AHA) president's reception celebrating research, held at the Yale School of Medicine in October. Dr. Smith is past president of the AHA's National Center.

Harry S. Holcomb III, M.D. '68, orthopaedic surgeon at Eastern Shore Physicians & Surgeons Inc. of Nassawadox, Va., addressed the 16th annual Symposium on Southern New England Maritime History in November. His talk chronicled

Quartermark

A special report from *Yale Medicine* and the Yale Cancer Center

"We've come farther than we ever dreamed"

"In 1971, cancer was a black box. We could examine it, turn it over in our hands, weigh it, but could not look inside. Today the lid of the box has been pried open, and we are gazing at an incredibly complex and beautiful piece of machinery, a facsimile if you will of a normal cell. The cancer cell has gone from a black box to a blueprint."

Vincent T. DeVita Jr., MD
Director
Yale Cancer Center

25

years of progress since passage of the National Cancer Act on Dec. 23, 1971

Twenty-five years ago, President Nixon signed a hard-fought yet momentous piece of legislation, the National Cancer Act. The new law launched a massive campaign of basic scientific research to better understand cancer, and it promoted the wide application of those discoveries to help patients. With new funding and independence, the National Cancer Institute (NCI) was expected to work vigorously and efficiently to reduce the suffering caused by a disease then considered to be fatal in most cases.

Has the War on Cancer been successful? A quarter century later, the profound impact of the National Cancer Act is easily measured in human terms. More than 10 million survivors owe their lives to cancer research, and, among children, the results have been truly remarkable. Most cases of childhood leukemia are now curable and death rates for children's cancers have declined by more than 62 percent since 1950, according to the NCI.

Dramatic proof of the measure's success came last November with a study in the journal *Cancer*. For the first time since record-keeping began in 1901, overall cancer mortality in the United States had dropped by 2.6 percent. This decline, observed during the years 1991 to 1995, is likely to continue well beyond the year 2000.

"We have come farther than the people who framed the act ever dreamed," says Yale Cancer Center Director Vincent T. DeVita Jr., MD, who headed the NCI for eight years under Presidents Carter and Reagan. The next 25 years, Dr. DeVita says, promise a more fundamental shift: the beginning of the end of cancer.

While mortality rates for certain cancers have shown sharp declines in the past, appreciation of those numbers often was overshadowed by the rising cancer death toll overall. But now the field has shifted, says Dr. DeVita. "I think these declines are going to be steady and they will continue to deepen. You can attribute this reduction in mortality, and the remarkable molecular revolution we are now experiencing, to the foresight of those involved with framing the National Cancer Act."

Since its passage Dec. 23, 1971, the act has provided more than $30 billion for cancer research and treatment. At the time of passage, annual governmental funding for cancer was $176 million, a budget that today has expanded to approximately $2 billion. Says Dr. DeVita, "It is probably one of the best investments ever made by the U.S. government."

Dr. DeVita joined the NCI in 1966, after his residency at Yale-New Haven Hospital. Six years later, he won the Albert and Mary Lasker Prize for Medicine, for development of the four-drug combination known as MOPP. This chemotherapy regimen raised the cure rate for patients with advanced Hodgkins disease from near zero to 65 percent.

(continued on page 2)

Present at the creation: The evolution of modern cancer research and treatment at Yale

1943

Yale gives birth to the field of chemotherapy with the work of Louis S. Goodman, MD, Alfred Gilman, MD, and Gustaf E. Lindskog, MD, when they use nitrogen mustard in the treatment of a patient with lymphosarcoma.

1953–1967

Arnold D. Welch, MD, PhD, chairman of pharmacology, and Paul Beeson, MD, chairman of the department of medicine, help lay the groundwork for the field of medical oncology in the United States.

1960s

Drs. Welch and Beeson establish the first medical oncology department at a university under Dr. Paul Calabresi, MD, PhD.

Yale forms statewide cancer network

The Yale Oncology Network expands on a tradition begun in 1941 with the establishment of the Connecticut Tumor Registry, the oldest defined-population cancer database.

New treatments being pioneered at the Yale Cancer Center are now available to patients throughout Connecticut at medical centers participating in the newly formed Yale Oncology Network. The network is designed to combine the expertise of the Yale Cancer Center with that of community oncologists in all corners of the state.

Danbury Hospital and Bridgeport Hospital are the first two affiliate cancer centers in the network. In addition, official partnerships have been formed with the Norwich Cancer Center and two medical practices, Hematology, Oncology, P.C. in Stamford and Northwestern Connecticut Oncology/Hematology Associates. Under the arrangement, many of the Yale Cancer Center's clinical research trials are open to patients of these facilities and practices, allowing them to undergo treatment in a familiar setting and under the direction of their own physicians.

Yale Cancer Center Director Vincent T. DeVita Jr., MD, envisions an eventual network of about eight hospitals. "By coupling the powerful research engine at Yale with the sphere of influence of community affiliates," he says, "advances in cancer care will be more readily available to patients all across Connecticut."

"We've come farther than we ever dreamed"

(cont. from page 1)

Dr. DeVita with Dr. Jose Costa, deputy director of Yale Cancer Center. Dr. Costa directs the Critical Technologies Shared Resource, which is designed to bridge basic research knowledge with clinical medicine. "Through this program, patients will benefit from the most advanced cancer diagnostics," Dr. Costa says.

Dr. DeVita became director of the National Cancer Institute in 1980, a position he held until 1988. Director of Yale Cancer Center since 1993, he has assembled a team and organized programs to integrate the world-class basic research of Yale with advanced clinical treatments to benefit cancer patients in Connecticut and around the world.

Much of the significance of the National Cancer Act arises from one unique feature: For the first time, there was a mandate to support the application of research, which expanded the NIH's previous focus on basic research. In order to speed transfer of cancer research to the treatment of cancer patients, the National Cancer Act established comprehensive cancer centers (there are 26 today) to perform basic research and transfer that research to the clinic. The Yale Cancer Center, founded in 1974, was one of the first of these "matrix" centers established at major medical schools in the United States.

Many of the advances in cancer care have come directly from the ability to conduct clinical trials, which were provided for in the act. And the results of that funding can be seen in the successful treatment of many types of cancers, including breast, colon, leukemias and Hodgkins disease. Many treatments now are less radical and less toxic and have fewer side effects.

"The morbidity of the disease has changed radically because of clinical trials," says Dr. DeVita, "and now we are also seeing the decrease in mortality."

Researchers are gaining a greater understanding of the differences in cellular mechanisms, and the actual genes that differentiate cancer cells from normal cells have become specific targets of treatments. In the future, these treatments will make cancer the most curable of chronic diseases, thanks in large part to the molecular biology revolution that was virtually funded by the National Cancer Act.

"The tools now available for us to analyze the cancer cell machinery are breathtaking," says Dr. DeVita. "Seeing cancer go from incurable to curable has been a great thrill."

1974

Yale Comprehensive Cancer Center is established by the National Cancer Institute under the provisions of the 1971 National Cancer Act.

1975

The Cancer Information Service is established by the NCI at Yale under the leadership of Marion Morra, SCD, who shapes the international cancer information field.

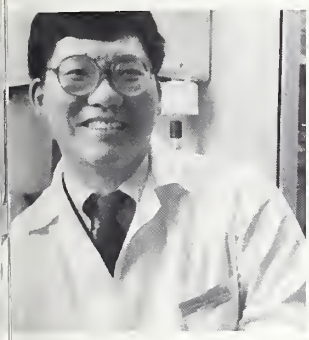
1970s–1980s

Yale continues as an international leader in basic cancer research and drug development under the leadership of Directors Joseph R. Bertino, MD, Jack W. Cole, MD, and Alan C. Sartorelli, PhD.

1986

Yale recei… research … becomes … preventio…

Edward Chu: A marriage of science and nature



Edward Chu, MD, arrived at Yale in 1996 after working nearly 10 years at the National Cancer Institute, where his background in biochemical pharmacology led him to investigate how cancer drugs work and how cancer cells become resistant to certain medications.

Dr. Chu's research focuses on the anti-metabolites and fluoropyrimidines, major drugs used to treat colon and breast cancer. In particular, he applies molecular approaches to better understand why cancer cells become resistant to these agents.

It may come as a surprise to some that Dr. Chu is interested in the development of drugs with a natural and herbal base. But that is one component of his research. "Many of the anti-cancer agents now in use originally developed from natural products," says Dr. Chu. Camptothecins, the most recent class of compounds to have demonstrated impressive clinical activity, come from the bark and wood of a tree found in China. A number of herbal medicines have recently been shown to have interesting anti-cancer properties. For example, the active ingredient in Yun zhi, derived from the willow wood tree in China, recently was identified as a small protein molecule that appears to have striking anti-cancer activity against a number of malignancies.

"It is an exciting possibility," says Dr. Chu, "that these agents may work, in part, by causing the cancer cells to differentiate into a state that is no longer malignant. It is also possible that they help to stimulate the body's own immune system."

Susan Mayne: Prevention and public health

For scientists pursuing state-of-the-art research in cancer prevention and control, Connecticut provides one of the best population laboratories anywhere in the world: It has a statewide cancer registry that has been in operation since 1935, a relatively large population concentrated in a small geographic region, and a wealth of resources at the Yale Cancer Center.

This synergy attracted Susan T. Mayne, PhD, to Yale to broaden her research in the role diet may play in cancer causation. As assistant professor of epidemiology and the Cancer Center's associate director for prevention, Dr. Mayne works with colleagues to isolate and assess the risk factors associated with cancer. A new tool, the Rapid Case Ascertainment Shared Resource, allows Yale Cancer Center investigators to identify cancer patients across Connecticut within a few weeks of their initial diagnosis. Following these patients from an early date provides valuable data to better understand what causes various cancers and how they may be prevented.

For example, little is known about the role of environmental factors in breast cancer causation. Dr. Mayne is working with lead investigator Tongzhang Zheng, ScD, assistant professor of epidemiology, to test the hypothesis that women with breast cancer have higher-than-normal levels of organochlorine compounds in their body fat. Drs. Zheng and Mayne, along with epidemiologist Robert Dubrow, MD, PhD, and breast cancer surgeon Barbara Ward, MD, are combining chemical analyses of women's fat tissue with in-depth patient interviews focused on diet and lifestyle.

For some cancers, the role of dietary patterns is unclear, suggesting a need for observational studies. One such project led by Harvey Risch, PhD, associate professor of epidemiology, is aimed at investigating the role of diet and other factors in a cancer that is rapidly increasing, adenocarcinoma of the esophagus. "These studies are needed to identify low- and high-risk behaviors," says Dr. Mayne, "to set the stage for future prevention efforts."

...r prevention ...ar from NCI, and ...by two cancer ...in the U.S.

1993

Vincent T. DeVita Jr., MD, pioneer clinical oncologist and director of the National Cancer Institute from 1980 to 1988, becomes the fourth director of Yale Cancer Center.

1995

The Yale Oncology Network is formed as a framework for statewide clinical trials conducted at Yale and medical centers around Connecticut.

1994–1997

Dr. DeVita and Jose Costa, MD, deputy director of Yale Cancer Center, establish a new program structure at Yale Cancer Center strongly linking basic and clinical research.

Yale Cancer Center

The Yale Cancer Center is one of 26 comprehensive cancer centers designated by the National Cancer Institute. If you would like to support its programs, please write to **Yale Cancer Center, Yale University School of Medicine, PO Box 208028, New Haven, CT 06520-8028** or telephone 203-785-2144.

Quartermark is a special joint publication of *Yale Medicine*, the magazine of the Yale University School of Medicine, and the Yale Cancer Center. Contributors: Michael Fitzsousa, Judith Winslow, Ilene Shub Lefland, Pat Janowski. Design: Cheney & Company

Albert Deisseroth: Cracking cancer's genetic code

Each of us carries within our cells fragments of DNA that are less than perfect. Some of these errors in programming will result in cancer.

What if we could correct those coded mistakes before a malignancy grows large enough to threaten life, or before it occurs? Perhaps even before birth itself?

That is the long-term goal of Albert B. Deisseroth, MD, PhD, and his team of researchers and clinicians, who are pursuing promising leads in the burgeoning field of gene therapy. The development of a single treatment that lasts a lifetime may one day alter the field of cancer therapy at its core.

The current gene therapy program at Yale is directed toward removing some of the obstacles to that long-term vision. Clinical trials will soon be launched for patients with breast, ovarian and prostate cancer, to test genetic interventions designed to improve chemotherapy and radiation treatments.

"Gene therapy," says Dr. Deisseroth, "will lead to drug discovery efforts and to a whole new generation of medications. The way human diseases are treated will dramatically change. It also may lead someday to better cancer prevention, by enabling clinicians to identify and repair gene defects before disease develops."

Frank Hsu: A vaccine against cancer

The most common objective of a vaccine is prevention: getting a flu shot is supposed to protect against contracting the disease. Oncologist Frank Hsu, MD, is engaged in developing quite a different type of vaccine to fight cancer.

Unlike standard vaccines, cancer vaccines are meant to be therapeutic. They are designed not to prevent cancer, but to help train the immune system to attack and destroy existing cancerous cells. At Stanford University, Dr. Hsu worked to develop and test this approach by incorporating pieces of cancerous cells into vaccines formulated to stimulate the immune system. Preliminary results from this work have shown promise against non-Hodgkins lymphomas.

At Yale, Dr. Hsu is working to refine and improve the vaccine techniques. Most of his work is focused on dendritic cells, which provoke a strong immune response in the body. In a clinical trial now under way, Dr. Hsu harvests blood cells from a patient, then isolates and purifies dendritic cell precursors from the blood.

These precursors are mixed in culture with tumor proteins from the same patient. After a few days in culture, the dendritic cells mature and incorporate the tumor proteins. By returning these cells back to the patient these modified dendritic cells can then stimulate response against the cancerous tumor.

the origin and operational expansion of the Benedict-Manson Transportation Co. of New Haven. Dr. Holcomb is a direct descendant of the Manson Family.

Charles A. Dinarello, M.D. '69, HS '69-75, professor of medicine at the University of Colorado School of Medicine in Denver, received the Ludwig Heilmeyer Gold Medal for his contributions to progress in molecular biology for medicine. Until 1996, he was professor of medicine and pediatrics at Tufts University School of Medicine, where he established the Sheldon M. Wolff Professorship. Dr. Dinarello is past-vice president of the American Society of Clinical Investigation and president of the International Cytokine Society. In 1993, he received the Ernst Jung Prize in Medicine and donated the $125,000 award to universities in the U.S. and Israel.

70s

Morris B. Mellion, M.D. '70, has been named senior vice president of health care policy and chief medical officer at BlueCross BlueShield of Nebraska. Dr. Mellion is also clinical associate professor of family practice and orthopaedic surgery (sports medicine) at the University of Nebraska Medical Center, and serves as team physician for men's and women's sports and as adjunct professor in the School of Health, Physical Education and Recreation at the University of Nebraska at Omaha.

Stephan Ariyan, M.D., HS '70-76, clinical professor of surgery (plastic) at Yale, was selected as the 1996 National Visiting Professor for the Society of Head and Neck Surgeons. As national visiting professor, Dr. Ariyan has lectured at the universities of Toronto, Miami, Tennessee and Louisville. He previously served as the society's president from 1992 to 1993.

Thomas W. Chapman, M.P.H. '71, chief executive officer of the George Washington University Hospital and senior vice president for network development of the George Washington Medical Center, has been presented the 1996 Distinguished Alumni Award by the Association of Yale Alumni in Public Health. The ceremony was part of festivities at the Yale Club of New York City in November at a dinner, held during the American Public Health Association annual meeting.

Mr. Chapman also serves as a senior health advisor to the Clinton administration on health care reform. He is currently the national program officer for Opening Doors, a program to reduce sociocultural barriers to health care sponsored by the Robert Wood Johnson Foundation and the Henry J. Kaiser Family Foundation. He also received the CEO of the Year Award from the American Hospital Association in 1989.

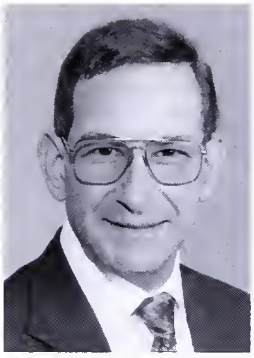
Harvey Fernbach, M.D. '71, M.P.H. '71, of Washington, D.C., has a private psychiatry practice in Maryland and is a consultant for the American Psychiatric Association's Council on Economic Affairs. Dr. Fernbach is also on the Medical and Chirurgical Faculty of Maryland and a member of the Physicians for National Health Program, which is involved in a national effort to establish a single-payer health care system.

Michael A. Kaufman, M.D. '73, J.D., has been appointed medical officer and senior vice president of

BlueCross of California, the California operating subsidiary of WellPoint Health Networks Inc.

Harry S. Romanowitz, M.D. '73, chairman of the department of pediatrics at Stamford (Conn.) Hospital, has been instrumental in founding the new Roslyn and Leslie Goldstein Children's Health Center, an outpatient primary and specialty care pediatric clinic. Dr. Romanowitz was the keynote speaker at the center's dedication.

Stephen I. Kramer, M.D., HS '78-83, was promoted to associate professor of psychiatry and behavioral medicine at Bowman Gray School of Medicine in Winston-Salem, N.C., in September. Dr. Kramer has been an assistant professor of psychiatry and behavioral medicine at Bowman since 1989.



Shannon C. Kenney, M.D. '79, HS '79-83, associate professor of medicine, was one of four recipients of the 1996 Philip and Ruth Hettleman Prizes for Artistic and Scholarly Achievement by Young Faculty at the University of North Carolina at Chapel Hill. Dr. Kenney is known worldwide among Epstein-Barr virus researchers as a leader in the field of regulation of viral gene expression.

80s

Thomas D. Fogel, M.D., HS '82-85, vice president of Coastal Radiation Oncology Medical Group in California, has been elected secretary of the 1996-97 Board of Directors of the American Cancer Society's California Division at the 50th annual meeting held at the Fairmont Hotel in San Francisco. Dr. Fogel

Thomas D. Fogel, M.D.

also received the division's annual Quality of Life Award for starting a prostate cancer support group for patients and families.

Kristine M. Napier, M.P.H. '84, nutritional consultant and medical writer, was presented a William Harvey Award for excellence in magazine writing on the subject of cholesterol at the 21st annual Southeastern Conference on Cardiovascular Health, hosted by the North Carolina State Division of Health Promotion. The award is sponsored by American Medical Writers Association, the National Heart, Lung and Blood Institute of the National Institutes of Health; and Bristol-Myers Squibb Co. Ms. Napier previously received a William Harvey Award in 1994.

Larry Amsel, M.D. '88, of New York City, has been awarded a $400,000 grant from the National Institutes of Health's Human Genome Project to produce an educational video for primary care clinicians on caring for and counseling patients facing genetic tests and struggling with questions of testing for genetic risks. The project is in collaboration with the Hastings Center for Bioethics.

Elan D. Louis, M.D. '89, HS '89-90, and **Vinita Sehgal**, M.D. '90, both assistant professors at the College of Physicians and Surgeons, Columbia University, announce the birth of their son, Devin Natan, in August.

90s

Leila A. Mankarious, M.D. '90, has joined the pediatric ear, nose and throat service at the Harvard Medical School, Massachusetts Eye and Ear Infirmary, in Boston.

Margaret R. Stevens O'Neill, M.D. '91, married Michael E. O'Neill, J.D. '90, in June 1991, and moved to Baltimore, where she spent two years in internal medicine and three in dermatology at Johns Hopkins. Dr. Stevens O'Neill has now joined a private practice near Washington, D.C., while her husband is clerking for a Supreme Court justice. She would love to see her classmates if they are in the area.

Deborah A. Dillon, M.D. '92, a fellow in molecular pathology, was selected to received a $25,000 fellowship as part of the College of American Pathologists Foundation 1996-1997 Scholars Award Program. Dr. Dillon's research project will focus on the detection of tumor DNA in the blood of patients with tumors of the colon and pancreas.

Kathryn M. Ryder, M.D. '92, has been appointed assistant professor of medicine at the University of Nevada School of Medicine. Dr. Ryder practices general internal medicine and is a diplomate of the American Board of Internal Medicine.

Bruce G. Freeman, M.D., HS '93-96, has joined **Edward H. Gleich**, M.D., HS '75-77, at Shoreline Pediatrics and Adolescent Medicine, which has offices in Madison and Clinton, Conn. Dr. Freeman is engaged to Tina M. Roman, M.D., a resident in pediatrics at Yale-New Haven Hospital.

ALUMNI *reunion* WEEKEND

PRELIMINARY SCHEDULE

FRIDAY, JUNE 6, 1997

8:00 a.m. to 7:00 p.m.
MEDICAL SCHOOL ALUMNI/AE REGISTRATION
Sterling Hall of Medicine, Rotunda

1:00 to 2:30 p.m.
SCHOOL OF MEDICINE ALUMNI FUND
CLASS AGENTS AND REUNION GIFT CHAIRS LUNCHEON
Sterling Hall of Medicine, Steiner Room

1:00 to 2:45 p.m.
YALE SCHOOL OF MEDICINE
CLASS REUNION PROGRAM
Hope Building

3:00 to 4:00 p.m.
ASSOCIATION OF YALE ALUMNI IN MEDICINE
Executive Committee Meeting
Sterling Hall of Medicine, Beaumont Room

4:15 p.m.
WELCOME TO REUNION 1997
Greetings and Remarks
Lycurgus M. Davey, M.D. '43 March
President, Association of Yale Alumni in Medicine
Gerard N. Burrow, M.D. '58
Dean, School of Medicine

YALE SCHOOL OF MEDICINE SPECIAL PRESENTATION
Albert B. Deisseroth, M.D., Ph.D.,
Ensign Professor of Medicine
Chief, Section of Medical Oncology
Hope Building, Room 110

5:15 p.m.
DEAN'S RECEPTION
Historical Library
333 Cedar Street
Open to all alumni/ae, faculty, students and guests

6:15 p.m.
BARBECUE/BUFFET
Edward S. Harkness Hall
367 Cedar Street
Open to all alumni/ae, faculty, students and guests
Pre-paid advance registration required

SATURDAY, JUNE 7, 1997

7:30 a.m. to 7:00 p.m.
MEDICAL ALUMNI/AE REGISTRATION
Sterling Hall of Medicine, Rotunda

7:30 to 10:00 a.m.
CONTINENTAL BREAKFAST
Sterling Hall of Medicine, Beaumont Room

9:45 to 11:00 a.m.
FACULTY SEMINAR
New Directions in the Treatment of Cancer
Introduction: Albert B. Deisseroth, M.D., Ph.D.
Participants: Edward Chu, M.D., Ph.D.,
Frank Hsu, M.D., Ph.D., and Barbara Burtness, M.D.
Hope Building, Room 110

11:15 a.m.
ANNUAL MEETING OF THE ASSOCIATION OF YALE ALUMNI IN MEDICINE
Welcome and Remarks
Lycurgus M. Davey, M.D. '43 March,
President of the Association
Greetings
Richard C. Levin
President, Yale University
State of the School Address
Gerard N. Burrow, M.D. '58
Dean, School of Medicine
Alumni in Medicine Distinguished Service Award Presentation
Brady Auditorium, 310 Cedar Street

12:15 p.m.
SHERRY

12:30 p.m.
BUFFET LUNCHEON
Edward S. Harkness Hall, 367 Cedar Street

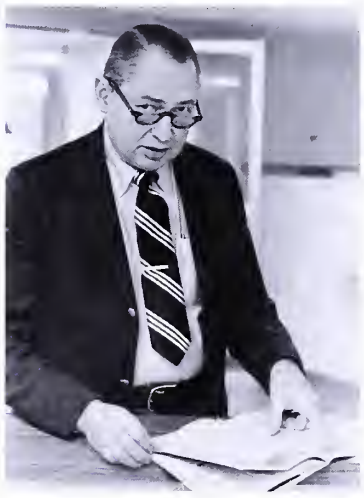
2:45 p.m.
GUIDED TOURS
Yale Center for British Art *3:00 to 4:00 p.m.*
Historic Sections of New Haven *3:00 to 4:15 p.m.*
Yale-New Haven Children's Hospital
3:00 to 4:00 p.m.

For additional information, call 203-785-4674

Ralph D. Alley

Ralph D. Alley, M.D., died Sept. 7 at his home in Loudonville, N.Y. He was 78.

Born in India, the son of missionary parents, Dr. Alley spent his first 15 years there and attended the Woodstock School at the base of the Himalayas. He graduated from the University of Virginia in 1939 and from Yale School of Medicine in 1943.



Dr. Alley served in the U.S. Navy as a medical officer aboard the LST 292 during the Normandy invasion of Omaha Beach on D-Day, June 6, 1944. He completed residencies in general and cardiothoracic surgery at Yale-New Haven Hospital and, in 1952, moved to Albany. In 1954, he was the first surgeon to repair a traumatic aneurysm of the aortic arch using external shunts developed in his surgical laboratory, and he became internationally known as a pioneer in cardiothoracic surgery. Dr. Alley, along with David S. Sheridan of Argyle, N.Y., invented numerous catheters and medical devices still widely used today.

From 1973 to 1983, he was the head of the division of cardiothoracic surgery at Albany Medical College and visiting professor on the faculty of the University of Virginia. Dr. Alley was a founding member of the Society of Thoracic Surgeons and served as president in 1976. He also served as regent to the American College of Surgeons for a nine-year period and was a member of the American Board of Thoracic Surgery.

Louise Bates Ames

Louise Bates Ames, born in Portland, Maine, died from thyroid cancer on Oct. 31 at the home of her granddaughter in Cincinnati. She was 88.

Dr. Ames received her B.A. and M.A. degrees from the University of Maine and her Ph.D. degree from Yale University in 1936. She was on the staff of the Yale Clinic of Child Development from 1933 to 1948 as a personal research assistant to Dr. Arnold Gesell. In 1950, she and two other collaborators of Dr. Gesell—Dr. Frances Ilg and Dr. Janet Rodell—established the Gesell Institute in Child Development in New Haven, which later became the Gesell Institute of Human Development.

Dr. Ames was one of the first researchers to track the developmental phases of childhood. From 1976 to 1985 she wrote a series of guides, beginning with *Your One Year Old,* that helped parents feel that they were on target even while their children seemed in turmoil.

Dr. Ames wrote 25 books, many scientific articles and a syndicated newspaper column. She appeared on the *Phil Donahue* and *Oprah Winfrey* shows and, for a time, her own weekly television program. From 1944 to 1950, she was curator of Yale Films of Child Development. In 1991 she became a lecturer at the Yale Child Study Center and since 1993, an assistant professor emeritus at Yale.

C. Elton Cahow

C. Elton Cahow, M.D., died Jan. 2 at his home in Branford, Conn. He was 65.

Dr. Cahow was born in Fort Pierce, Fla. He graduated in 1952 from Davidson College in North Carolina with a bachelor's degree in chemistry and received a medical degree from the Cornell University School of Medicine in 1956. He served internships in both surgery and medicine at New York Hospital-Cornell Medical Center and completed his residency in general and cardiothoracic surgery under the late Frank Glenn, M.D., at the New York Hospital.

In 1963, Dr. Cahow joined the faculty at Yale as an instructor in the Department of Surgery. During his 33 years at Yale, he served from 1964 to 1970 as assistant professor, from 1970 to 1977 as associate professor and from 1977 to 1987 as professor of surgery. In 1987, Dr. Cahow was named the William H. Carmalt Professor of Surgery and was also appointed vice chairman of the department and chief of the section of general surgery at the medical school and at Yale-New Haven Hospital. He was also program director of surgical residency at the hospital.

Dr. Cahow's wife, Barbara Kinder Cahow, M.D., is chief of surgery at the VA Connecticut Healtheare System in West Haven. In December, Dr. Kinder was

named the William H. Carmalt Professor of Surgery.

Although his clinical interests spanned the entire field of general surgery, he developed particular interest in the areas of liver, pancreatic and biliary tract surgery. In recent years, Dr. Cahow embraced the techniques of laparoscopic surgery and became an international leader in the performance, critical evaluation and teaching of these techniques. He was a fellow of the American College of Surgeons and belonged to a multitude of professional associations. He was past president of the Connecticut Society of the American Board of Surgeons.

Memorial contributions may be made to the C. Elton Cahow Endowment Fund, c/o Larry Jerome, Senior Development Officer for Medical Development, 100 Church St. South, P.O. Box 7611, New Haven, CT 06519. A memorial service will be held May 23 in Battell Chapel.

Louis A. Cohen

Louis A. Cohen, Ph.D., of West Bethesda, Md., died after a heart attack Sept. 12 at a hospital in Edinburgh, Scotland, while attending a conference. He was 70.

Dr. Cohen, a Boston native, was a 1949 organic chemistry graduate of Northeastern University and received a doctorate in organic and biological chemistry from Massachusetts Institute of Technology. He was on the biochemistry faculty at Yale medical school from 1952 to 1954.

In 1955, he moved to Bethesda, Md., while working as an organic chemist for the National Institutes of Health (NIH). From 1957 to 1960, he was an adjunct professor of chemistry at Howard University. Since 1966, Dr. Cohen had been director of the NIH's Graduate School of the Foundation for Advanced Education in the Sciences.

Donald S. Dock

Donald Stone Dock, M.D., died Dec. 3 at Connecticut Hospice. He was 69.

Born in New York City, Dr. Dock was a graduate of Princeton University and the Johns Hopkins University School of Medicine. He had post-graduate training at Yale University and Harvard. Dr. Dock lived in Madison, Conn., for 26 years before moving to Branford in 1986.

He was a New Haven cardiologist for 36 years, most recently with the Connecticut Heart Group. Dr. Dock was chief of medicine at the Hospital of Saint Raphael from 1963 to 1981, except for the years 1972 to 1974, when he was chief of medicine at the Atomic Bomb Casualty Commission in Hiroshima and Nagasaki, Japan. More recently, Dr. Dock was director of the coronary care unit, director of the Take Heart cardiac rehabilitation program and director of electrocardiography and Holter monitors at St. Raphael's. He was a clinical professor of medicine at Yale and an associate fellow at Berkeley College. Dr. Dock was awarded the Dr. Oscar Roth Award in 1996 by Saint Raphael's for his many years of dedication and service to his patients and to the hospital.

William R. Goff

William Richard Goff, Ph.D., of Branford, Conn., died Sept. 10 at Connecticut Hospice. He was 66.

Dr. Goff was born in Providence, R.I., and received a doctorate from the University of Virginia. He was professor emeritus of neurology and psychology at Yale School of Medicine and former director of the neuro-psychology laboratory at the VA Connecticut Healthcare System in West Haven. Dr. Goff helped design and build the first analog computer to study electrical activity of the human brain.

At the time of his retirement in 1986, he was professor of neurology at Yale and a research career scientist at the VA.

Frederick R. Hine

Frederick R. Hine, M.D., died Sept. 12 at Duke University Medical Center in Durham, N.C. He was 70.

Born in Cincinnati, Ohio, Dr. Hine received a bachelor's degree from Yale in 1946 and graduated from the medical school in 1949. He was a psychiatric intern at Charity Hospital in New Orleans and a resident at Tulane University School of Medicine, where he was later a member of the faculty. In 1953, he became affiliated with the Southeast Louisiana Hospital in Mandeville.

In 1959, Dr. Hine joined the staff at Duke University and began a long tenure, beginning as an assistant professor of psychiatry, becoming an associate professor in 1963 and full professor in 1971. During his 37 years at Duke, he was chairman of the medical school training committee for the Department of Psychiatry from 1962 to 1974, and director of medical student education in psychiatry until the time of his death. He is the only three-time recipient of Duke University medical school's Honored Teacher Award.

J. Louis Jack

J. Louis Jack, M.D., died Nov. 19 at his home in North Haven, Conn. He was 103.

Dr. Jack, born in New York City, attended Brown University and graduated in 1915 from Rhode Island State College in Kingston, now known as the University of Rhode Island. He taught science and coached at East Providence High School. From 1917 to 1919, Dr. Jack served in France as a member of the Second Field Artillery. In 1923, he graduated from Yale School of Medicine and interned at Bellevue and Staten Island hospitals in New York. He was a surgeon at the former Grace-New Haven Hospital, retiring in 1950, and was also in private practice with his brother, the late Gabriel J. Jack, M.D.

In October 1948, his painting *Young Men In Green* was featured in *TIME* magazine. In 1992, on his 100th birthday, he was honored with a Doctor of Humane Letters degree by the University of Rhode Island and was also the first recipient of its Distinguished Alumni Award in 1990.

Warren R. Johnson

Warren R. Johnson, M.D., died Aug. 28 of cancer at his home in Fairway Falls, Pike Creek, Del. He was 65.

Dr. Johnson graduated in 1953 from Colby College in Waterville, Maine, and in 1957 from the Yale School of Medicine. He completed his pediatric internship and residency at Delaware Hospital, Wilmington Medical Center, and was a fellow in pediatrics at Johns Hopkins Hospital in Baltimore from 1960 to 1961. Dr. Johnson served as secretary of the Delaware Hospital medical staff from 1963 to 1970, senior attending physician in the department of pediatrics from 1970 to 1973, and chairman of the department of pediatrics credentials committee from 1973 to 1980. Since then, he had been in private practice and was director of medical education for pediatrics at the Medical Center of Delaware. Dr. Johnson was also active in the Health Care of the Homeless Program at Henrietta Johnson Clinic.

John W. King

John Weaver King, M.D, Ph.D., died Oct. 9 at his Cleveland Heights, Ohio, home. He was 80.

Born in Bakerton, Pa., Dr. King earned a master's degree in dairy science from Pennsylvania State University and a doctorate in bacte-

riology from Yale in 1941 before completing his medical degree at Yale in 1944. After an internship in Philadelphia, he taught at the Vermont Medical School in Burlington for four years. In 1950, Dr. King joined the Cleveland Clinic, where his devotion to upgrading the laboratories led to the naming of the medical technology department after him following his retirement. He headed the hospital medical laboratory for the Cleveland Clinic Foundation and, in 1980, retired as director of the foundation's blood banks.

Dr. King served in the Army in active duty in San Antonio, Texas, during the 1950s and as a reservist in the 1970s. He was commanding officer of the 256th General Hospital in Parma, Texas, from 1973 until he retired in 1975.

Leonard Parente

Leonard Parente, M.D., died Nov. 9 in the Hospital of St. Raphael in New Haven.

Dr. Parente was born in New Haven and received a bachelor's degree from Yale in 1927. After earning his medical degree from Emory University, he completed an internship and residency in pediatrics, and entered private practice.

In 1942, Dr. Parente earned an M.P.H. degree from Yale. He was a lecturer in public health at the medical school and director of health for the town of Hamden, Conn., for 28 years. Dr. Parente was the first medical director of the Connecticut Department of Welfare. He was president of the Connecticut Public Health Association and a fellow of the American Public Health Association.

Earl J. Rhoades

Earl J. Rhoades, M.D., died Oct. 8 in the Dover Rehabilitation and Living Center, Dover, N.H. He was 83.

Dr. Rhoades was born in West Pittston, Pa., and attended Lafayette and Wilkes colleges. He received an M.D. degree from Yale in 1943. After an internship at Henry Ford Hospital, he received further orthopaedic training at Northwestern University, the Bronx Veterans Administration Hospital and the Hospital for Special Surgery in New York City. He served as a captain in the Army's 375th Orthopaedic Detachment from 1944 to 1947 and was chief of orthopaedics at Tripler Army Medical Center in Honolulu at the time of discharge.

Dr. Rhoades was a specialist in orthopaedic surgery in New Haven for 32 years, attending at Yale-New Haven and St. Raphael's hospitals. He served as an associate attending at Newington Children's Hospital. Dr. Rhoades was also on the clinical faculty at Yale School of Medicine, a member of the Yale Orthopaedic Association and a past editor of the *Yale Journal of Biology and Medicine*. He lived in Woodbridge and Orange for many years before moving to New Durham, N.H., in 1994.

Murray Z. Rosenberg

Murray Z. Rosenberg, M.D., died Sept. 1 at the home of his son in Asheville, N.C. He was 71.

Dr. Rosenberg formerly lived in Storrs, Conn., and had a home in Longboat Key, Fla. He graduated in 1946 from Harvard University and in 1949 from Yale School of Medicine. For 30 years until his retirement in 1986, Dr. Rosenberg served as chief of pathology and as director of the clinical laboratory at Windham Community Memorial Hospital in Willimantic, Conn. He also had clinical appointments at Yale University and the University of Connecticut medical schools.

Dr. Rosenberg served in the U.S. Navy during World War II and served as an Army physician at the 406th Laboratory in Tokyo from 1951 to 1953.

IN MEMORIAM

Ralph D. Alley, M.D. '43
September 7, 1996

George A. Carden Jr., M.D. '35
August 10, 1996

Raymond S. Duff, M.D. '52, M.P.H. '59
June 21, 1996

Eugene Field, M.D., HS '36
May 1995

Richard L. Frank, M.D. '31
February 10, 1996

Frederick R. Hine, M.D. '49
September 12, 1996

Warren R. Johnson, M.D. '57
August 28, 1996

Ferdinand G. Kojis, M.D. '28
April 1991

Margaret J. Lindsay, M.P.H. '68
July 6, 1996

Leonard Parente, M.D., M.P.H. '42
November 9, 1996

Earl J. Rhoades, M.D. '43
October 8, 1996

Murray Z. Rosenberg, M.D. '49
September 1, 1996

William F. Stephenson, M.D. '52
August 23, 1996

David C. Sundmacker, M.P.H. '75
October 11, 1996

Constance B. Thomas, M.P.H. '53
August 28, 1996

Sarah A. Schleck

Sarah Ann Schleck, Ph.D., died Nov. 16 at Duke University Medical Hospital. She was 45.

Born in Morristown, N.J., Dr. Schleck lived in Madison, Conn., from 1979 until moving to North Carolina in 1992. She received a B.A. degree from Mount Holyoke College in South Hadley, Mass., in 1973. She received a master's degree in 1985 and a Ph.D. degree in 1991, both from Yale School of Medicine's Department of Epidemiology and Public Health. Dr. Schleck worked as an associate in research and a laboratory supervisor at Yale. At the time of her death, she was the operating room scheduling coordinator for heart surgery at Duke University Medical Hospital.

Dr. Schleck was past president of the Yale Epidemiology and Public Health Doctoral Student Organization and had served on a Yale Graduate Professional Student Senate committee.

Constance B. Thomas

Constance Bancroft Thomas, M.N., M.P.H., died Aug. 28 at her home in Frederick, Md. She was 79.

Mrs. Thomas, born in New Haven, earned two master's degrees from Yale University, one in nursing in 1944 and one in public health in 1953. She received her bachelor's degree in music from the University of Pennsylvania. Before her marriage, Mrs. Thomas worked as a public health educator for the Denver Tuberculosis Society and as a head nurse at Yale-New Haven Hospital and later at the State University of New York at Geneseo.

Edward M. Wakeman

Edward Maurice Wakeman, M.D., died Oct. 12 at the M.D. Anderson Hospital Cancer Center in Houston, Texas.

Dr. Wakeman, born in New Haven, was a graduate of Yale College and the University of Pennsylvania School of Medicine. Following an internship at the Mary Imogene Bassett Hospital in Cooperstown, N.Y., and a tour in the Navy as a flight surgeon, he returned to New Haven for his pediatric residency at Grace-New Haven Hospital and was named chief resident in 1962. Dr. Wakeman was in a private pediatrics practice in Guilford, Conn., for 33 years until the time of his death. He was a fellow of the American Academy of Pediatrics, an associate clinical professor of pediatrics at Yale and was recently named a member of the board of directors of Yale Preferred Health.

Dr. Wakeman served on the Guilford Board of Education and founded the Guilford Center for Children, the first state-supported day care center for children in Connecticut and served as chairman from 1971 to 1975.

From the dean of the School of Medicine

Dean Gerard N. Burrow, M.D. '58

As change touches our research-intensive medical school, it is reassuring to note that two rich traditions continue to prevail and even flourish. These are, of course, the *Yale System* of medical education, which remains the framework of our dynamic curriculum, and the original research that our students conduct for their theses, an academic requirement at Yale for more than 150 years.

During this transitional period for both the practice and profession of medicine, another impressive tradition continues as well, in the form of loyal support from Yale alumni/ae.

Just as you and your classmates did, Yale medical students today excel in academics and community service. And your contributions to the School of Medicine help to support their education.

Last year, your gifts and pledges to the Medical School Alumni Fund totaled more than $2 million. For this generosity, my deep appreciation goes to fund chairman Daniel L. Arons, M.D. '67, his committee, the reunion gift chairs, class agents and to the hundreds of Yale alumni/ae who support this school.

As dean of the Yale School of Medicine, I cherish the interactions with the students, our future alumni/ae, and delight in interactions with current Yale alumni/ae, who have given so much to our profession, the health of many who live in America, and to this school.

From the chairman of the Medical School Alumni Fund

This has been a very impressive year for the Yale Medical School Alumni Fund. I have enjoyed getting to know many of the volunteers and donors who are so loyal to our alma mater. Our support of the medical school has gained prominent recognition within the entire Yale Alumni Fund program, and I am very proud to serve as your representative.

There is a great deal of excitement in the air as we are in the final year of Yale's remarkable $1.5 billion campaign. Hundreds of medical school graduates will be counted in the campaign honor roll, having made special reunion gifts toward the many worthy needs at the School of Medicine and having supported the Annual Fund generously each year. In particular, I am very grateful for those who have made contributions toward the renovation of Harkness Hall and new student laboratory facilities. As Dean Burrow has told us, these two projects especially need alumni/ae backing, and it has been heartening to see so many graduates stepping forward to make the school an even better place for future generations of students.

Thank you very much to more than 2,000 alumni/ae who made gifts or pledges in 1995-96. You brought us to 50 percent participation, helping us to be a leader among our peer institutions at Yale. Our reunion

continued on next page ▶

Daniel L. Arons, M.D. '67

classes had an extraordinary year, raising more than $2 million. We were led by the Class of 1946, which achieved a reunion giving record of more than $1.1 million and reached the highest percentage of participation among reunion classes with 80 percent. The Class of 1971 also had a great reunion gift effort, raising more than $300,000 for the school.

I would like to recognize and thank the reunion gift chairs who did such great work to make all of this possible: John Ogilvie, M.D., for the classes of 1926, 1931 and 1936; Peter Duncan, M.D., for 1941; Frank Behrle, M.D., 1946; Arthur Pava, M.D., 1951; Dwight Miller, M.D., 1956; Anoush Miridjanian, M.D., 1961; John Baxter, M.D., 1966; Richard Moggio, M.D., 1971; Alfredo Axtmayer, M.D., 1976; Anthony Urbano, M.D., 1981; Eric Suan, M.D., 1986. We are also grateful for the wonderful leadership of Andrew McGowan, M.D. '58, and the Reunion Gift Program Committee on the YSM Alumni Fund Board.

Annual Fund gifts from alumni/ae and friends remain a vital source of funding for the School of Medicine, and raised well over $400,000 last year to benefit current medical students. Thanks to the dedication and hard work of more than 100 class agents, the school is able to make personal contact with its graduates to sustain this wonderful support. Special thanks go to Howard Minners, M.D. '57, the class agent who achieved the highest participation rate (for the second year in a row), with almost 90 percent of his group of classmates contributing.

All of the donors for 1995-96 are listed with their classes, and those who made leadership contributions also are recognized in the Sterling Association listing.

Please join me again this year in building the extraordinary legacy of the Yale Medical School Alumni Fund. Through our annual and reunion giving, we are making an important and tangible difference in the lives of current and future medical students as we give something back to the school where we began our lives as physicians.

Medical School Alumni Fund

The names and data included on the following pages reflect contributions made and endowment income accumulated between ***July 1, 1995,*** *and* ***June 30, 1996.*** *The class members recognized made a gift to the fund during that period. Endowment income is not reflected in the class participation percent. If we have inadvertently omitted your name, please accept our apologies and contact Mr. William K. Jenkins in care of this magazine so that we may correct this omission.*

1925
Gift: $650
Participation: 100%

Samuel Reback

1926
Gift: $556

Maxwell Bogin

1927
Gift: $1,452

William C. Meredith

1928
Gift: $1,423
Participation: 100%

Edward P. Kearney
Nathan E. Ross

1929
Gift: $3,014
Participation: 67%

Olive Gates
George S. Goldman
John A. Hangen

1930
Gift: $702

Knox H. Finley

1931
Gift: $6,427
Participation: 50%
Agent:
Thomas C. Jaleski
Reunion Gift Chairman:
John B. Ogilvie

Paul A. Harper
Thomas C. Jaleski

1932
Gift: $3,213
Participation: 38%

Frank Carroll
Lee E. Farr
Myron E. Wegman

1933
Gift: $2,353
Participation: 57%
Agent:
Fred W. Buse

Fred W. Buse
Warren P. Cordes
John G. Martin
Francis M. Woods

1934
Gift: $5,290
Participation: 57%
Agent:
John B. Ogilvie

Joseph Budnitz
Knowles B. Lawrence
Herbert C. Miller
John B. Ogilvie
Harry Sherman

1935
Gift: $8,530
Participation: 27%
Agent:
James Q. Haralambie

H. Hoffman Groskloss
James Q. Haralambie
Samuel D. Kushlan

1936
Gift: $42,219
Participation: 25%
Agent:
Nicholas D. D'Esopo
Reunion Gift Chairman:
John B. Ogilvie

Albert W. Diddle
Margaret C. Gildea
Philip M. LeCompte
Stephen F. Nagyfy
Margaret Sommers

1937
Gift: $12,133
Participation: 53%
Agent:
Wilbur D. Johnston

William G. Cooper Jr.
Guido A. Deblasio
Alfred E. King
Dunham Kirkham
Julia Mehlman-Greenhut
James P. Morrill
T. Dennie Pratt
Morgan Sargent
Albert D. Spicer
John M. Thomas
Jean Wells

1938
Gift: $6,498
Participation: 60%
Agent:
Nelson K. Ordway

Benjamin E. Lyons
John J. McGillicuddy
Nelson K. Ordway
James Radcliffe Jr.
George E. Roberge
Theodore W. Steege
Lester J. Wallman

1939
Gift: $164,743
Participation: 76%
Agent:
Rebecca Z. Solomon

Harold H. Coppersmith
Norman L. Cressy
William H. Druckemiller
John P. Ferguson Jr.
Joseph B. Forman
S. Jerome Greenfield
Arthur E. Laidlaw
Margaret A. Lennox Buchthal
James P. Murphy
Douglas S. Riggs
Ernest L. Sarason
Bradford Simmons
Rebecca Z. Solomon
John D. Tobin
Douglass W. Walker
John H. Wentworth

1940
Gift: $7,040
Participation: 65%
Agent:
James F. Ferguson Jr.

Theodore E. Allen
Joseph V. Baldwin
Ronald S. Beckett
Jack S. Blaisdell
Wynant Dean
Richard E. Dormont
James F. Ferguson Jr.
Eugene J. Fitzpatrick
Henry D. Humphrey
Donald G. Johnson
Ira D. LeFevre Jr.

Paul D. MacLean
Edward Martin
Robert T. Rowe
Lee S. Sannella
Bryce A. Smith
Patricia E. Wanning
Helen H. Woods

1941

Gift: $31,320
Participation: 65%
Agent:
Willys M. Monroe
Reunion Gift Chairman:
Peter Duncan

Sophia C. Alway
W. Randal Bell
Charles B. Cheney
Herbert W. Diefendorf
Peter A. Duncan
Lloyd D. Flint
Frederick P. Glike
Thomas S. Harvey
William Lee
Bjorn Lih
F. Eugene Martin
Willys M. Monroe
Edward B. O'Connell
Robert W. Ollayos

1942

Gift: $20,400
Participation: 74%
Agent:
Walter J. Burdette

William E. Bloomer
James M. Bunce
Walter J. Burdette
Robert E. Carroll
Donald S. Childs Jr.
Vincent J. Collins
Hendrik DeKruif
Davitt Felder
William Harrison Jr.
Leo Kellerman
John R. Lincoln
Samuel Ritvo
Lois K. Rogers
Charles F. Scholhamer
Richmond W. Smith Jr.
Carter Stilson
Maurice Tulin
Irving N. Wolfson

1943-March

Gift: $15,778
Participation: 74%
Agent:
Dorothea R. Peck

Ralph D. Alley
John R. Brobeck
Lycurgus M. Davey
Gerard Fountain
R. Leonard Kemler
J. Philip Loge
Henry E. Markley
Dorothea R. Peck
Edward F. Rabe
Earl J. Rhoades
Henry A. Riedel
Bernard R. Rowen
Marcus E. Sanford
Edward H. Soule
Hilliard Spitz
Nicholas M. Stahl
Oliver G. Stonington
Sophie C. Trent-Stevens
Morris A. Wessel
Robert H. Wyatt

1943-December

Gift: $6,140
Participation: 58%
Agent:
S. Brownlee Brinkley

John R. Almklov
David G. Borden
Robert F. Bradley
S. Brownlee Brinkley
Henry B. Bruyn Jr.
Thomas L. Bucky
Jane B. Cadbury
Donald G. Clark
Hunter H. Comly
Norman I. Condit
Thomas D. Cook
Ronald W. Cooke
Joseph I. Epstein
Robert H. Furman
Henry H. Jones
Joseph F. Kell
Benjamin R. Robinson Jr.
Donald W. Seldin
W. Keasley Welch

1944

Gift: $88,138
Participation: 83%
Agent:
Nicholas P.R. Spinelli

Carl E. Andrews
Edward J. Conway
Robert E. Cooke
John C. Coolidge
George B. Corcoran Jr.
Frank W. Countryman
Charles H. Crothers
Lawrence G. Crowley
Sanford R. Dietrich
John H. Doherty
Robert W. Frelick
Carol Goldenthal
Howard B. Hamilton
Robert I. Hinkley
Donald H. Holden
W. Raymond James
Ward S. Jenkins
Edith M. Jurka
Harvey W. Kausel
Jerome J. Kaye
John W. King
Frederick F. Krauskopf
Edwin F. Lang Jr.
Ronald E. Losee
Ellen P. MacKenzie
Katharine H. Martin
Joseph Massaro
A. Reese Matteson
Russell R. Monroe
Lawrence K. Pickett
Laurence G. Roth
Sarah P. Sherwood
Nicholas P. Spinelli
Priscilla D. Taft
Anthony Varjabedian

1945

Gift: $21,651
Participation: 67%
Agent:
Richard W. Breck

George H. Allison
Albert S. Atwood
Richard W. Breck
Louise H. Burr
Alice S. Cary
Thomas P. Cotter
Richard R. Dyer
Robert S. Easton
Alice D. Friedman
Raymond A. Gagliardi
James D. Gardam
Philip S. Good
Herbert S. Harned Jr.
Isao Hirata Jr.
O. Roger Hollan
Hans R. Huessy
Leland W. Jones
Michael W. Lau
William E. Laupus
Mark M. Lindsey
Charles U. Lowe
James R. Mason
Charles E. McLean
George W. Naumburg Jr.
Fitzhugh C. Pannill
Charles E. Sherwood
Joseph R. Stanton
Kenneth C. Steele

1946

Gift: $1,155,059
Participation: 80%
Agents:
Franklin C. Behrle
Joe D. Morris
Reunion Gift Chairman:
Franklin C. Behrle

Margaret J. Albrink
Joseph A. Arminio
William G. Banfield Jr.
Aaron T. Beck
Franklin C. Behrle
Sanfurd G. Bluestein
Linus W. Cave
Thomas J. Coleman
George C. Cusick
Thomas A. Doe
Edward F. Edinger
Martin E. Gordon
John C. Hoover
Ruth S. Kempe
Harold King
James A. Kleeman
Vincent J. Longo
Hugh J. McLane
Joe D. Morris
John H. Morton
John F. Neville Jr.
Laura W. Neville
Robert H. Owens
Vincent Pepe
David H. Riege
Phillips E. Roth
Julian A. Sachs
Donald P. Shedd
Richard G. Sisson
R. Bruce Thayer
Robert R. Wagner
William P. Walsh
William J. Wedemeyer Jr.
Elihu S. Wing Jr.

1947

Gift: $37,838
Participation: 77%
Agents:
George R. Barnes Jr.
W. Roy Breg Jr.

George R. Barnes Jr.
Henry N. Blansfield
John E. Bowers
W. Roy Breg Jr.
Rocco A. Calandruccio
John L. Cannon
Betty P. Carlin
M. Richard Carlin
John C. Carpenter
Charles R. Cavanagh Jr.
Robert A. Chase
Amoz I. Chernoff
William F. Collins Jr.
Robert P. Darrow
Archie L. Dean Jr.
Owen W. Doyle
Franklin H. Epstein
Richard K. Friedlander
Frank L. Golbranson
Frank H. Horton
Robert J. Kerin
Brock Lynch
Victor A. Machcinski
William K. McClelland
Robert F. Newton
Myron K. Nobil
Philip H. Philbin
Olive E. Pitkin
Irving Rudman
Alvin Somberg
Patricia B. Tudbury
Ellis J. Van Slyck
M. Henry Williams Jr.

1948

Gift: $6,300
Participation: 64%
Agent:
Anne Godley

George F. Batten
Edith M. Beck
Jonathan S. Bishop
Richard S. Buker Jr.
Elizabeth F. Elsner
Albert A. Fisk
Emil Frei
Julian Frieden
Anne Godley
Paul S. Goldstein
B. Herold Griffith
Sylvia P. Griffiths
Richard M. Hannah
Ross R. Harcus
Paul B. Koehler
Robert E. Lempke
John P. Morris
John B. Morrison
David E. Morton
Richard C. Peterson
George P. Rostel
Lewis P. Rowland
Benjamin F. Rush Jr.
Jerome H. Shapiro
William A. Sibley
Jessie P. Spear
Paul Talalay
Wallace W. Turner
Paul W. Weld

1949

Gift: $5,136
Participation: 67%
Agent:
Daniel W. Elliott

William G. Anlyan
DeWitt C. Baldwin Jr.
Jonathan S. Bishop
Mary P. Couchman
Phillip G. Couchman
N. Joel Ehrenkranz
Daniel W. Elliott
Albert A. Fisk
Eleanora C. Gordon
Frederic W. Gray
Daniel K. Halvorsen
Jackson Harris
Frederick R. Hine
Gordon D. Jensen
Benjamin A. Johnson
Frank D. Law
Orlando J. Miller
Timothy F. Nolan Jr.
Julian I. Pichel
Charles L. Rennell Jr.
Murray Z. Rosenberg
Carl M. Russell
Lawrence E. Shulman
Martha Vaughan

Vernon T. Watley
Mary-Agnes P. Wine

1950

Gift: $35,751
Participation: 65%
Agent:
Jane B. Shumway

Lyal D. Asay
Sylvia L. Axelrod
Malcolm A. Bagshaw
John E. Borowy
William H. Bucher
Alvin Davis
Claude W. Delia
Marie C. Duncan
Kent Ellis
Thomas J. Ferraro Jr.
Daniel Fine
Lawrence R. Freedman
David A. Frucht
Carl A. Gagliardi
Lucian S. Lapinski
Janus C. Lindner
Margaret S. Lyman
Harold March
Harry L. McClelland
Robert T. McSherry
John H. Meyers
Orlando J. Miller
Charles A. Nugent Jr.
Robert T. Sceery
Cynia B. Shimm
Jane B. Shumway
John S. Strauss
Myra D. Tyler

1951

Gift: $110,013
Participation: 49%
Agent:
Lowell I. Goodman
Reunion Gift Chairman:
Artlur A. Pava

Frank R. Allen
Thomas T. Amatruda Jr.
Muriel H. Bagshaw
John W. Berg
Eleanor C. Bigley
Paul R. Bruch
John J. Egan
Sidney S. Furst
Lowell I. Goodman
John T. Groel
Robert N. Hamburger
John V. Haxo
Carrold K. Iverson
Robert D. King
Jocelyn S. Malkin
Walter S. Morgan
Albert R. Mowlem
Richard S. Munford
Ismail N. Nevin
Alfred Owre Jr.
Arthur A. Pava
Harold M. Sterling

Harry Bishop

Alumni/ae leaders gather for the annual meeting of the Association of Yale Alumni in Medicine last June. Reunion this year is June 6 and 7.

John H. Sullivan
Andrew S. Wong

1952

Gift: $6,134
Participation: 70%
Agent:
Sidney N. Paly

Maurice L. Bogdonoff
Frank R. Coughlin Jr.
Richard N. deNiord Jr.
Richard D. Floyd
Robert P. Gerety
Marvin H. Goldberg
Arthur P. Hustead
William J. Johnson
Thomas S. Kelly
James K. Luce
Joseph A. Montimurro
N. Karle Mottet
Robert L. Nolan
Robert F. Owen
Sidney N. Paly
Robert G. Petersdorf
Leon A. Phillips
John M. Roberts
Elizabeth M. Rush
Leonard Rush
Mary W. Schley
Donald H. Schultz
Robert B. Schultz
John H. Wagner Jr.
Doris L. Wethers
John L. Wolff

1953

Gift: $20,647
Participation: 65%
Agent:
Vincent L. Gott

Seth F. Abramson
Harold D. Bornstein Jr.
Remi J. Cadoret
William R. Chaffee
Allen Chetrick
Rex B. Conn
John L. Doppman
James P. Dunn
Thomas O. Gentsch
Vincent L. Gott
Robert E. Hamlisch
A. Daniel Hauser
George L. Hoffmann
David P. Holman
Peter B. Hukill
Richard R. Knowles
Frederick M. Lane
Hildegard M. Leslie
Preston L. Leslie
Robert N. Melnick
Harvey M. Peck
Warwick Potter Jr.
Paul G. Quie
Jose Ramirez-Rivera
John C. Roberts
Barbara F. Rosenberg
Irwin K. Rosenberg
Virginia C. Saft
Richard A. Sinnott Jr.
Ora K. Smith
John F. Snyder
Lynn C. Stoker
William J. Vandervort
William A. Wilson
James F. Young

1954

Gift: $6,764
Participation: 82%
Agent:
John K. Rose

Frank P. Berg
George W. Bostwick
Richard J. Bouchard
George N. Bowers Jr.
Ralph K. Campbell
John R. Cole
Alan H. Covey
Arthur C. Crovatto
Donald D. Davis
Walter J. Freeman
Orlando F. Gabriele
John A. Gariepy
Edward J. Gerety
Samuel T. Giammona
Frank L. Gruskay
Nicholas A. Halasz
Katherine H. Halloran
Robert P. Hatch
Walker R. Heap Jr.
Eva H. Henriksen
Samuel J. Hunter
Herbert S. Hurwitz
Robert F. Hustead
Robert J. Joy
Robert M. Keith
Donald S. Kornfeld
Lowell A. Kristensen
Richard Lamb
Harry C. Miller Jr.
Paul N. Neufeld
James J. Nora
William S. Palmer
William J. Paule
Anthony V. Piccirillo
Richard D. Pullen
Jacques M. Quen
John K. Rose
Elihu M. Schimmel
Leonard M. Silverman
Robert L. Stein
Martin B. Vita
John W. Vosskuhler

1955

Gift: $27,040
Participation: 55%
Agent:
Robert A. Kramer

John B. Atwater
John C. Bailar III
George E. Becker
E. Edward Bittar
Jerome Bobruff
Douglas G. Boyden
Irwin M. Braverman
Padraic Burns
Paul Calabresi
Joseph A. Camilleri
Leo R. Cardillo
Nicholas A. Coassin
Pasquale J. Costa
Robert G. Crounse
John G. Daley
Fred W. Doyle
Leroy Engel
Edwin G. Fernand
Mahlon V. Freeman
James C. Garlington
Paul Gonick
Dicran Goulian Jr.
Ion Gresser
Milton J. Hirshberg
John H. Hodge
D. Franklin Johnson Jr.
Harry O. Kendall
David R. Kessler
Robert A. Kramer
Edward A. Krull
Roger Lester
James Lum
Alexander Maitland III
Joseph S. McGuire Jr.
David J. Nelligan
James P. Nolan
Edward J. Ottenheimer Jr.
Robert H. Peters Jr.
Robert A. Reich
Paul J. Robinson
Alan A. Stone
Paul R. Stowell
Vito J. Zupa

1956

Gift: $108,123
Participation: 78%
Agents:
Jolin H. Gardner III
Donald J. Dalessio
Reunion Gift Chairman:
Dwight F. Miller

Suzanne S. Becker
Alvin D. Benjamin
Levon Z. Boyajian

Thomas M. Brown
Rosalie A. Burns
John F. Carroll
Joseph C. Cerny
Edwin L. Child
James C. Collias
Chandler Dawson
S. Evans Downing
Mitchell Edson
Gilbert M. Eisner
Thomas F. Ferris
John H. Gardner III
Sumner H. Gochberg
Val S. Greenfield
Robert H. Groves
Alan R. Gurwitt
Armen C. Haig
Joan M. Hardenbergh
John H. Hart
Robert L. Hill
William H. Hindle
Charles L. Hopper
Marie-Louise T. Johnson
George T. Kammerer
Jerome O. Klein
William V. Lewit
Jacob Mainzer Jr.
Preston C. Manning
Dwight F. Miller
Norman F. Moon
Donald J. Nalebuff
William M. Narva
A. Frederick North Jr.
William M. O'Brien
David A. Page
James R. Patrick
George W. Paulson
Robert L. Powell
Stewart E. Pursel
Robert J. Rice
Robert Scheig
James Scheuer
Edward C. Senay
Benjamin A. Shaver Jr.
Donald W. Sherrick
Daniel R. Silbert
Bruce Trembly
Theodore K. Tseu
Marion B. Warbasse

1957

Gift: $32,325
Participation: 70%
Agents:
Harry C. Briggs
Howard A. Minners

Donald Agostinelli
Joseph S. Amenta
Jack N. Blechner
Richard I. Breuer
Harry C. Briggs
John P. Carey
Albert K. Chun-Hoon
Louis Z. Cooper
Harold D. Cross
Brian Crowley
Thomas H. Danaher
James R. Dorr
Salvatore Falbo
Elizabeth H. Forsyth
Gary A. Fry
Robert H. Glass
Anne H. Good
Jack P. Green
Malcolm Hill
Gilbert F. Hogan
Warren R. Johnson
Richard L. Kahler
Stanley E. Kilty
William L. Kissick
Edgar H. Levin
Jack Levin
Bennett F. Markel
Mark D. Marshall
David E. Martin III
Howard A. Minners
Robert K. Modlin
Hugh L. Moffet
George A. Nelson Jr.
Herbert A. Newman
Thomas F. O'Brien Jr.
Joseph S. Pagano
Raymond E. Phillips
Clifford B. Reifler
Arnold Schoolman
Stanley Simbonis
Charles A. Slanetz Jr.
Gilbert B. Solitare
Donald C. Stahl
Arthur Taub
Romeo Vidone
William J. Waskowitz
James G. Zimmer

1958

Gift: $77,752
Participation: 59%
Agents:
Andrew J. McGowan Jr.
Paul A. Rudnick

George K. Aghajanian
Don P. Amren
Joseph E. Angelo
John P. Arnot
Frederick Baekeland
Peter A. Benson
William C. Branscome
A. Russell Brenneman
Gerard N. Burrow
Benjamin Bursten
David A. Carlson
John A. Carlston
Joseph J. Cillo
Robert V. Diserens
Robert J. Donohue Jr.
Lawrence Dubin
Donald A. Duncan
Joel C. Eberlin
Philip R. Fazzone
Michael E. Fishman
Raymond A. Gaito
Marcia K. Goin
William M. Gould
James Greenwald
Charles A. Hall Jr.
Stanley Harris
Roger C. Herdman
Michael Kashgarian
Haskins K. Kashima
Jay W. Kislak
Morton M. Kligerman
Theodore W. Lieberman
Myron Lotz
Jack W. Love
Thomas J. Mauro Jr.
Michael J. McCabe
Andrew J. McGowan Jr.
John A. Merritt Jr.
Richard C. Miller
Robert S. Neuwirth
Carol F. Phillips
David M. Pugh
William B. Radcliffe
Paul A. Rudnick
Bruce H. Sklarew
Edward L. Socolow
Arlene Sweedler
Raymond W. Turner
Margaret S. Wenzel
John P. Wood
Pauline B. Wood
Robert W. Wroblewski

1959

Gift: $19,573
Participation: 56%
Agents:
Asa Barnes Jr.
Muriel D. Wolf

Scott I. Allen
Carol J. Amick
Robert M. Amick
Asa Barnes Jr.
Jack F. Bowers
William C. Butterfield
Edwin M. Clayton
Sidney M. Cohen
Martin Colodzin
Ronald C. De Conti
William L. Donegan
Gerald Fenichel
Robert L. Fisher
Paul J. Friedman
Eric Gillett
Gerald B. Gordon
W. Keith Hadley
James H. Halsey Jr.
H. Rodney Hartmann
William H. Heydorn
C. Richard Hinckley
Leonard Inker
William J. Jablonski
John J. Jasaitis
Edvardas Kaminskas
Herbert J. Kaufmann
Kristaps J. Keggi
David W. Kingsbury
Parry B. Larsen
Myron S. Lee
Kathryn H. Lewis
John C. Marsh
Brian J. McGrath
Peter M. Molloy
James A. O'Neill Jr.
Nicholas M. Passarelli
Lincoln T. Potter
James D. Prokop
James R. Ralph
David P. Reed
Joseph D. Saccio
Constantine J. Sakles
Marc D. Schwartz
Owen A. Shteir
David B. Skinner
Carl H. Smith
Gene W. Spector
James J. Stagnone
Lisa A. Steiner
John S. Strauss
Leo H. Von Euler
Robert B. Whitney Jr.
Muriel D. Wolf

1960

Gift: $17,753
Participation: 63%
Agent:
Thomas P. Kugelman

Victor A. Altshul
Alan W. Ames
Jack D. Barchas
Colin M. Bloor
Stuart P. Bowne
Donald P. Buebendorf
Thomas E. Carson
Francis D. Cogliano
Neil R. Cooper
Jon E. Courtney
John M. Davis
Malin Dollinger
Caldwell B. Esselstyn Jr.
Warren H. Fisher
Paul J. Friedman
Eugene C. Gaenslen Jr.
Gary E. Gathman
James I. Gilman
Irving Guttenberg
Daniel M. Jones
William S. Kaden
Eric P. Kindwall
Frank J. Kleeman
Susan T. Kleeman
Thomas P. Kugelman
Alcide M. LaNoue
Edward R. Lang
Robert Marcus
Donald L. Miller
Richard G. Morrill
Buford L. Nichols Jr.
Fred Palace
Jerrold M. Post
Martin L. Reite
Albert M. Ross
Daniel J. Rubin
John J. Schrogie
Ross L. Snyder Jr.
Fred L. Stargardter
Robert C. Wallach
May Y. Wang
Ronald A. Yankee

1961

Gift: $65,578
Participation: 58%
Agent:
Robert S. Briggs
Reunion Gift Chairman:
Anoush Miridjanian

Earl L. Baker
Frank H. Baker
Albert A. Bechtoldt Jr.
Robert S. Briggs
David W. Brook
Ralph J. DePonte
Orson R. Dee
Paul D. Deiter
Jon D. Dorman
John E. Fenn
Charles F. Gibbs
David D. Griffith
Walter J. Hierholzer Jr.
Royal C. Hudson Jr.
Louis D. Hunt
Richard L. Keefe
Robert I. Levy
George M. Lordi
Hugh J. Lurie
Sally L. Marchesi
Vincent T. Marchesi
David B. Matloff
Anoush Miridjanian
Richard A. Moore
John K. Pearce Jr.
Elaine Pitt
Bruce C. Robinson
William M. Rogoway
Roy E. Ronke Jr.
Shaun Ruddy
Thomas H. Sakoda
Stanley G. Schade
John H. St. Andre
Robert N. Taub
Franklin H. Top Jr.
David E. Weaver
Warren D. Widmann
Murray Wittner

1962

Gift: $34,524
Participation: 55%
Agents:
Fredric K. Cantor
A. Richard Pschirrer

Michael H. Alderman
Charles B. Anderson
Frederic P. Anderson
Spencer J. Brody
Fredric K. Cantor
Ray A. Carlsen
Thomas N. Chase

Oliver T. Dann
Arnold J. Eisenfeld
I. Bruce Elfenbein
Joseph D. Ferrone Jr.
John W. Foreman
Stephen J. Fricker
John N. German
David H. Groth
Roderick C. Haff
John H. Hageman
John T. Harrington
Patricia C. Hassakis
Cornelis Heijn
Gary Jacobson
Walter W. Karney
Glenn L. Kelly
David E. Knoop
Bernard Kosto
Manuel J. Lipson
Richard E. Marshall
Allan L. Mattern
Stanley E. Matyszewski
David J. McConnell
William A. Miller
David D. Nicholas
A. Richard Pschirrer
Joseph Ross
James A. Spencer
Nancy A. Staley
Larry L. Stewart
Seth U. Thaler
William F. Weber
Stewart R. Wright

1963

Gift: $16,696
Participation: 44%
Agent:
Craig H. Llewellyn

Barbara R. Almond
Miguel R. Alonso
V. Richard Back
Wayne D. Brenckman Jr.
Charles W. Carl Jr.
Theodore J. Chu
Gordon S. Cohen
John E. Conte Jr.
James S. Dalsimer
Dudley S. Danoff
Andrew Edin
John P. Eliopoulos
Jon M. Fessel
Alan L. Folsom
David H. Fram
William T. Friedewald
David H. Fulmer
Vincent F. Geremia Jr.
Lee D. Goldberg
Peter B. Gregory
Benjamin K. Harris
Stephen C. Joseph
Brian C. Judd
Harold P. Kaplan
Constantine D.Kyropoulos
Edward C. Larkin
William B. Lehmann
Craig H. Llewellyn
Edward G. Lund Jr.
John L. Mahoney
Robert H. Margulis
Herbert Y. Meltzer
Robert E. Mueller
Sheldon R. Pinnell
Jay M. Pomerantz
William F. Porter Jr.
Berkeley L. Rich
Gaylord Rockwell
Thomas A. Savignano
Alan E. Shapiro
Marvin R. Skolnick
Lee B. Talner
Richard M. Thompson
Thomas W. Tillack
Peter V. Tishler
Lawrence Tremonti
Helen N. Walsh
Peter G. Weiner
Seth M. Weingarten
James G. Wepsic
Charles S. Wilson
Edward F. Wilson
Jerome A. Winer
Alfred J. Wise

1964

Gift: $10,197
Participation: 48%
Agents:
Berton W. Ashman
Robert W. Lyons

Berton W. Ashman
Sidney M. Baker
Philip Blume
Anthony J. Bravo
William V. Brown
Thomas A. Cardella
Joseph F. Curi
Paul F. Dodd
Anthony A. Ferrante
Norman C. Fost
Barry Gault
Peter A. Gross
John F. Haney
Christopher W. Hauge
Richard Hockman
Lawrence Horwitz
William J. Houghton
Sue Y. Kimm
William E. Knight
Lewis Landsberg
Richard V. Lee
Thomas L. Lentz
David B. Leof
James S. Levine
Paul R. Lightfoot Jr.
Robert W. Lyons
Andrew E. MacMahon
William F. Matchett
Robert L. Mitchell
Alan H. Morris
James J. Murphy
Donald A. O'Kieffe Jr.
William B. Pratt
Jack S. Rice Jr.
Stanley J. Rosenberg
Richard P. Saik
Saul M. Schanberg
Norman Scher
A. Thomas Snoke
Sigrid L. Tishler
Lee Van Lenten
Stephen Waltman
Oscar Wand

1965

Gift: $45,553
Participation: 62%
Agent:
David A. Hill

Jon R. Almquist
Susan A. Aoki
Thomas T. Aoki
John H. Austin
Paul Balter
Hector R. Bird
Victor J. Burner
Thomas B. Caldwell III
David G. Campbell
Grant L. Christian
Robert M. Cohn
Michael J. Cummings
Carl Ellenberger Jr.
David S. Fedson
Robert I. Finkel
Michael P. Flynn
Richard I. Frankel
Christopher C. Gates
Gary L. Gross
James K. Gude
Reid R. Heffner Jr.
David A. Hill
Carl E. Hunt
Virginia B. Johnson
Ronald J. Karpick
Mohandas M. Kini
Robert H. Koehl
Richard J. Kozera
Sandra C. Levine
Mark W. Lischner
Michael B. Mayor
David Murdock
Walter W. Noll
A. Lawrence Ossias
Robertson Parkman
John A. Parrish
Robert L. Pickens
Alan N. Rachleff
William A. Renert
George B. Rowland
John F. Schilke
Margretta A.R. Seashore
David P. Simmons
Robert T. Solis
Harlan Spitz
Alan W. Stone
Jonathan Titus
Robert G. Weiner

1966

Gift: $93,220
Participation: 53%
Agents:
Mary A. Houghton
Gary L. Townsend
Reunion Gift Chairman:
John D. Baxter

Benjamin F. Balme
John D. Baxter
Patricia Bazemore
Robert P. Bazemore
Frank C. Bell
Philip Bernstein
James E. Brown
Eugene P. Cassidy
Donald J. Cohen
Thoburn A. Dadisman Jr.
Joseph A. Donadio
Robert N. Frank
Peter D. Gibbons
Stanley I. Greenspan
J. McLeod Griffiss
Robert A. Gunn
Henry G. Hanley
Jay G. Hayden
Mary A. Houghton
Richard J. Howard
Stuart M. Kotler
Wilbur L. Kukes
Lynne L. Levitsky
Henry B. Mann
David B. Melchinger
Harold Mellin
William Y. Moores
Eli H. Newberger
Edward J. O'Keefe
William D. Peterson
James D. Slavin Jr.
Reynold Spector
Parker J. Staples
Lawrence J. Toder
Arne S. Youngberg

1967

Gift: $16,943
Participation: 58%
Agent:
Richard B. Swett

Daniel L. Arons
Arthur L. Beaudet
Richard S. Bockman
Arthur W. Boddie Jr.
Daniel J. Booser
Gary C. Burget
William T. Cave Jr.
Mary W. Clark
Cynthia J. Curry
Marian C. Davidson
James L. Davis III
James J. Dineen
Timothy J. Dondero Jr.
Alexander F. Dora
James M. Dowaliby
John A. Drews
Peter R. Egbert
Dennis G. Egnatz
Herbert W. Felsenfeld
Melvin V. Goldblat
Richard J. Hart Jr.
Richard L. Heppner
Peter N. Herbert
George P. Herr
David L. Ingram
Mary Jurbala
J. Robert Kirkwood
Melvyn Korobkin
Carl E. Lane
Anthony P. Lovell
Carl K. Marling
James V. Miller
Stephen W. Miller
Joseph L. Morris
John O. Pastore
William E. Perkins
Daniel F. Phillips
Brian F. Rigney
Jonathan L. Savell
Alfred Q. Scheuer
Stephen C. Schimpff
Sidney C. Smith Jr.
Helen L. Smits
Lewis S. Solomon
Robert S. Steinberg
Richard B. Swett
M. David Tilson III
Karen H. Toker
Robert A. Vogel
Robert A. Vollero
Joseph F. Walter
Martin Wand
Redford B. Williams Jr.
Robert J. Winer
Robert S. Young
Ihor G. Zachary
Peter M. Zeman

1968

Gift: $12,370
Participation: 52%
Agents:
Rutledge W. Currie
Donald O. Lyman

Philip L. Barry
Daniel I. Becker
Bernard D. Beitman
Grace J. Boxer
William Catalona
Donald R. Coustan
Rutledge W. Currie
Robert G. Dillard
Edward M. Druy
Barbara M. Egbert
Alan G. Finesilver
William F. Flynn
Richard A. Getnick
Mark G. Grand
Leonard Grauer
Ralph S. Greco
John R. Hill
Thomas R. Johnson

Peter Jokl
William F. Keane
Daniel E. Keim
Peter A. Kirkpatrick
Jeffrey S. Lee
Marc E. Lippman
Frank E. Lucente
Donald O. Lyman
Stephen I. Marglin
Rodrigo Martinez
John A. McCutchan
Harmon Michelson
David P. Millett
Riehard P. Mills
Richard M. Morehead Jr.
James B. Morris
Peter Nicholas Jr.
Margot Onek
Henry F. Panek
Jackson B. Pickett III
Charles T. Post Jr.
Ralph J. Rauch
Joseph L. Renda
Gordon H. Sasaki
Peter W. Scherer
Frederick C. Sherman
Elizabeth M. Short
Howard W. Siegel
Gerald L. Springer
Lee H. Strohl
Edmund C. Tortolani Jr.
James L. Weiss
Per H. Wickstrom
Creed W. Wood

1969

Gift: $413,410
Participation: 56%
Agent:
Adrian M. Schnall

Charles S. Angell
David G. Ansel
David W. Barry
Robert E. Belliveau
Donald H. Buchholz
Thomas E. Ciesielski
Joseph P. Cleary
N. Roger Cooke
Leo M. Cooney Jr.
Richard J. Daly
Michael W. Dennis
Charles A. Dinarello
Douglass T. Domoto
Daniel M. Eichenbaum
Ralph J. Falkenstein
Gary S. Farnham
B. Graeme Fincke
Lesley F. Fishelman
Anna S. Gail
Royal J. Gay
Sander G. Genser
Robert O. Gordon
John F. Hiatt
Thomas C. Howard
Lee M. Jampol
Joel M. Kaufman
Paul H. Kelker
John J. Kelly Jr.
Rowena Korobkin
Lynn G. Lagerquist Jr.
Michael R. Liebowitz
Elliot M. Livstone
C.E. Long III
Robert L. Marier
Arnold F. Mazur
Ellen B. Milstone
Thomas F. Minehan
Bruce K. Nagle
Lionel M. Nelson
Nancy Olmsted
Timothy A. Pedley
Deborah A. Putnam
Joseph D. Robinson
Joseph M. Rochford
Jonelle C. Rowe
Dennis J. Rudzinski
Lutz H. Schlicke
Adrian M. Schnall
David J. Schulak
Andrew Schwartz
Gerald J. Smallberg
Robert J. Walat
Stephen R. Webb
Carolyn K. Wells

1970

Gift: $29,319
Participation: 52%
Agent:
James R. Missett

Elissa B. Arons
John W. Blanton Jr.
Paul E. Braun Jr.
Henry Chessin
M.J. Chusid
Anne M. Curtis
Michael H. Cynamon
James E. DeLano Jr.
Daniel F. Dedrick
W. Montague Downs
Jonathan Ecker
Richard L. Edelson
Robert A. Epstein
Bruce A. Fabric
Harvey Fernbach
Robert D. Gilbert
Thomas H. Gouge
Paul C. Hessler
Jay H. Hoofnagle
Jonathan D. Katz
Gerard T. Kennealey
Mark A. Korsten
Thomas L. Lewis
Robert B. Litman
Anne W. Lucky
Roger A. Mason
Leonard M. Milstone
James R. Missett
William K. Mueller
Lynn W. Reiser
Bruce A. Reitz
Joel F. Rubinstein
Dennis E. Shield
Stuart S. Shorr
Richard A. St. Onge
Robert S. Stern
Daniel A. Symonds
Ray W. Tripp III
C. Bruce Wenger
Joellen Werne
Daniel Wuensch
Karl O. Wustrack
Marc O. Yoshizumi

1971

Gift: $301,308
Participation: 70%
Agents:
John L. Cieply
Barbara K. Kinder
Reunion Gift Chairman:
Richard A. Moggio

Judith L. Bader
Gregory W. Bartha
Michael J. Beierle
Bruce Block
Marian H. Bloek
John L. Cieply
Frederick L. Cohn
Andrew D. Cook
David Cossman
Edward C. Cottle
John S. Ebersole
Leonard I. Eisenfeld
Thomas Etkin
Daniel E. Feldman
Fred Finkelman
John W. Foster Jr.
Jared J. Gardner
Riehard B. Gloor
Allan W. Graham
Jerold A. Haber
Michael J. Hart
William W. Hay Jr.
W. Robin Howe
N. Timothy Jette
Richard Katzman
Robert M. Kessler
Barbara K. Kinder
Ralph J. Kirmser
Stuart R. Kleeman
Michael E. Klein
William L. Krinsky
Gary M. Lande
Laurence W. Levinger
David H. Lippman
Robert A. Mackey
William J. Mangione
Samuel S. Masters
Patrick T. Minihan
Steven H. Moffic
Richard A. Moggio
Martin Paris
John A. Patti
Barry B. Perlman
Stuart B. Phillips
Michael C. Piercey
Irving G. Raphael
Joan M. Reese
David M. Rinzler
Douglas R. Schmidt
John Smiarowski
James P. Southwick
Jonathan W. Stewart
Daniel R. Synkowski
Semeon G. Tsalbins
Paul A. Vignola
Robert B. Vranian
Albert C. Weihl
Jerold C. Woodhead
Burns Woodward
Daniel G. Wright

1972

Gift: $10,424
Participation: 59%
Agent:
Harry L. Malech

Robert D. Arbeit
R. Michael Buckley Jr.
Leonard H. Cohen
Philip L. Cohen
Norman M. Dinerman
William H. Druckemiller Jr.
M. Felix Freshwater
John P. Fulkerson
Robert D. Glassman
Dorothy M. Gohdes
Robert F. Goodman
Andrew H. Greenhill
Bruce B. Haak
Thomas L. Horn
Vernon H. Humbert Jr.
Anthony H. Jackson
Jesse B. Jupiter
Frank M. Kahr
Roy A. Kaplan
Michael A. Kaufman
Donald L. Kent
Philip W. Lebowitz
Theodore M. Levin
Paul A. Lucky
Harry L. Malech
John E. Mayer Jr.
Jeffrey S. Menkes
Jerome H. Meyer
David B. Moyer Jr.
John P. O'Grady
Edward J. Olinger
Mare B. Osias
William L. Risser
Richard S. Robbins
David H. Romond
Philip M. Rothfeld
Charles F. Scholhamer
Frederick D. Stockwell
Gary M. Strauss
Lawrence P. Temkin
Philip J. Weyman
Brooke M. Wolf
Michael W. Yogman
Steven M. Zeldis

1973

Gift: $8,022
Participation: 60%
Agents:
John F. McQuade
Jerrold F. Rosenbaum

David A. Adler
David A. Baggish
David N. Bailey
Mary Ann Brunstetter-Shafer
James N. Campbell
Marvin M. Chassin
William T. Choctaw
F. Sessions Cole III
Joseph M. Connors
David L. Coulter
Carolyn G. Dedrick
Christopher M. Doran
Jane H. Ferguson
Richard J. Fingeroth
Robert A. Florin
Lee Goldman
Gary V. Gordon
Gary T. Grimes
Neal Handel
Frederick M. Henretig
Jorge L. Hernandez
Howard S. Honig
John M. Kirkwood
Michael S. Kramer
Lynne M. Liptay
George Lister Jr.
Harold R. Mancusi-Ungaro Jr.
John A. McDowell
John F. McQuade
Jerry Nagler
James A. Neviackas
Claes M. Nilsson
David E. Peach
John W. Popp Jr.
Robert H. Posteraro
Thomas J. Romano
Harry S. Romanowitz
Jerrold F. Rosenbaum
John P. Sherck
George D. Shoup
Joseph F. Simeone
Robert A. Sirota
Carole H. Stashwick
Charles F. Stroebel
James F. Sullivan
Thomas F. Sweeney
Robert J. Ursano
Christine A. Walsh
Marc A. Weinberg
Richard S. Young

1974

Gift: $8,275
Participation: 49%
Agents:
Robert J. Schechter
Amy Starr

Irving M. Asher
Leonard I. Banco
Ralph E. Binder
Neil Blumberg
Ronald C. Brown
Peter J. Buchin
Robert A. Caine
Richard A. Cazen
Richard F. Clarke
Bert D. Collier Jr.
Paul David
Vincent A. Di Maria
Irl L. Extein
Allan B. Friedland
Michael A. Gerber
Harvey Gerhard
Alan A. Halpern
Robert F. Hempton
Edward O. Janosko
Robert M. Jarrett
Robert C. Jimerson
Marie T. Kelly
Dahlia V. Kirkpatrick
Robert M. Kolodner
Saul Lande
Edward L. Marut
Andrew R. Mayrer
James R. McMonagle
Daniel A. Moros
Marjorie A. Oda
Richard C. Pasternak
Andrew L. Ries
David Z. Ritvo
John D. Schrumpf
Harry Shamoon
Alan B. Silken
Barry S. Solof
Amy Starr
James A. Strom
George H. Talbot
Carol C. Teitz
Edward M. Wolin

1975

Gift: $9,713
Participation: 27%
Agents:
Mary Jane Minkin
Phillip J. Rich

Yvonne L. Burnett
William S. Bush
Rodney J. Butch
Chau V. Dang
Jeffrey J. Davis
Robert G. Drake Jr.
Stanley W. Gale
Elizabeth R. Gawron
Alfred C. Gaymon
Paul A. Johnson
Kevin Kane
George D. Knowles
Richard J. Loewenstein
Bruce McLucas
Hyman J. Milstein
Mary Jane Minkin
Robert G. Nankin
Andrew B. Newman
Kwaku Ohene-Frempong
George J. Pardos
Mary L. Polan
Vivian Reznik
Philip J. Rich
Robert S. Sandler
Frederick S. Sherman
Thomas W. Smith
Morris J. Westfried
Henry S. Willner
David W. Wiltse

1976

Gift: $93,915
Participation: 51%
Agent:
William K. Levy
Reunion Gift Chairman:
Alfredo L. Axtmayer

Alfredo L. Axtmayer
Alan B. Bloch
Sharon L. Bonney
Roger A. Boshes
William D. Carlson
Randall D. Cebul
Helen Y. Chang
Pauline Y. Chao
Richard S. Childs Jr.
Joseph Ciabattoni
John D. Clemens
Ellen C. Cooper
Kenneth J. Dobuler
Gary S. Dorfman
John A. Elefteriades
Geoffrey Etherington
Richard A. Frank
Susan R. Gaynon
Ira H. Gewolb
Rose H. Goldman
Randall S. Hawkins
Clarion E. Johnson
Joel Kabak
David T. Kawanishi
Richard D. Kayne
Carol H. Lee
William K. Levy
Sidney Mandelbaum
Cynthia F. Mann
Josefina V. Marin
Frederick C. Morin III
Jon S. Morrow
Richard L. Neubauer
O'dell M. Owens
N.T.S. Quao
Daniel W. Rahn
Paul R. Ramirez
Emanuel R. Reinitz
Mark C. Ruchman
Lawrence E. Samelson
Richard S. Schottenfeld
Charles R. Swenson
Peter M. Ting
Robert C. Ward
John C. Wiles
Jerome B. Zeldis
Carol M. Ziminski

1977

Gift: $9,806
Participation: 59%
Agents:
Marybeth Ezaki
Ronald J. Vender

Michael G. Adelberg
Marcia C. Arem
Phyllis August
Diane M. Barnes
George Bolen
John J. Boronow
Gerald M. Brody
Richard D. Bucholz
Christopher S. Clark
Mark A. Dillingham
Stuart B. Dubin
Sybil E. Duchin
Marybeth Ezaki
Thomas W. Ferguson
Anne H. Flitcraft
James A. Fox
Julia B. Frank
Barbara K. Gehrett
Gary G. Griffieth
Steven R. Hahn
Robert W. Hand
Bruce L. Innis
Howard K. Koh
Wilhelmina C. Korevaar
Don A. Marshall Jr.
Margaret S. McKenna
Robert J. Mitchell
Alan S. Penziner
Richard E. Peschel
Theodore M. Pitts
Jordan S. Pober
Rachel Z. Ritvo
Steven J. Scheinman
Ricky M. Schneider
Susan B. Schneider
Simeon A. Schwartz
Jeffrey L. Sklar
Ronald J. Vender
Steven L. Warsof
Sharon R. Weinstein
John E. Whitcomb
J. Douglas White
Daniel Wohlgelernter

1978

Gift: $7,445
Participation: 51%
Agents:
Michael J. Anderson
Duke E. Cameron
Seth M. Powsner

Kathy L. Ales
Richard J. Baron
Ronald J. Berenson
Booker T. Bush Jr.
Duke E. Cameron
David F. Cawthon
Jesse M. Cedarbaum
Henry R. Desmarais
Mark J. Di Nubile
James N. Dreyfus
Eric B. Einstein
James T. Elder
Emily A. Fine
Mark L. Finklestein
Eugene G. Fong
Stuart M. Forman
Maija G. Freimanis
Robert A. Gelfand
George M. Golenwsky
Linda J. Hall
Jeffrey N. Hausfeld
Alexandra N. Helper
Robert Hershfield
Elizabeth S. Hodgson
Anne A. Knowlton
Robert L. Kraft
Cynthia S. Kretschmar
Sanford D. Markowitz
Jose L. Martinez
Robert K. McLellan
Michael J. Mitchell
Kurt K. Nakaoka
Yvette L. Piovanetti
Barbara H. Pober
Seth M. Powsner
Jeffrey D. Roth
Sally Rudicel
Neal D. Ryan
Steven M. Shoum
Donald C. Simonson
Thomas J. Smith
Gerson M. Sternstein
Rebecca A. Taub
Caroline R. Taylor
Marcia J. Wade
Jonathan D. Weinberg
David L. Wessel
Susan Wong

1979

Gift: $10,510
Participation: 41%
Agents:
David E. Golan
Cynthia A. Sherman

Frederick R. Aronson
Guthrie S. Birkhead III
Gershwin T. Blyden
J. Kenneth Burkus
Stuart L. Bursten
Sarah E. Carpenter
Paul E. Collier
Kerry Cooper
Jeffrey N. Dornbusch
Norman L. Elliott
Lu-Jean Feng
John A. Fox
John J. Gargus
David E. Golan
Bruce Halperin
Edward C. Halperin
Arthur C. Johnson III
Heather L. Johnson
Leslie J. Katz
Roxanne E. Kendall
Jonathan Kolitz
Forrester A. Lee Jr.
Wing-Yin Leong
Michael K. Lindsay
Shirley McCarthy
Timothy W. McKeithan
S. Kwame Ofori-Kwakye
Barbara A. Peters
Jean Rosenthal
Lynn K. Rudich
Gary L. Schaer
Eric A. Schwartz
Cynthia A. Sherman
Laurie Smaldone
Pamela E. Smith
Candace S. Thurston
Duane C. Tucker
Gary C. Vitale
John T. Woo
Jeffrey W. Work

1980

Gift: $5,503
Participation: 44%
Agents:
Eduardo C. Alfonso
Steven I. Rosenfeld

David E. Adelberg
Eduardo C. Alfonso
Seth L. Alper
Alan B. Astrow
David A. August
Milton F. Austin
Jay M. Baraban
Jean B. Bolognia
Patricia C. Brown
Michael W. Champeau
Michael M. Chang
Thomas F. Deering
Deborah D. Desir
Gary V. Desir
Claudia Dinan
Francis W. Drislane
Stephen G. Emerson
Paul A. Epstein
Barbara G. Fallon
Todd J. Garvin
Marc F. Glickstein
David J. Goldberg
Jonathan L. Jacobs
Barry M. Kacinski
Mary C. Kornei
Ethan A. Lerner
Theodore W. Marcy
Suzanne M. Matsui
Cesar R. Molina
Eric J. Nestler
Mark J. Ratain
Steven I. Rosenfeld
Alan E. Schlesinger
Gerri A. Schulman
John A. Selling
Jeffrey N. Siegel

Hillel D. Skoff
Leslie W. Sojka
Kim R. Swartz
James A. Talcott
Joseph L. Tate
Marcia R. Taylor
Nancy T. Taylor
Mary C. Wise
Lawrence H. Young
Raphael Zahler
Laurel E. Zollars

1981

Gift: $33,949
Participation: 45%
Agent:
Anthony M. Urbano
Reunion Gift Chairman:
Anthony M. Urbano

Jane E. Asch
Cynthia B. Aten
Robert B. Bailey Jr.
Alicia I. Barela
Sherri L. Brown
Patricia A. Burke
Colleen Bursten
Nelson J. Chao
Chee C. Chow
Francis Chui
Marc D. Coltrera
Jonathan M. Fine
Paula M. Fracasso
Robert S. Goldman
Laurie J. Gordon
Jeffrey A. Gruskay
Alan Heimann
Scott A. Hundahl
Thomas Klevan
Brian K. Kobilka
Mark J. Koruda
Richard E. Kravitz
Thomas S. Kupper
Elliot Lach
Aiziz Laurent
David E. Lebwohl
Bernard Lewin
Philip A. Lowry
David Y. Lu
Yvedt L. Matory
Barton N. Milestone
Robert M. Milstein
David A. Paly
Robert B. Portney
Susan B. Radoux
Barbara A. Roach
Barbara A. Ross
Dovelet Shashou
Bernard H. Shen
Martin H. Teicher
Anthony M. Urbano
Alan B. Wagshal
David S. Weiss
Stephen B. Wilson
David H. Wohns
Aizik L. Wolf
John C. Wong

1982

Gift: $5,408
Participation: 33%
Agents:
Muriel Cyrus
Stephanie Wolf-Rosenblum

Sylvia R. Beck
Paula K. Braverman
Thomas J. Brennan
Muriel Cyrus
Fred M. Drennan
Liba E. Goldblum
Daphne T. Hsu
Henry D. Jampel
Laurie B. Katz
Patricia Kellner
Teresa L. Massagli
Kathleen A. Nolan
Joyce A. O'Shaughnessy
Christopher N. Otis
Robert Pierattini
Carrie A. Redlich
Steven D. Resnick
Robert J. Rizzo
Paula C. Schlesinger
William M. Sikov
Lynn T. Tanoue
Patrick J. Toth
Albert L. Ungricht
Stephanie Wolf-Rosenblum
N. Bruce Yager
Mary E. van der Velde

1983

Gift: $4,851
Participation: 31%
Agents:
David Schwartz
Michael B. Tom

Amos Bodner
Robert E. Bookstein
Michael Brines
Elena Citkowitz
Sean W. Dowling
Dianne Edgar
Tammy C. Harris
Donald R. Johns
William Kadish
Robert M. Kotloff
Ana M. Lamas
Scott R. Lambert
Charles Lim
David Lindgren
Frederic R. Martin
Lois A. Morton
David P. Norton
Dan A. Oren
Moshe Rubin
Daniel Sabbeth
Leonard B. Saltz
Maria E. Schmidt
Susan O. Seward
Michael Silverberg
Philip M. Spiro
Nancy K. Terrell
Pamela L. Zeitlin

1984

Gift: $5,000
Participation: 43%
Agents:
Hingge Hsu
Jay R. Kostman

Martha R. Arden
Deborah J. Arrindell
David I. Astrachan
Susan J. Baserga
Leonard Bell
Troyen A. Brennan
Barbara A. Coda
David J. Fillmore
David A. Frank
Paul Gagliardi
Peter M. Glazer
John L. Gwin Jr.
Bruce G. Haffty
Robert J. Havlik
Sabra L. Jones
Emilio J. Juncosa
Jeffrey N. Katz
Michel Kliot
Daniel M. Kolansky
Jay R. Kostman
Philip R. Krause
John H. Krystal
Margaret L. Lancefield
Richard L. Leff
James G. Linakis
Alison C. Lindsay-Beltzer
Frederick A. Paola
Dominic D. Pennachio
Jill S. Ratain
Terri L. Richardson
William A. Rios
Kenneth S. Rosenblum
Paul B. Rothman
Saul Sadka
Ana M. Salazar
Joshua D. Schor
David A. Shrier
Theodore A. Silver
Edwina E. Simmons
Michael Simons
Paul M. Snyder
Mark Stein
Andrew L. Sternlicht
Susan P. Tredwell

1985

Gift: $4,375
Participation: 45%
Agent:
Fred Santoro

Barry D. Bergquist
J. Alexander Bodkin
Jane E. Carter
Elizabeth A. Charney
Alice S. Chi
Bryan X. DeSouza
Carol F. Farver
Guy L. Fish
Guy Fried
Richard B. Garber
Michael W. Gilbert
Samuel D. Goos
Daniel Greenwald
Barbara J. Guillette
Jacqueline Gutmann
Robert S. Higgins
Marie Hobart
Stuart N. Isaacs
Michael R. Johnson
Robert L. Klitzman
Ellen R. Kolarik
Susan A. Korrick
Shirley J. Lee
Jonathan S. Lewin
Ted W. Love
Jeffrey A. Lowell
Anthony Marks
Mary C. Nakamura
Jon C. Parker
Richard G. Parker
Leslye C. Pennypacker
Samuel R. Pesin
Anne Regenstein
Richard A. Ruiz
Greg A. Sachs
Fred Santoro
Edward B. Savage
Gary L. Shapira
Timothy A. Shapiro
Robert C. Smith
Louis J. Tesoro
Yonina C. Wëiss

1986

Gift: $20,817
Participation: 41%
Agents:
Eric Bernstein
Clinton L. Lindo
Eric P. Suan
Reunion Gift Chairman:
Eric P. Suan

Margaret N. Alexander
Catharine A. Arnold
David Atkins
Samir M. Bhatt
Richard L. Bridgewater
Cristina M. Brunet
Danilo D. Castro
Paul Chang
Raymond T. Chung
Andrew R. Conn
Suzanne D. Conzen
Raymund S. Cuevo
John A. Detre
Amanda B. Dill
Jay A. Gates
Michael Grossbard
Barbara J. Harvey
Gary S. Hirshfield
Jeremy L. Holtzman
Robert A. Jackson
Roberto Lewis-Fernandez
Clinton L. Lindo
Manuel B. Litchman
Antoinette L. Lloyd
Thomas J. Lynch Jr.
Stacey Mandelbaum
Cynthia A. McCraven
Timothy W. McGowen
Michael D. Miller
Elizabeth A. Plotkin
George M. Sachs
Jeffrey G. Schneider
Dae Y. Song
Kimberlee A. Sorem
Andrew W. Steele
Eric P. Suan
Steven J. Waisbren
Terry Watnick
Reginald O. Windom
John J. Wysolmerski
Alan Yamada

1987

Gift: $4,664
Participation: 33%
Agents:
Subba R. Gollamudi
Mindy G. Schuster
Barry Weinstock

Andrew N. Bazos
Gregory M. Brown
Michael J. Caplan
Jerome H. Chin
Richard Diana
Ellen Dolnansky
Robert Englander
Eugene S. Fu
Steve M. Gaskin
John M. Gaziano
Laurence A. Greenbaum
Hugh C. Hemmings Jr.
Robert J. Homer
Amy C. Justice
Rebecca E. Kadish
Christopher King
Joseph T. King Jr.
Elliott Levy
Kenneth E. Newhouse
Patricia T. Powell
Lauri R. Robertson
Seth A. Rosenthal
Patrick A. Ruwe
Mindy G. Schuster
Michael H. Solon
Odett R. Stanley-Brown
Richard P. Tierney
Robert C. Urban Jr.
Leslie Vogel
Barry Weinstock
Mark D. Widmann

1988

Gift: $3,891
Participation: 36%

Agents:
Michael E. Mockovak
Susan A. Valley
Hedayatollah Zaghi

Larry Amsel
Linda W. Armstrong
Joi Barrett
Jonathan A. Borden
Martha Brochin
Robert K. Brown
Kathleen Carney-Godley
Martin L. Chenevert
Laura M. Dember
Joshua E. Freedman
Irene J. Freeman
Jonathan S. Friedes
Leslie K. Jacobsen
Ellen Kornmehl
Frederick F. Lang Jr.
Lisa C. Larkin
Frederick Long
Michael E. Mahig
Elizabeth E. Mannick
Theodore Miclau
Kelle H. Moley
Autry J. Parker Jr.
Donna Richman
Michael O. Rigsby
Michael A. Rothschild
Jonathan A. Sherman
Mitchell J. Sklar
Lenore K. Soodak
Philip A. Stull
Susan A. Valley
Hedayatollah Zaghi

1989

Gift: $3,878
Participation: 44%
Agents:
Stephen Bharucha
Lewis Lipsey
Melissa T. Myers

Katherine A. Albert-Hemmings
Jennifer F. Bock
Susan K. Bonar
Maura J. Brennan
Ira Cheifetz
Cherise M. Dyal
Dina B. Eisinger
Alexandra Flather-Morgan
Craig E. Fleishman
Yvonne I. Frei
Susan Garetz
Virginia J. Greenbaum
Adam L. Greene
Colin K. Grissom
Joni H. Hansson
Lisa R. Ide
Howard Kesselman
Lawrence R. Kleinberg
Robert L. Levin
Amy Lewis
Howard Morningstar
Melissa T. Myers
Viviann M. Rubin
Thomas J. Silva
Leslie M. Sims
Stephen M. Smith
Robert Spiera
David M. Stier
Sanjoy Sundaresan
Amy A. Tyson
Andrew T. Walker
Marjorie S. Webster
John T. Whalen
Roger F. Widmann
Christopher Wolf-Gould

1990

Gift: $1,881
Participation: 30%
Agents:
Ercem S. Atillasoy
Thomas J. Christopher
Jonathan T. Foster
Tracy D. Nelson
Chander N. Samy
Roberto Soto
Dan Stryer

Susan G. Anderson
Nancy R. Angoff
Ercem S. Atillasoy
Thomas J. Christopher
Mark A. Dettelbach
Mittie E. Doyle
Jonathan T. Foster
Douglas M. Freedman
Alan S. Hilibrand
Betty S. Kim
Stephen Knight
Toshiko F. Magnus
Ira Meisels
Mark A. Miller
Tracy D. Nelson
Erika H. Newton
Jullie W. Pan
Jane E. Rasmussen
Chander N. Samy
Andrew H. Schulick
Daniel Stryer
Karl G. Wagner Jr.
Samuel C. Wang
Marc J. Warman
Siu-Long Yao
Keith A. vom Eigen

1991

Gift: $6,560
Participation: 30%
Agents:
Stephen Bell
Carl Henningson
Richard G. Ihnat
Frank M. Lobo
Karen Hsieh Lu
Funda Meric
Andrew F. Phillips
John Phillips
Reunion Gift Chairman:
Frank M. Lobo

Jeanne B. Ackman
Marc E. Agronin
William T. Andrews
Mark G. Barad
Stephen Bell
Steven B. Care
Jeffrey D. Carter
Daryl K. Daniels
Vivek David
Sarah A. Davidson
Scott E. Edwards
Helen L. Egger
Jean L. Fraser
Bernice K. Glover
Gwendolyn Grant
Lawrence J. Hirsch
Richard G. Ihnat
Thomas S. Kupper
James S. Levine
Francis M. Lobo
Charles Lu
Karen Hsieh Lu
Margaret R. O'Neill
Robert Z. Orlowski
Eleanor S. Pollak
Pablo A. Quintela Jr.
Marc A. Seltzer
Robert M. Spillane
Stacy B. Stryer
Margaret M. Toth
Paula I. Watnick
Ellis L. Webster

1992

Gift: $1,135
Participation: 23%
Agents:
Karen J. Antell
J. Mathieu Massicotte
Robin A. Perlmutter

Darrick J. Alaimo
Karen J. Antell
Douglas M. Dahl
Frederic W. Deleyiannis
Ann S. Denehy
Anne T. Egan
Michael Girardi
Andrew J. Griffith
Israel R. Grossman
Nancy L. Harthun
Doris M. Iarovici
Joanna Y. Jen
Robert B. Johnson
Alan B. Jotkowitz
Lauren E. Krieger
Joseph M. Massicotte
Robin A. Perlmutter
Kenneth E. Rosenzweig
Mary E. Savage
John L. Walsh
Teresa L. Wooten
James S. Yeh

1993

Gift: $1,270
Participation: 28%
Agents:
Juan Bartolomei
Ann Dolinsky
Stephanie A. Falcone
Robert Iannone
Julie Miner

Anthony J. Adrignolo III
Albert Assad
Elizabeth S. Auld
Michael C. Brown
Sarah S. Demtrak
William D. Dockery III
Elizabeth D. Elguera
Stephanie A. Falcone
Christopher P. Fey
Blair W. Fosburgh
Lawrence B. Gardner
Adriane M. Guerin
Deborah M. Jotkowitz
William F. King Jr.
Lisa A. Kotler
Elizabeth D. Le
David M. Lee
Matthew L. Lemer
Gayle Lesnieski
Michael C. Locker
Samer Najjar
Lisa J. Nelson
Michael I. Oppenheim
William R. Rodriguez
Jaclyn A. Ryan
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Irl L. Extein '74
Marybeth Ezaki '77

Tommy and Susan Hilfiger fund MS research

Tommy Hilfiger's name is recognized around the world for his popular men's and women's fashions. His company is also well-known for its support of charitable organizations, such as the Fresh Air Fund in New York. Tommy Hilfiger and his wife, Susan, have personally committed themselves to biomedical research. Among other activities, they have made a gift of $50,000 to support a research fellowship in the Yale Multiple Sclerosis Program.

Mr. Hilfiger's sister, Dorothy Clapp, who has multiple sclerosis, is a participant in clinical treatment studies sponsored by Yale under the direction of Joseph B. Guarnaccia, M.D., co-director of the Yale MS Program. She has also worked with patients and their families to ease the devastating effects of this disease.

The Hilfiger family helped the Yale MS Program become the fifth participating academic center in the Nancy Davis Center Without Walls, a unique collaboration created and supported by the Nancy Davis Foundation for MS. ▪

MEMORIALS

Deceased medical alumni/ae and friends may be memorialized by a gift at any time to the School of Medicine Alumni Fund endowment in the name and class of the person so honored. The next-of-kin of a deceased medical alumnus/a is advised about the In Memoriam Program by a mailing from New Haven some weeks after the School of Medicine receives notification of the death. The letter of information includes a copy of the *Testament of Remembrance*, in which the names of all persons so memorialized are listed in the medical section by class, thus establishing a lasting memorial. Your inquiries and interest are welcome.

YALE UNIVERSITY
Office of the Alumni Fund-Memorials
Rev. James R. Blanning *and*
Rev. William E. Bliss, directors
P.O. Box 1890
New Haven, CT 06508-1890
(203) 432-5853

Deceased alumni and friends
so honored in 1995-1996 were:

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Vincent A. Doroszka '30
David Paul Dunn '60
James Philip Dunn '53
Gunnar O. Eng '49
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Sidney L. Lasell '41
Charles L. Mache Jr. '47
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Edward Nichols '38
Edward T. O'Donnell '34
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Philip Caeser Viscidi '42
Darrell G. Voorhees '39
Wesley Watson '43
Harry M. Zimmerman '27
Salvatore Falbo '57
Ralph J. Falkenstein '69
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Herbert W. Felsenfeld '67
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Michael Fitzsousa

The Office of Alumni Affairs, as part of its new Outreach Program, sponsored a reception in San Francisco in November 1996 during the annual meeting of the Association of American Medical Colleges. Brothers John A. Anlyan, M.D. '45, right, and William G. Anlyan, M.D. '49, second from left, are pictured with Dean Gerard N. Burrow, M.D. '58, left, and John's wife, Betty.

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Ted Mann Foundation Funds Lymphoma Research

The Ted Mann Foundation pledged $500,000 over five years to establish the Ted Mann Lymphoma Research Program Fund in the Yale Cancer Center. Mr. Mann, producer and founder of Mann Theaters in California, supports a variety of education and medical research causes through the foundation.

Harris Brothers Support Yale Child Study Center

Two brothers, both Yale College graduates, pledged a $4 million gift to construct a new facility and support programs at the Yale Child Study Center. The gift from Irving B. Harris, Yale College Class of '31, and Neison Harris, Yale College '36, will help construct the Neison and Irving Harris building, a new wing attached to the center.

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From the dean for public health

The faculty and students join me in thanking our alumni/ae for their outstanding support this year for financial aid through the EPH Alumni Fund. We have an extraordinary group of students, many of whom have great financial needs. Being able to help them relieve some of their financial burdens is very rewarding.

We have opened the new student center across the street from the Laboratory of Epidemiology and Public Health. It includes the Student Affairs and Career Services offices, a student lounge, computer facilities and a magnificent new library. Moving those activities has allowed us to develop the first floor of the main building with new classrooms and a thoroughly renovated Winslow Auditorium.

The faculty is implementing our strategic plan, including needed revisions of the curriculum. The first classes in our new Health Management and Regulatory Affairs programs are here and doing well. We are strengthening our relationships with other schools at Yale and the cross-fertilization of ideas makes EPH a lively place. We are also recruiting several new faculty in a wide range of areas.

But as we enjoy academic life, we cannot forget the enormous public health problems facing populations close to us in the city of New Haven and as far away as the most distant point on the globe. It is on these problems that we must focus our educational and research activities and programs.

On behalf of the entire school, I extend our gratitude to those alumni/ae who have generously supported our efforts.

Michael H. Merson, M.D.
Dean for Public Health

From the chairman of the Public Health Alumni Fund

This spring at our alumni weekend we will celebrate the 50th anniversary of organized alumni/ae involvement in Epidemiology and Public Health at Yale. Throughout all of these years, we have shared a tradition of loyalty and devotion to EPH. The enthusiasm of our dean, the new renovation of the student and teaching facilities and the heightened activity of our faculty—in research and service areas such as emerging infectious disease, managed care and urban health—have increased the visibility of public health at Yale.

One result has been the recruitment of an outstanding group of master's and doctoral students who represent our real investment in the field. Alumni/ae generosity has made financial support available to many of these students who could otherwise not attend Yale. In fact, last year our level of alumni/ae participation in giving was at an all-time high of 41 percent, and EPH gifts and pledges to the Annual Fund and Yale's capital campaign totaled more than $400,000.

I want to express my congratulations and sincere thanks to everyone who worked on these fund-raising activities, as well as to those who so generously contributed. Adequate financial aid for students remains our most important financial priority as we address the challenges of educating students for the demands of public health in the future. If EPH is guided by our mission to train leaders, we must be able to attract and retain the very best students and allow them to plan careers that address the needs of the field. As EPH alumni/ae and public health professionals, we all appreciate the importance of this mission. It is fitting, in this next anniversary year, that we renew our commitment to advancing the field by continuing our support of those who will be our future colleagues.

Eric W. Mood, M.P.H. '43
Chairman
Public Health Alumni Fund

EPH Alumni/ae Fund

*The names and data included on the following pages reflect contributions made and endowment income accumulated between **July 1, 1995,** and **June 30, 1996.** The class members recognized made a gift to the fund during that period. Endowment income is not reflected in the class participation percent. If we have inadvertently omitted your name, please accept our apologies and contact Mr. William K. Jenkins in care of this magazine so that we may correct this omission.*

1933
Gift: $20
Participation: 33%

Miriam M. Campbell

1934
Gift: $1,338
Participation: 100%

Iwao M. Moriyama

1937
Gift: $100
Participation: 50%

Howard West

1938
Gift: $185
Participation: 100%

Willard H. Boynton
Andrew S. Wong

1941
Gift: $1,376
Participation: 50%

Margaret H. Hyde Moore
Roslyn L. MacNish

1942
Gift: $5,455
Participation: 100%
Agent:
Eric W. Mood

Henry F. Canby
Leonard Parente
Charles D. Spangler

1943
Gift: $1,327
Participation: 75%
Agent:
Eric W. Mood

Julius Elston
Carolyn S. Koffler
Eric W. Mood
Amelia F. Roe
Miriam H. Rohde
Adele P. Schlosser

1944
Gift: $1,078
Participation: 67%
Agent:
Eric W. Mood

Paul E. Gagnon
Jean F. Heston
Jane Y. Parker
Einar H. Raysor

1945
Gift: $200
Participation: 56%

Roslyn R. Bilford
Naomi Barer Golden
Mrs. Joe Bales Graber
Lois M. Jund
Hazel M. Whitesel

1946
Gift: $600
Participation: 33%

Dorothy B. Hamilton
D. Patricia Nelson

1947
Gift: $3,390
Participation: 58%

Sidney S. Chipman
Anne E. Fulton
Lillian L. Konick
Leah Lehrer
Jean M. Pinder
Cecil G. Sheps
Samuel Zibit

1948
Gift: $120,875
Participation: 62%
Agent:
Samuel S. Herman

John B. Dibeler
Mary L. Ellis
Joseph Hanford Gerber
Samuel S. Herman
Mrs. Richard E. Johnson
Beatrice H. Kaasch
Dorothea S. LaBelle
Hiram Sibley

1949
Gift: $1,150
Participation: 69%
Agent:
Edgar L. Geibel

Eleanor C. Connolly
Edgar L. Geibel
Eleanor P. Kostant
Edmund R. Mattos
M. Christine R. Owre
William B. Parsons
Joyce L. Reiss
Elizabeth Robinton
Ernest M. Sable
Mary T. Springer
Kathryn K. Venning

1950
Gift: $1,987
Participation: 62%
Agent:
Eric W. Mood

Dorothy Reese Bloomfield
Ida M. Bucher
Austin J. Evans
Jerome M. Glassman
Dorothy R. Granoff
Eugene K. Harris
Frances K. Reynolds
Nathan M. Simon

1951
Gift: $640
Participation: 42%

Norton G. Chaucer
Homer Hopkins Jr.
Robert L. Johnson
Virginia E. Torres
James M.A. Weiss

1952
Gift: $3,255
Participation: 47%
Agent:
Yolande F. Lyon

Mary M. Del Piero
Howard Dunphy
Joanna Adele Henry
Malcolm C. Hope
Charles Holway Lawrance
Helen Kardys Loria
Yolande Lyon
Brena B. Wolff

1953
Gift: $865
Participation: 45%

Abraham Cutcher
Cecilia Frances
Di Cicco
Barbara J. Lee
Milton H. Sisselman
Constance B. Thomas

1954
Gift: $610
Participation: 71%
Agent:
Eric W. Mood

Donald R. Cowan
Jo Ann G. Graves
Alvin Hamburg
William A. Markey
Ruth M. Taber

1955
Gift: $465
Participation: 67%
Agent:
Frances R. Ogasawara

Lester M. Bornstein
Amy L. Cawley
Evelyn S. Farnsworth
Morris London
Mary McC. Mogan
Frances R. Ogasawara
Gerald Rosenblatt
Daniel E. Ross

1956
Gift: $2,705
Participation: 75%
Agent:
David D. Boyd

Ruth D. Bartling
Dorothy Carol
Blumer
David D. Boyd
Marvin H. Burton
Lois Blatchford Fuller
Kathleen H. Howe
John E. Ives
Paul I. Kaufman
John F. Mullett
Julia R. Nole
Mary K. Ochiai
George R. Walker

1957
Gift: $2,025
Participation: 53%
Agent:
Edward R. DeLouise

Anne M. Anzola
Lee de Cady Jr.
William A. Clermont
Edward R. DeLouise
Sheldon Selig King
Shirley T. Steidel
Paul W. Sternlof
Patricia A. Viscosi

1958
Gift: $4,845
Participation: 55%
Agent:
Joseph Scorpion

Eduardo Anzola
Josephine Blanchett
Helen H. Davenport
Normand E. Girard
Patricia P. Grimaila
Philip B. Hallen
J. Philip Keeve
Edward H. Noroian
Joseph A. Scorpion
Mary K. Spiker
Irene N. Sweeny
Robert Kenneth Wood

1959
Gift: $965
Participation: 40%
Agent:
Dorothy M. Wilson

Marvin A. Lavenhar
Hugh J. Maher
Ferne G. Moore
Ellwyn D. Spiker
Mattie Lee D. Wade
Kenneth J. Williams

1960
Gift: $2,205
Participation: 53%

Charles W. Burchard
Kathryn L. D'Amico
Wouter Ekker
Maxine Geeslin
Rose A. Iannotta
John J. Kwasnowski
Salvatore Miano
R. John C. Pearson
Hannah Clark Russell

1961
Gift: $3,425
Participation: 71%
Agent:
Joseph T. Prekup

Gordon R. Beem
Mary S. Blackburn
Martin Donabedian
Alfred E. Fletcher
Yoh Ok Lee
Helen M. O'Connell
Margaret P. Parker
Joseph T. Prekup
Angela M. Russo
William R. Slivka

1962
Gift: $1,050
Participation: 22%

Thomas A. Blumenthal
Thomas R. Mayhugh

1963
Gift: $3,125
Participation: 47%

Jordan Braverman
Hamp Coley
Raul R. Cuadrado
Stephen F. Davie
Frank M. Isbell

Edward M. Kenney
Jean M. Maynard
Samuel B. Webb Jr.

1964

Gift: $2,755
Participation: 39%
Agent:
Allen Cohen

James J. Culhane
Katherine Maria Detre
Martin Hirsch
Carter L. Marshall
Estelle Siker
Monroe W. Spero
Claudewell Sidney Thomas

1965

Gift: $2,225
Participation: 50%

Edgar W. Francisco III
Monte Nelson Frazier
James F. Jekel
Michael E. Kove
Peter J. Levin
Charlotte Miller
Mary K. Murphy
Francia M. Pagano
Elliot A. Segal
Viola J. Spinelli
Alice J. Turek
Sarah L. Turner
David S. Weiner

1966

Gift: $1,820
Participation: 36%

Richard W. Benfer
Allen Cohen
Anne B. Collart
Richard H. Ferraro
Jennifer L. Kelsey
Robert C. Lowrie Jr.
Mrs. Birch H. Milliken
Nancy Alfred Persily
Gary J. Robinson

1967

Gift: $4,341
Participation: 59%
Agent:
James M. Malloy

Gerard M. Barber
Rosalie M. Berberian
Caroline Fong-Cheng
Ann Gomez
Joel Kavet
Dennis J. Magid
Patricia D. Mail
James M. Malloy
Joseph A. Mangiafico
Charles Petrillo Jr.
Nancy Ruth Phillips
Bruce J. Steinhardt
Elgin Wayne Watkins
Irma Willner
Robert L. Woodward

1968

Gift: $12,910
Participation: 53%

Sonia M. Colon
Joseph L. Dorsey
Elizabeth Schwartz Elliot
Robert R. Everett
L. Carol Fernow
Carl R. Fischer
Michael J. Geaney Jr.
Francis J. Greaney
William D. Harkins
Chester H. Johnson
R. Elizabeth Leif
Margaret J. Lindsay
Jean C. MacCorison
John M. Patton
Richard L. Petrelli
Cornell Scott
Doreen P. Sharabati
Martha F. Steel
Doris Storms
Elizabeth C. Wright

1969

Gift: $2,773
Participation: 45%

Susan S. Addiss
Janet A. Albrecht
Jean Parker Cobb
Victor Crown
James M. Dawson Jr.
Charles W. Felix
Sister Mary Anne Fitzmaurice
Sharon A. Garcia
David P. Johnson
Samuel P. Korper
John N. Parker
Samuel D. Rowley
Marva Serotkin
Edward P. Tantorski
Wanda Vierthaler

1970

Gift: $12,820
Participation: 56%

Robert G. Alexander
Susan W. Balter
Katherine Benesch
Arthur A. Berarducci
Michael B. Bracken
Hamilton B. Brown Jr.
Shan Cretin
Ruth C. Edelson
Walter M. Gawlak
Robert S. Gureasko
Martin James Kandes
J. Kevin Kinsella
Shirley O. Labrum
Scott W. Lite
Russell F. Martin
C.P. Noel McCarthy
Andrea W. Nevins
Peter Orris
Saro Palmeri
William L. Pedersen
Carol B. Phillipy
Nancy Norton Reitz
Stephen Skorcz
Joseph A. Zaccagnino

1971

Gift: $17,460
Participation: 52%

John Bihldorff
Evelyn J. Bromet
Willard Cates Jr.
Katrina H. Clark
Dale A. Culp
Chester L. Davis II
Harvey Fernbach
William P. Ferretti
Anne-Marie Foltz
Marilyn S. Halper
Dennis R. Hamilton
Wanda Hatmaker Decker
Mohamed Ismail Johnson
William P. Koughan Jr.
Joseph S. McManus
Nancy P. Mogielnicki
Wan Hin Ooi
Carol L. Paul
Marcia Russell Prado
John M. Ryan
Anna Caroline Schildroth
Jane Silver
Rev. Robert E. Steele
David L. Stockton
Victor J. Tucci
Judith Whitcomb

1972

Gift: $6,085
Participation: 67%
Agent:
Dorothy J. Nicoll Lewis

David P. Barone
Stephen B. Baruch
Steven H. Beloff
Michael L. Benjamin
Frances L. Bushnell
Paul G. Bushnell
C. Gene Cayten
Catherine A. Connolly
John A. Drew
James P. or Anne S. Fenhagen
Daphne Dej. Gemmill
Susanne Harris
Russell E. Holmes
Selby Campbell Jacobs
Dorothy N. Lewis
Steven M. Lipsius
Marilyn Marie Massey
Eugene A. Richardson
Sergio Ruschel
Jo Ann Silverstein
Joyce R. Waksman
Owen L. Wood
Carol H. Simpson Yee

1973

Gift: $8,575
Participation: 57%
Agent:
Gary D. Sax

Emily M. Barclay
Eva Danielsson Cohen
Bernice E. Coleman
Etekamba E. Ekwo
Bruce Goldman
Schula Russell Hobbs
Helen B. Hubert
Shirley A. Jackson
James L. Mason
Dennis P. May
Dwight N. McNeill
Stanley D. Miller
George A. Million
Eugene C. Nelson
Marjorie E. Nelson
Eugene Robertson
Gary Dean Sax
Janet B. Schoenberg
Andrew Edmund Slaby
Alice S. Stark
Thomas J. Stranova
Irene Trowell-Harris
Larry S. Webber
Bonnie C. Yankaskas
Carl J. Zack

1974

Gift: $3,033
Participation: 44%
Agent:
Thomas A. Benoit

Gregory Belok
Thomas A. Benoit
Ian B. Berger
Roger H. Bernier
Olga Brown-Vanderpool
Beth G. Crocker
Robin Gilleland
Elizabeth M. Helming
George L. Kelley
Evelyn B. Mostow
Edward J. Mullen
Thomas P. Pipicelli
Shirley M. Pripstein
Nils R. Richardson
Elaine Ron
Donald R. Showalter
Abigail L. Smith
Meredith E. Spear
J. Lawrence Tanenbaum

1975

Gift: $6,355
Participation: 42%
Agent:
Linda K. Broker

Christine P. Antaya
Edith N. Baum
Ralph E. Binder
Gerald E. Bisbee Jr.
Linda K. Broker
Ann C. Cunningham
Linda K. Demlo
Jack A. Eiferman
Joyce H. Glazer
Gerard R. Goulet
William J. Grego Jr.
Donna Brown Grossman
Anne H. Hall
Mary F. Johnson
Barbara R. Unterman Jones
James E. Knoben
Matthew A. Kurs
Stuart L. Lefkowich
Sheldon M. Levy
Marsha Alex Lubick
Hillary Demby Malafronte
Laurence F. McMahon Jr.
Dennis W. Mesenhimer
Mary W. Palshaw
Dale P. Sandler
Edward V. Sargent
Nancy E. Stroup
Raymond Chiu-Ping Tang
John H. Tobin
Maura M. Tobin
Franziska U. Ulrich
Vera B. Walline

1976

Gift: $15,860
Participation: 55%
Agent:
Elaine P. Anderson

Elaine P. Anderson
William F. Appicelli
Helen Y.Y. Chang
Janet Cobey
Mary P. Cowmeadow
Darryl E. Crompton
Agueda N. Deans
Joanna M. Erikson
Paul H. Etkind
Robert H. Frazier
Berton D. Freedman
Wendy Corn Friedman
Annette B. Garofalo
Linda J. Goodhart
Karen A. Gordon
Cleve Lee Killingsworth
Janina Levy
Eric Malz
Robert C. Marquardt
Karen E. McClelland
Lawrence V. Meagher Jr.
Gino A. Nalli
Arthur J. Orloske
Ruth Fitch Quah
Robert Risdon Schwarz
Mary Jo P. Shepard
Martha Ann Teitelbaum
Gladys A. Williams
Thomas S. Wingardner Jr.
Frances L. de Peyster

1977

Gift: $9,227
Participation: 42%

Harry Bishop

EPH Dean Michael H. Merson, M.D., with keynote speaker Michael Owens, M.D., M.P.H. '78, at the EPH reunion last June.

Richard B. Burford Jr.
Patrick F. Carone
Jeffrey Allen Cassis
Steven R. Cohen
Bruce D. Cummings
Marsha E. Dunn
Gerard J. Foley
Joanne Godley
Travis K. Hedrick
Susan J. Kennedy
Teri J. Klein
Ronald F. LaPensee
Wendy K. Lefkowich
Angela Manns
Polly W. Marvin
Rosanne B. McTyre
Sharon A. Mulgrew
Kristin K. O'Connor
Veronica C. Oestreicher
Harris Pastides
Linda Mendelsohn Pottern
Marilynn S. Robinson
Deborah Rose
Lynne E. Rosenwald
Abby Rothschild
Carroll Schilling
Susan M. Silverman
Gail M. Sullivan
Virginia R. Towle
Leon F. Vinci
Ellen J. Waldman
Paula Y. Yaney Gambill

1978

Gift: $10,650
Participation: 57%
Agent:
Ann T. Freedman

Vijaya V. Bapat
Kathleen M. Berman
William Harvey Blitz
Alan B. Bloch
Bradford A. Buxton
Constance C. D'Atri
Robert J. Fensterheim
Ann T. Freedman
Janice R. Gold
Celestine Grace
Olympia Hadjimichael
Naney G. Hildreth
Stephen W. Hildreth
Jane E. Hill
David W. Houck
William A. Howard
Jean Crum Jones
Margaret Long Karis
Amy Schein Kondo
Rosalyn S. Liss
Christopher M. Maylahn
Robert K. McLellan
H. James Myers
Marguerite Nelligan
Patricia Lynn Noeker
Peter F. O'Connor
David W. Osborne
Elizabeth L. Pantelick
Trudee C. Parenteau
Ellen D. Rothberg
Karen C. Schneider
Michelle D. Schoenberger
Robert E. Schwartz
Roberta Jo Shapiro
Patricia A. Shea
Alan J. Siniscalchi
Marie Stoeckel
Rolando Antonio Thorne
Bernadette S. Vissani
R. Bradford Walker
Lucy Ellen Weiger
Karen W. Wolchuck-Sher

1979

Gift: $13,985
Participation: 47%
Agent:
Ralph Tartaglione Jr.

Virginia P. Bainbridge
Marianne Berwick
Joann N. Bodurtha
Jonathan Brenn
Dennis A. Brogan
Christopher M. Cannon
Elizabeth S. Carter
Ralph J. Coburn
James F. Consedine II
Susan De Renzo
Frances D. Dwyer
Terry Edelstein
Nurit Erger
Lynn Fielden-Smith
Laura Meisler Finkelstein
Delores A. Franks
Judith B. Gancher
Shelley Helfer-Amira
Karen G. Hellenbrand
Joseph D. Henn-Demayo
Lucinda H. Hogarty
Susan Kananovich
Phillip S. Katz
Karen A. Kmetzo
Paul Anthony Kowalski
Benjamin Krevsky
Renee S. Leary
William McCune IV
Patricia J. Moore-Pastides
Laure C. Nichols
Helen O'Brien
S. Kwame Ofori-Kwakye
Betty J. Reid
Lisa Klar Rosenfeld
George B. Rowland
William E. Schweizer III
Audrey P. Silvey
Ilene B. Wachs Fache
Jonas Zucker

1980

Gift: $8,925
Participation: 47%

Phillip R. Aaron
Frederick R. Aronson
Diane Denis Aye
Curtis S. Breslin
Antoinette M. Brooke
Gary L. Busack
Sheila L. Conneen
Martha G. Dale
Anne Morrison Danaher
Alfred E. Fasulo Jr.
Audrey L. Fetter
Barbara H. Granger-Russota
Ellen B. Greif
John Halleran
Samuel S. Hamilton
James P. Harisiades
Virginia S. Humphrey
Johanna C. Hunt
Helen E. Kelly
Michael J. Kremer
Robert V. Levine
Paul A. Locke
Leroy F. Ludwig
Kristina Obom Maldarelli
Steven Morrow
Glenn S. Newsome
Benita J. O'Colmain
Jane Ungate O'Connor
Ann L. Prestipino
Christina P. Quinn
James E. Rawlings
Christie Michele Reed
Jeri Ann Rose
Beth F. Schaier
Susan L. Schwartz
Kathleen F. Scribner
Lydia A. Selling
Marsha L. Silverman
Judith S. Stavisky
Carolyn K. Wells
Tal Ben-Dashan Widdes

1981

Gift: $10,015
Participation: 43%
Agents:
Angelo J. DeVita
Barbara Gaugler Pennebaker

Robert M. Anderson Jr.
Barbara M. Aufiero
Heidi Boerstler
Janet L. Brandsma
Harold J. Burdo Jr.
Lionel K. Chadwick
Patricia J. Checko
Rollin C. Chew
Angelo J. Devita
Richard T. Forsley
Robert Fox
Peggy A. Gallup
Marie F. Gavula
Louis M. Gonzalez
Joan Urquhart Goodman
Roslyn Hamilton-McGraw
Gerlinde B. Kehlenbach
Cindy F. Kleiman
Thomas J. Krause
Charles R. Lawson
Neal A. Lustig
Katherine M. McCormack
William R. McLaughlin
Blackford Middleton
Marlee D. Mooney
Ellen Gallagher Parsons
Frederick V. Peterson Jr.
Idalia Ramos-Sanchez
Kimberly Chauncey Shadur
Elizabeth N. Shapiro
Karin Swanson
Keith D. Tait
Kathleen R. Yager
Nancy C. Yedlin

1982

Gift: $10,860
Participation: 36%
Agent:
Jean Milton Ellis

Jamie L. Amaral
Gretchen D. Biemesderfer
Francis L. Crowley
Kathleen K. Devine
Jean M. Ellis
Paul Garbe
James L. Hadler
Denise Heinemann
George R. Hession Jr.
Karla A. Hitchcock
Nancy Pitt Hopkins
Catherine Sullivan Jaquith
Constance M. Jarowey
Annette Kenney
David P. Klarberg
Susan Eberle Levy
George J. Mandes
Linda F. McCaig
William F. McKeon
Tsuneki Mizuta
David L. Mork
Susan G. Rice
Christopher J. Rogers
Scott David Stratton
Michele T. Visconti
Sandra Michaelson Warren
Maud Helen White
Theodore J. Witek Jr.
Jill Okrent Zaheer

1983

Gift: $7,824
Participation: 40%
Agents:
Jeffrey Hughes
Marybeth McNemey

Barbara W. Abraham
Gail Ellen Alexander
Joseph A. Amatruda Jr.
Carolyn R. Anderman
Lisa A. Bowie
Benjamin Obi Chukwumah
Eileen Conlon
Linda K. Contreras
Peggi Matzkin Czinger
Lorraine Denicola
Mark L. Dembert
Robert A. Duncan
D.J. Safiya Edwards
Eileen McDonald Egan
Ellen M. Ginzler
Judith S. Goldstein Trerotola
James D. Gonzales
Halesteen Graham
Daniel A. Graybill
Virginia C. Hiland
James M. Lehane III
Allen F. Levy
Scott K. Mock
Judith F. Nelson
Suzanne Nutt
Barbra G. Rabson
Keith A. Radcliffe
Julie A. Russem
Lynn St. Germaine Saphire
Paul M. Schur
Ina L. Silverman
Claudia Smith
Elizabeth C.H. Stevenson
James G. Uberti
Nancy K. Wright

1984

Gift: $7,170
Participation: 39%

Agent:
Leslie A. Balch

Deborah J. Arrindell
Leslie A. Balch
John R. Beecher
Rhonda L. Bohn
Troyen A. Brennan
Timothy J. Callahan
Jean G. Concannon
Rudy Glen Davis
Christopher Fenger
Jean L. Freeman
Marcia Lipkind Hirsch
Suzanne S. Horn
Sarah M. Horwitz
Robert C. Hughes
Gregory R. Huth
Catherine S. Jackson
Mehrdad Jalali
Georgia Jennings
J. Kutcher-Henchel
Andrea McCrensky-Kremer
Stephen T. McGarvey
Marta E. Moret
Lloyd M. Mueller
Cathy F. Nager
Donna Niedzwiecki
Theresa Marie O'Connor
Jessica L. Richer
Stephen Marc Schwartz
Phillip J. Screen
Dennis G. Shrauger
Robin Kupfer Spencer
Pamela Parise Suan
Marie Ann Tobin
Carey Vames

1985

Gift: $4,660
Participation: 32%
Agents:
Katherine S. Fitzpatrick
Joan M. Cleary Miron

Lisa R. Anthony
Christine D. Berman
William P. Buick
René S. Cabral-Daniels
Lawrence M. Chesny
Joan M. Cleary Miron
Kathleen M. Craig
Loretta Dipietro
Marjorie M. Eichler
Grace P. Erickson
Katherine S. Fitzpatrick
Elizabeth Hale Frayne
Barbara K. Gottlieb-Ware
Tatsuyuki Kakuma
Julie M. Marshall
P. Douglas McConatha
Rona Janis Mogil
Beverly-Jane Perry
Adrian J. Pinsince
Martha J. Santini
Eric Scalettar
James V. Soscia
David Steffen
Heidi Roberta Sulis
Anne Harmon Sweeney
Samuel P. Wertheimer
Nathan D. Wong
Terry Martin Zingman

1986

Gift: $7,734
Participation: 34%
Agents:
Indu B. Ahluwalia
Aric R. Wilt

Indu B. Ahluwalia
Maria Rosario G. Araneta
Judith Ann Bell
Andrea Lee Boissevain
Lewis P. Bower Jr.
Marijane L. Carey
Julia E. Clark
Reid M. Davis
A. Richard Dooley Jr.
John M. Esdaile
Nancy E. Fithian
Robert B. Goetzinger Jr.
Stephen B. Gruber
Michael S. Huncharek
Denise R. Lewis
David C. Lowy
Adrienne Marks
Karen C.P. Milliken
Bernadette M. Mosellie
Daphne M. Nielsen
Tracey M. Orloff
Clare F. Pegues
Philip O. Renzullo
Maria J. Schymura
Janet M. Sgro
Carrie Shepard
Eric Triffin
Marie Irene Tsivitis
Katherine Burdick Wilson
Lynn D. Wilson
Nancy Borstelman Winer

1987

Gift: $14,425
Participation: 29%
Agents:
Hilda Chaski Adams
Elizabeth A. Wennar

Hilda Chaski Adams
Margaret B. Corbae
Barbara L. Decesare
Meg B. Domino
Robin N. Eastman
Cecelia Edwards-Randolph
Stephen A. Frayne
Bridgid M. Garrison
John Ginnetti Jr.
Elizabeth Grottole
Carol Guardiano
Priscilla Ann Halloran
Sara A. Holdcroft
Michael T. Koff
Mary Ann Lillie
Laurie B. Logan
Deirdre McDonald
John C. McLaughlin
Barbara J. Moggio
Maureen Brady Moran
Joseph J. Napolitano
Mark J. Pereira
Lynn Pezak Malloy
Elizabeth J. Philippe
Anita A. Roth
Judith Natale Sabino
Catherine Leda Seibyl
Mary C. Sherwin
Peter C. Tortora
Joel A. Wasserman

1988

Gift: $6,885
Participation: 30%
Agent:
Joseph Della Puca

Ellen S. Bass
Giselle Charlotte Bleecker
Jayne Bonner-Gary
Sharon Marie Christie
James Joseph Cullen
April R. Dworetz
Sylvia Blackburn Farrell
Aden Carlos Jackson
Ellen Lucy Kraftsow
Lydia Jeanne Landis
Mark William Legnini
Paul Alan Lindia
Saifuddin Taiyeb Mama
Susan S. Merrill
Carolyn Andrea Nunley
Mary E. Haesche Okero
Madhusudan G. Rao
Carrie A. Redlich
Lawrence Vincent Silvia
Carol Ann Strycharz
Howard S. Teitelbaum
Thomas Aaron Wellington
Lisa Wilson-Foley
Darlene Uten Zimmermann

1989

Gift: $6,635
Participation: 27%
Agent:
Joy Misako St. Germain

Christine Appel
Holly Anne Ardito
Judy Gardner Audette
Perry David Cohn
Marybeth Durkin
Agnes B. Edwards
Michael Joseph Gillespie
Elizabeth Harrison Hadley
Clifton Ping Lee
Lydia M. Lodynsky
Angela S. Mattie
Kathleen Louise Moore
Joanne Susan Mosca
Deena Beth Myers
David Dean Peete
Elizabeth Ann Platz
Theresa L. Raphael
Joseph Robinson
Robert P. Sbriglio
Nipon Sermpanich
William Benjamin Shatz
Joy Misako St. Germain
James Gordon Trexler
Sophie Helene Tworkowski
Whei-Kuo Wu

1990

Gift: $8,015
Participation: 36%
Agent:
Jennifer Jennings Miller

Lorraine M. Almo
Ethan N. Arnold
Alisa M. Bellantonio
Linda V. Bergonzi King
Andrew K. Bhak
Phyllis F. Boynton
Patricia Campbell
Michael Anthony Carrozza
Nicholas A. Daniels
Jerilyn A. Deveau
Deborah L. Fulton-Kehoe
Donna Mae Gruskay
Brenda Y. Hernandez
Jennifer W. Hincks Reynolds
Alfredo A. Lardizabal
John Martin Lavin
Barbara A. Leonard
Susan Patricia Lustig
Rebecca J. Mark
Julie Ann Medulan
Janet Amy Munroe
Karyn J. Nair
Angela B. Nimsgern
Rochelle Enid Oberwetter
Karen A. Oliver
Gary D. Perlman
Edward M. Rafalski
Jeanne Marie Danzi Scinto
Heralio G. Serrano
Brian Yong-Seop Shin
Salim Ramzan Ali Surani
Stacey H. Wills

1991

Gift: $7,513
Participation: 30%
Agent:
Patricia J. DeFelice

Benjamin O. Adetola
Lisa A. Amerino
Sharon Lee Carlton
Barbara A. Casey
Sandra S. Childress
Maureen P. Corry
Patricia J. DeFelice
Dymphna J. Egglin
Seth R. Frank
Brenda J. Goldstein
Catherine M. Heer
Rani A. Hoff
Katie B. Horton
Timothy A. Jacobs
Kathryn S. Katz
Anne M. Lane
Sally J. Malech
Laura Elizabeth Mitchell
Andrea Mary Orane
Andrew P. Owens
Louise P. Roumagoux
Sanjeev K. Srivastava
Stacy M. Susman
Mitchell S. Tepper
Victoria Valdez
Lucie L. Wilkins
Patreece T. Williams

1992

Gift: $2,665
Participation: 21%

Melissa Paige Barby-Byers
Donald G. Cofrancesco
Murat Dayanikili
Shannon Green Hanson
Nancy A. Malone
Lisa Newell
David Max Senior
Steave Hon-Shen Su
William D. Wamester
William Robert White

1993

Gift: $1,270
Participation: 22%

Deirdre D. Hardrick
David L. Katz
Chinaro M. Kennedy
Lynn M. O'Connor
Mark B. Russi
Nadeem S. Siddiqui

1994

Gift: $3,350
Participation: 18%

Kathleen A. Cameron
Linda C. Degutis
Cynthia D. Ho
Robyn M. Hoffmann
Ellis K. Johnson
Gwendolyn A. Myers
Eric H. Opin
Mary-Elizabeth M. Reeve
Helaine E. Resnick
Kenneth C. Rondello
Nicole T.C. Vecchi

1995

Gift: $1,135
Participation: 21%
Agent:
Nicole Herczfeld

Donna J. Boehm
Michelle L. Canham
Suzanne C. Fickett
Shelley D. Geballe
Julie Huang
Brad M. Ingegneri
Saima Iqbal
Marjan Javanbakht
Unni K. Karunakara
Elizabeth G. Kemper
Bonnie D. Kerker
Hans-Helmut Koenig
Rama G. Melkote

Friends

Frederic Holtzberg
Michael H. Merson

Reaching out

The impressive honor roll of names that precedes this page is testament to the support that alumni/ae and friends of the School of Medicine have provided in just a single year.

There are dozens of other ways, too, that alumni/ae strengthen the school and its programs every day.

Many of those efforts are focused on students and the school's educational program. For example, alumni/ae on the clinical faculty volunteer their time to teach medical students in lectures and small groups. Alumni/ae endow academic chairs, fellowships and special programs. And in smaller ways, too, alumni/ae support the activities and spirit of medical students. At this writing in late February, the Second-Year Show is gearing up with support from alumni/ae who bought ads in the program. Likewise, the yearbook went to press this month with similar alumni/ae backing.

The cycle of giving does not end there. Yale medical students are certainly among the nation's most generous with their time and resources. Students have initiated community service programs, ranging from The HOPE Project, which brings medical care to people at New Haven shelters, to the ASAP initiative, in which medical students spend time in city schools talking to pupils about substance abuse. An extraordinary number of first- and second-year students volunteer in one of these many programs.

Last fall, in what has become an annual tradition, the students staged the fourth Hunger and Homelessness Auction, raising more than $13,000 for the benefit of New Haven area shelters, soup kitchens and other community programs. Students and other auction-goers paid top dollar for the chance to go bowling with the directors of student affairs and admissions, or for three days roughing it at Dr. Tom Lentz's Vermont cabin.

This kind of outreach eventually comes full circle, as students graduate and become alumni/ae themselves. By encouraging alumni/ae to nurture the next generation of physicians and scientists and to remain in touch with one another, we are strengthening a community that is greater than the sum of its parts.

AYAM President Lycurgus "Bill" Davey, M.D. '43 March, and I invite you to become involved in the AYAM Outreach Program, which is described on the inside front cover of this magazine. Watch the mail for announcements of regional receptions and programs near you. We hope to see you at these events, and we encourage you to order the new Yale School of Medicine Alumni Directory. We also hope you will make every effort to attend reunion this year on June 6 and 7, even if your class reunion year (ending in a 2 or 7) isn't here yet. This year's program will be fantastic, with a presentation by gene therapist Albert B. Deisseroth, M.D., Ph.D., (who is profiled on Page 12) and a chance to tour the school and medical center and historic New Haven.

We look forward to seeing you in New Haven or in your hometown.

William K. Jenkins
Managing Director
Office of Alumni Affairs

Write to William Jenkins at the Office of Alumni Affairs, P.O. Box 7613, New Haven, CT 06519, or via e-mail at ***william.jenkins@yale.edu***

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Mission statement

Defining a family financial philosophy is the first step toward effective planning.

"Because of constant harassment by investment sales personnel your phone call is being screened. If your call is personal and you would like a response, please leave a message. Thank you."

The above is taken verbatim from the home answering machine of a Yale medical alumnus who graduated more than 30 years ago. He is a surgeon with an active practice. Like many successful professionals, he is beset by junk phone calls from sales people trying to pitch their company's product.

Usually, this means life insurance, mutual funds or advice on investing. Most of these calls are made by young college graduates working on commission for well-known brokerage houses. The callers get a phone, a desk and a list of names and numbers provided by direct marketing firms that collect information from numerous sources.

This is a real nuisance for many people, but a very serious interference for a physician on-call who expects to hear from patients or colleagues.

MATTERS OF TRUST

The Yale alumnus who uses his message machine to block sales calls has found a way to deal with this aggravation. However, many people are not immune to quacks posing as competent investment advisors. One retired physician in her 80s who has her financial planning in good order (thanks to a skilled and reputable financial planner), went to a "free seminar" on how to set up living trusts to avoid probate. A high-pressure salesman promised to help her set up a trust with assets that, she later found out, she could not legally use for that purpose. The physician gave him a $250 deposit on the spot. Fortunately, she consulted her trusted financial planner for advice. He intervened and got the money back.

The general advice that this financial advisor gives is as fol-

lows: "Get professional help you can trust. Work out your objectives before you take action, but don't procrastinate."

LIFE PLANNING

Most Yale alumni/ae are not likely to confide in strangers about their investments and estate plans (or lack thereof). However, the existence of bothersome callers should not become an excuse to avoid seeking out competent help to put your financial house in order. Even the most successful and savvy investor may not have a coordinated overall financial plan that takes advantage of opportunities to maximize retirement income stream, minimize the estate tax burden for children, or guarantee college funds for grandchildren.

"I know I need to make out a will," said one alumnus to a Yale development officer on three separate occasions over a period of a year and a half. "I just can't seem to face my own mortality." Amazingly, an estimated 70 percent of Americans do not have a will.

"People think that estate planning means *death* planning," says Tom Rogerson of State Street Global Advisors, "and they want to avoid the subject. Actually it's *life* planning." Mr. Rogerson's point is that a good estate plan should benefit you while you are alive, as well as provide for the disposition of your property when you are through using it. A good plan can increase current income, assure financial security during retirement or disability, minimize taxes, cut costs and reduce aggravation. Planning is for people with a lot to live for.

State Street Global Advisors is making a series of presentations on estate planning exclusively for Yale alumni/ae around the country. The AYAM sponsored a presentation in New Haven in December that was attended by 45 medical alumni/ae, spouses and friends. Several of those present had been to seminars put on by other institutions, so it was a demanding and attentive audience.

The primary points of the State Street Global Advisors seminar are:

- Determine your goals and objectives.
- Get expert help and formulate a plan that accomplishes those goals and objectives.
- Recognize that planning is a team effort that should include your attorney, your accountant and your investment counselor.

TO GRAT OR NOT TO GRAT

Some people think that reducing taxes is the only goal, but it is best not to let that consideration distort your real objectives. If it is one of your goals to be charitable, and the time is right, you may wish to include a development officer on your planning team. There are simple ways to afford to be more generous, such as by donating appreciated securities instead of cash.

The acronymns GRAT and CRUT are simply jargon used to deseribe different kinds of trusts. Choosing among these and other financial planning vehicles is a matter of finding the best means to reach the desired end. The more important first step is determining a family financial philosophy that will define your values—a personal mission statement that helps you map out good decisions.

For example, some wealthy people who could arrange to give their children a free ride for life, don't. They might have a philosophy that includes paying for their children's education, but no more, expecting each child to make it in the world on merit and initiative. In their estate plans, they might fund a charitable family foundation that their children would be responsible for administering. Their goal is to enable the family to work together to preserve a legacy of philanthropy in the community.

To begin to develop your family financial philosophy, ask yourself some life planning questions. What are my values? What do I want to accomplish with my assets? How do I want to benefit my spouse, my children or grandchildren—now and later?

David Davison
Director, Individual Major Gifts

Write to David Davison at the Office of Medical Development, 100 Church Street South, Suite 211, New Haven, CT 06519, or via e-mail at ***david.davison@yale.edu***

The **AYAM** *is sponsoring a series of estate planning seminars by* **State Street Global Advisors,** *designed as a financial planning service to alumni/ae, with fund-raising issues relegated to the background. No one is solicited for a gift at these events.*

For more information, contact:

William Jenkins
Office of Alumni Affairs
(203) 785-3304
or **David Davison**
Office of Medical Development
(203) 785-5577

Do-it-yourself guide to stopping junk mail and phone calls.

Yale School of Medicine has a policy *never* to rent or share its list of names, addresses and phone numbers with any outside person or company: reputable or not. For information on how you can stop junk solicitations of all kinds, try this Internet website: *www.obviously.com/junkmail* — or contact the National Fraud Information Center at 1-800-876-7060, or via e-mail at *nfic@internetMCI.com*

The organ bind

To the editor:

As a Yale alum, husband of a liver transplant recipient of 10 years, and co-founder with that recipient of a chapter of TRIO (the Transplant Recipients International Organization), I was extremely pleased to see your Summer 1996 issue [cover story, *Second chance at life.*] It wonderfully supports our message that transplantation works. Your plea for organ donation is most welcome, for without donation, transplantation will not have the opportunity to work.

Signing a donor card, although in many states a legally binding document, is not enough. No doctor will violate the wish of the family of the departed, no matter what. Thus we plead for everyone to discuss their wish with their family before the tragedy occurs. This is vital. The emergency room is no place to consider the gift of life for the first time. Without donors, (or until artificial or xenographic transplants become practical) thousands who could live will not.

I was, however, troubled by the comment that people are " ... asked for consent to use the organs of a dying person." That is never done. Consent is only asked for the use of the organs of those who are in fact dead and whose organs at that time are being maintained in a viable state by mechanical means. The usual term is "brain dead," an unfortunate and misleading term. It is important for potential donor families to know that their loved one is in fact dead, that no one involved with their care has had anything to do with the process of potentially using their organs, and their "left-over items" are actually capable of saving the life of another.

Donal R. Treffeisen, M.Eng. '52
Transplant Recipients International Organization
New York

How to reach us

Yale Medicine *welcomes news and commentary. Please send letters to the editor and news items to* **Yale Medicine, *P.O. Box 7612, New Haven, CT 06519-0612,*** *or via electronic mail to* ***ymm@yale.edu****, and include a daytime telephone number. Submissions may be edited for length, style and content.*

Let us be precise

To the editor:

I was seated in the waiting room. Knowing no doctor's appointment ever starts on time, I looked for reading matter more interesting than the paperback I had with me. Then I spotted *Yale Medicine* with a tick on the cover featuring Lyme disease. I know Lyme disease cases actually were first found in La Crosse, Wisc., but Lyme, Conn., scooped the pool with the investigators at the Ivy League schools.

My eyes stopped on page 15. Oh, my fur and whiskers! "Ticks, like other insects, have a decided sense of taste." Perhaps, but ticks and mites are not insects, not even in New Haven. This Midwestern native, product of the University of Wisconsin, cannot ignore this statement.

Yes, ticks and insects are both arthropods, a large phylum, but the class *Insecta* have 6 legs, and 3 body segments, head, thorax and abdomen. Ticks have 8 legs, 2 body segments, a cephalothorax and abdomen. Ticks, mites and scorpions are the class *Arachnoidea.*

Ticks and insects are as closely related as ticks and lobsters.

M.H. Schmidt, M.D.
Marshall, Wisc.

Ticks most definitely are not insects. Unfortunately one such reference slipped into print. Apologies to entomologists (and ticks) everywhere.

Extra credit

To the editor:

I was gratified to read your comment in the Fall/Winter 1996 issue of *Yale Medicine.* Harry Greene, not Harry Zimmerman, did the heterologous tumor transplantation.

In 1947-49, I did my thesis with Harry Greene [the Anthony N. Brady Professor of Pathology from 1949 until his death in 1969], transplanting embryonic chicken gizzard to anterior chambers of guinea pig eyes. In recent years I have been amused at work coming out of Boston concerning tumor angiogenesis. This would be nothing new to Harry. Credit should go where credit is due.

Richard D. Otis, M.D. '49
East Falmouth, Mass.

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name

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Continuing Medical Education *at Yale*

June 2
Monday

Update in Hepatology

Course Director: Victor J. Navarro, M.D. **A**
Assessment and implementation of current therapies for hepatitis C and new diagnostic categorizations and therapies for autoimmune liver diseases.
Jane Ellen Hope Building, Room 110

June 13
Friday

Yale Alumni in Ophthalmology:
The Yale Spring Symposium

Course Directors: Craig A. Sklar, M.D. and M. Bruce Shields, M.D. **B**
A broad range of topics in ophthalmology including treatment of retinal disease, contemporary cornea surgery, neuro-ophthalmology, oculoplastics, strabismus and glaucoma basic and clinical research.
New Haven Lawn Club, New Haven, CT

July 12-13
Saturday-
Sunday

Medical Problems in the Performing Arts

Course Director: Martin W. Sklaire, M.D. **C**
Traumatic injuries in musicians (special focus on the hand, and ear, nose & throat), performance anxiety, and alternative medicine.
Yale Summer School of Music, Norfolk, CT

August 11-13
Monday-
Wednesday

7th Annual Cardiovascular Symposium
Atrial Fibrillation: The Arrhythmia of the Elderly

Course Director: Michael D. Ezekowitz, MBCHB, Ph.D. **D**
Mechanisms of atrial fibrillation, and relevant treatment approaches.
Jane Ellen Hope Building, Room 110

August 15
Friday

1997 Annual Yale Sports Medicine Seminar
Women in Sports

Course Director: Peter Jokl, M.D. **E**
Focus will be on epidemiology and treatment. Special presentation on National Institutes of Health's role in studying and assessing the impact of athletic activities on female health.
Mary S. Harkness Auditorium

For information, contact the Office of Postgraduate and Continuing Education, Yale University School of Medicine, 333 Cedar Street, P.O. Box 208052, New Haven 06520-8052; Tel: (203) 785-4578

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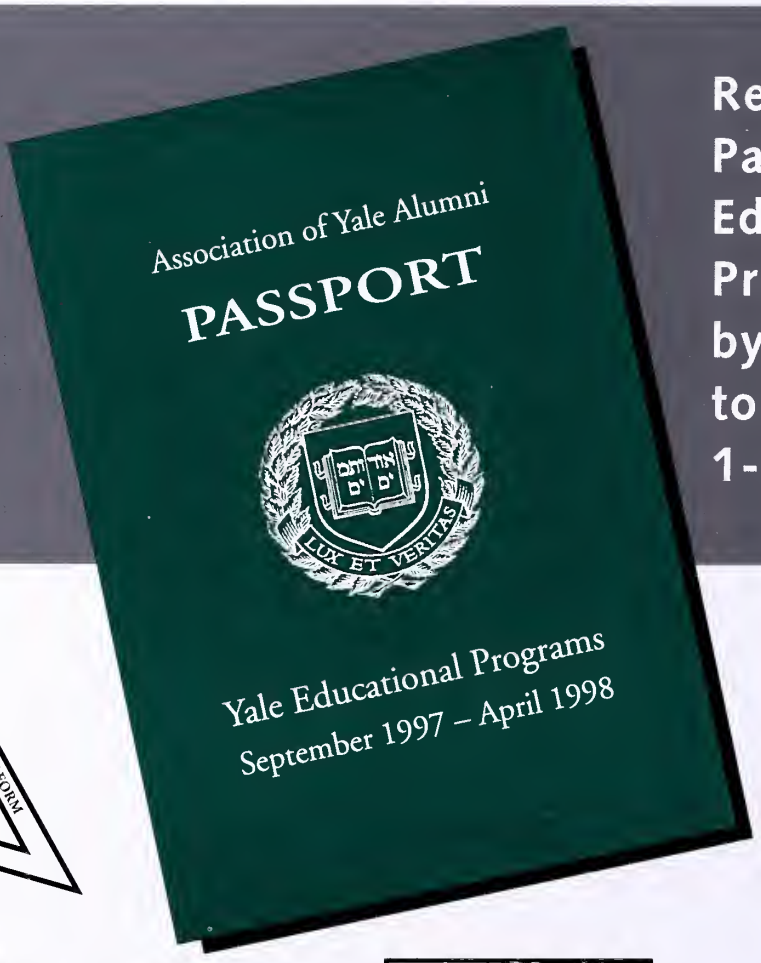

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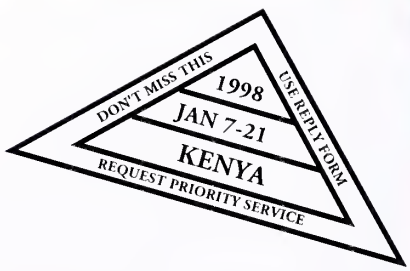

Yale Medicine

ALUMNI BULLETIN OF THE SCHOOL OF MEDICINE
SUMMER 1997

FEES ARE DOWN

"Managed care is

PATIENT LOAD IS UP

TIME FOR TEACHING IS SCARCER THAN EVER

making us look in the mirror."

BUT WITH CHANGES COME NEW OPPORTUNITIES TO BETTER EDUCATE THE NEXT GENERATION OF PHYSICIANS

Continuing Medical Education *at Yale*

Sept. 6-7 **Sat-Sun**	**Yale at Mystic: An Ultrasound Review** Course Director: Kenneth J.W. Taylor, M.D., Ph.D. *Mystic Hilton, Mystic, Conn.*	**A**
Sept. 6-13 **Sat-Sat**	**The Third Anaesthesia & Critical Care Symposium** Course Director: Sorin Brull, M.D. *Killarney, Ireland*	**B**
Sept. 13 **Saturday**	**Glaucoma Symposium** Program Chairman: M. Bruce Shields, M.D. *Marriott, Rocky Hill, Conn.*	**C**
Sept. 18-21 **Thurs-Sun**	**The 21st Yale Physician Assistant Certification/Recertification Preparatory Conference** Course Coordinator: Christiane Nockels, P.A. *Mary S. Harkness Auditorium, New Haven*	**D**
Sept. 20 **Saturday**	**First Annual Michael S. Voynick Neuro-Oncology Symposium** Course Director: Joseph M. Piepmeier, M.D. *Jane Ellen Hope Building, New Haven*	**E**
Oct. 9 **Thurs**	**7th Annual Dual Diagnosis Committee Conference** Course Director: Douglas Ziedonis, M.D. *Jewish Community Center, New Haven*	**F**
Oct. 31 **Friday**	**Diabetes Complications: Mechanisms and Management** Course Director: Rosa Hendler, M.D. *New Haven Lawn Club, New Haven*	**G**
Nov. 14 **Friday**	**Uveitis Update** Program Chairman: I. Willard Abrahams, M.D. *Boardman Building, Room 307, New Haven*	**H**
Dec. 12 **Friday**	**Advances in HIV Therapeutics** Course Director: Gerald Friedland, M.D. *Mary S. Harkness Auditorium, New Haven*	**I**

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YALE MEDICINE
SUMMER 1997

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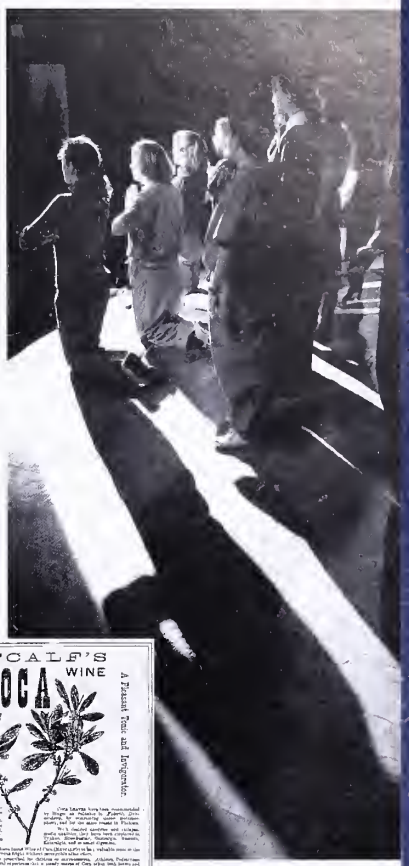
CONTENTS

2 Lessons in managed care

Managed care has cut into the clinical income that helps support medical schools such as Yale's, and it threatens to limit the number of patients that students and residents may see as part of their education. The challenge is also an opportunity to reassess and improve teaching.

VANTAGE POINTS Pages 5-19

A dean, a student, a hospital administrator, a U.S. senator and a managed care executive look at the issue from a range of perspectives.



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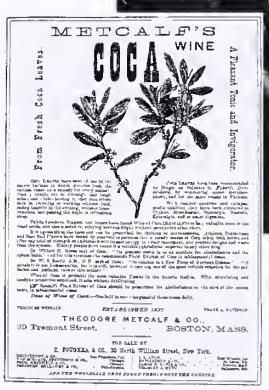
20 How we live

Sherwin Nuland follows his 1994 bestseller on the lessons of death with a new book about the endurance and wonder of human life.

EXCERPT Page 23

from *The Wisdom of the Body*



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29 Mission critical

Anesthesia is branching out far beyond the operating room, as the specialists of sleep find new challenges in intensive care, pain management and hospital-based screening and prevention. An interview with Roberta Hines, M.D., the department chair.

37 Through the past, darkly

America's problems with narcotics and other drugs began long before the heroin epidemic of the 1950s, the use of psychedelics in the 1960s, or cocaine in the '70s and '80s. In New Haven, scholars from around the nation gathered to explore why.

AN EARLIER EPIDEMIC Page 41

Medical students are acutely aware of the mounting influence of economics upon physicians, says Steve Kavic, M.D. '97, who graduated in May. "There's no question," he says, "that the style of medicine I'll practice will be very different from that of my father's and grandfather's generations."

Lessons in managed care

Say what you will about the assault on medical education by a changing economy. Managed care has Yale and other academic medical centers reassessing the way they do business.

By Marc Wortman

Speaking to a team of community physicians last fall, one longtime Yale faculty member joked ruefully, "We're thinking about changing the name from the School of Medicine to the School for Health Care Cost-Containment. We're hoping eventually to squeeze the medical part out altogether." He may have been exaggerating wildly to make

a point, but as anyone around a medical school can testify, cost-containment has indeed taken its place as part of the curriculum. Faculty and administrators at Yale once focused solely on preparing students and residents to treat patients while carrying out their own clinical practices and research. These days, the School of Medicine must not only teach them how best to care for patients, but also how to care for them while keeping an eye fixed firmly on costs.

As a result, says Dean Gerard N. Burrow, M.D. '58, "There has been a fundamental and profound change in the way we go about our business. Diminishing clinical income and diminishing research support," he says, "are forcing medical schools to abandon the privileged monastic life of the ivory tower for the secular world." [On July 1, Dean Burrow will become special advisor for health affairs to Yale President Richard C. Levin, and David A. Kessler, M.D., former commissioner of the U.S. Food and Drug Administration, will assume the deanship.]

The move from academic isolation to the rough-and-tumble reality of modern medical practice reflects the swiftly changing environment for health care delivery around the nation and at Yale. The advent of managed care—the term most often used to describe the reorganization of managerial control of medical service delivery and costs—has forced across-the-board rethinking of how Yale goes about training its students and residents to be the physicians of tomorrow. No department or clinical program has been untouched, and many have embarked on major reorganization. The need for these changes results in part because the in-patient hospital unit—the longstanding principal training ground for medical students and residents—is no longer the comprehensive training center it was. More and more medicine takes place in ambulatory settings, and students and trainees must be where the patients are.

Because medical education has been supported for decades by clinical revenue generated by faculty, managed health care and its cost-cutting agenda have quickly undermined the funding basis for teaching programs across the United States, especially in areas where managed care has become the dominant insurance model. Faculty and administrators at Yale and elsewhere are sounding the alarm as they look for new ways to support teaching. "Managed care," says Joseph B. Warshaw, M.D., chair of the Department of Pediatrics and the medical school's deputy dean for clinical affairs, "has the potential to wreak havoc on medical schools. And, in many cases, it is extracting money from the health care system that would otherwise be available for patient care and medical education." Yale faces many of the same difficulties as other academic medical centers around the country, says Dr. Burrow: "Every medical school dean in the United States is searching for a new funding paradigm."

Marc Wortman is a free-lance writer in New Haven.

THE MARKET'S IMPACT

The story of the rise of managed care has been widely told, but what is less well-known is its impact on medical education. With medical costs spiraling upwards with no systemic economic brake, market controls were asserted over the freedoms physicians previously enjoyed to direct patient care—and effectively set their own fees. Fears of potential liability, along with the absence of economic oversight, often led fee-for-service physicians to prescribe high-cost tests and procedures of marginal medical benefit. Hospital-based care proved especially prone to upward price pressures. Health care spending reached astronomical levels, with no end in sight.

Jumping at the opportunity to control costs presented by changes in insurance laws during the late 1980s and the early part of this decade, employers rapidly moved employees out of traditional fee-for-service individual insurance coverage and into health care plans, such as health maintenance organizations (HMOs) and other managed care plans. There, physicians work as paid employees or profit-sharing associates answering to administrators responsible for containing costs.

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"There has been a fundamental and profound change in the way we go about our business."

The future of managed care

If we're fortunate, insurers will see that the health of medical schools, not to mention patients, is in their best interest.

By Gerard N. Burrow, M.D. '58

"Optimal care is cost-effective care" is a statement that underlies the interest in managed care. Unfortunately, at present, cost is being managed rather than care. The dollar amount of patient care is called the medical-loss ratio by the managed care companies, a pejorative term. As the managed care companies drive down this ratio, drive-by deliveries and $12 million bonuses for the CEO are the result.

In the United States, the costs of medical care had been increasing at a level that could not be sustained, and change was necessary. While the Clinton Health Care Reform plan was directed toward cost-containment to control this increase, the plan also was directed toward access for 45 million Americans without health insurance. The ultimate failure of the Clinton plan stimulated the rapid incursion of managed care companies, which have successfully managed cost, albeit at the expense of quality, but have not at all addressed the problem of access.

The health of the public and the pathophysiology of the individual patient represent a continuum. However, in the past, this concept has been given lip service rather than serious attention. A positive aspect of managed care is that there is a premium on wellness and a resulting financial advantage in preventive medicine. Unfortunately, under the current system of managed care, patients change providers so frequently that there is little financial advantage for the provider to emphasize the preventive aspects of health care.

Managed care, as presently constituted with the intense downward pressure on clinical income, presents a real threat to medical schools. The managed care organizations have been reluctant to provide teaching opportunities because of increased cost, and have been equally unwilling to support medical education in general. At Yale, we have estimated that the faculty donates about $15 million from its clinical income to pay for education and the under-recovered costs of research. As the reimbursement decreases, faculty members have increasing difficulty supporting themselves, much less donating clinical income for education and research.

Yale School of Medicine requires sufficient patients for teaching and research, sufficient academic control to carry out teaching and research and, from somewhere, sufficient resources to support education and research. The managed care organizations must play a role in this support. If they continue to ignore the issues of access and medical education, managed care organizations will ultimately wither.

Dean Gerard N. Burrow, M.D. '58, becomes the David Paige Smith Professor of Medicine and special advisor for health affairs to President Levin on July 1.

FRANK POOLE

A range of voices Here and on the pages that follow, 10 short commentaries shed light on the effects of economic change upon the teaching of medicine. These opinions and analyses come from physicians and leaders in academic medicine and public health, a student, a U.S. senator, and two executives in managed health care.

Doing the right thing

We need to safeguard academic values from the distractions of finance.

By Joseph B. Warshaw, M.D.

Academic medicine in the United States faces a conflict of values that threatens our contribution to the health enterprise, and to American society more broadly. We are forgetting who we are and why we are. We are in danger of becoming part of a culture of commercialism in medicine and in the biologic sciences that threatens core values of our tradition: teaching to educate, carrying out research for the pure exhilaration of discovery, and practicing medicine because of our commitment to serve the public, especially the underserved of our communities.

These pressures are coming from the financial constraints imposed by managed care and an increasingly competitive clinical and research environment. In response, medical schools should indeed have sound, efficient, and competitive practice operations that provide the revenues to support medical education and clinical research. In many respects, however, we have gone over the cliff and have reached a level of destructive preoccupation with the business of practice. Academic discussions among chairmen about issues relating to education, research and innovative programs of care increasingly take a back seat to an almost compulsive fixation on managed care, physician networks, price competition, and clinical income in a capitated environment. Our faculties are taking sabbaticals in the business school rather than the biology department.

Why, at a time when our students show so much promise and there is so much excitement in medicine, is there such a serious threat to our values? One of our major problems is the need to sustain huge academic programs, the result of the phenomenal growth that has occurred over the past 30 to 40 years.

The money that medical schools receive from clinical activities alone has increased from $28 million in 1960 to $14.5 billion in the late 1990s. From 1960 to 1990, medical school revenues grew at more than twice the rate of other U.S. institutions of higher education, due in large part to clinical income opportunity. We have benefited enormously from these clinical revenues, and we contributed to and bear some responsibility for a health care system in which costs were viewed as running amok.

While managed care has slowed the rate of increase in health costs, the values behind this trend are not those of academic medicine. Commercial managed care organizations and their officers have extracted huge profits from the health care system, and they have benefited enormously from the educational programs, clinical research and medical innovation that have originated in our medical schools. Yet they have contributed relatively little to the academic enterprise itself. There is little incentive for the companies to invest.

There are recent additional pressures on academic health centers, with perhaps a new zenith

"Terms such as gatekeeper, covered lives and provider should be abolished from our vocabularies. We are physicians, caring for patients."

reached by the audits on Medicare billing being conducted by the Office of the Inspector General and the implicit presumption that American medical schools have defrauded the American public of hundreds of millions of dollars in excessive charges. Audit squads are now extracting huge back payments and penalties from our nation's schools. This not only risks damage to the American medical educational establishment, but also creates a public mistrust that is unfounded. All of this has contributed to our new academic commercial vocabulary and a quest for dollars that is distorting our mission and our values. We need to refocus and remember that we do not build our medical school practices to sustain the business of medicine, but rather as the means by which we meet our mission of service, education, and scholarship.

So what can we do? There are a number of steps that we can take.

▶ First, we must create some distance between the business of medicine and the practice of medicine. We are spending too much academic energy on the former. Our medical school practices should be centralized, competitive vehicles for care that are professionally managed, with service and performance standards that can compete with the private sector and which support, not detract from, our academic responsibilities.

We are about to launch a new integrated group practice that will be organized as an "arms-length," not-for-profit corporation, in which all medical practice activities of the school will be carried out. The practice will be responsible for all contracting and credentialing, for setting performance standards and for funds flow to the school and departments. While there may be some financial margin coming to the departments from the practice, we anticipate that, in this very competitive health care marketplace, revenues generated will be used primarily to support the physicians in the practice itself. The goal of the practice will be to provide the patient base necessary for our medical education and clinical research.

▶ Given the explosive growth in faculty size over the past 30 years, we must carefully evaluate the size of our programs. It is likely that many of them have grown beyond our abilities to support them and, in many cases, beyond what is required for our academic mission. Right-sizing will, in many instances, mean a downsizing of our faculty. Critical mass will be achieved both through programmatic development and by collaborations across traditional departmental boundaries and with community physicians in the clinical areas.

For managed care organizations to bear some of the responsibility for sustaining the medical enterprise, our system needs a tax on gross revenues of these organizations as a kind of reinvestment capital to support medical education and clinical research. Postgraduate medical education has in large part been funded by monies linked to Medicare reimbursements. We need new paradigms for the distribution of the direct and indirect costs of medical education that have traditionally gone to hospitals as a component of Medicare reimbursement. Allocation of these monies to medical schools for support of the faculty actually providing education for postgraduate medical education would ease financial pressure to our schools.

▶ Our medical students and house staff must be educated about issues in medical economics and practice structure and organization in a way that reinforces the traditional values inherent in the physician-patient relationship. These are the values that resulted in the overturning of gag rules for physicians in HMOs that forbade them from discussing treatment options with their patients. It was practicing physicians and enlightened consumers who challenged inappropriate limits on hospitalization after mastectomy and delivery, and other restrictions imposed by HMOs seemingly more interested in profits than in quality. It is surprising how complacent the broader medical community has been.

▶ We should reject the notion that patients are clients or customers. Terms such as gatekeeper, covered lives and provider should be abolished from our vocabularies. We are physicians, caring for patients. We must convey to our students the values that make medicine the caring profession, and those values should be no different under managed care. We must continue to emphasize the values inherent in the doctor-patient relationship.

Most importantly, we should be mindful of why we do what we do. Why are we physicians and medical scientists? What attracted us to medicine? In most cases, it was not to do battle with insurance companies and HMOs. We must continue to practice the values that attracted us to medicine, those values that always put the patient first and give us joy from our students and from discovery. The values of medicine have served society well. We must protect them.

Joseph B. Warshaw, M.D., is deputy dean for clinical affairs and chairman of the Department of Pediatrics.

For the next generation of doctors, a chance to make change count

The following is excerpted from the commencement address delivered in May by Robert H. Gifford, M.D., HS '65-66, associate dean for medical education and student affairs.

Graduating students with Dr. Gifford at Commencement in May. "Somehow," he told the class of 1997, "your generation must find a way to convince our leaders and political representatives that health care is not just another product."

I don't have to tell you that it's an unsettled time in American medicine. There are a lot of negative feelings and tensions out there, I am sorry to say. But we had better get used to the fact that our profession will no longer be business as usual. The individual, fee-for-service, unrestricted, entrepreneurial system that my generation so short-sightedly fostered and protected essentially broke the bank. It simply couldn't go on. Something had to be done to contain, and even to reduce, the ever-escalating costs of medical care. And, like it or not, managed care has been the answer, and it's not likely to go away soon.

You have an opportunity to do something about it. But my generation has so resisted the concept of managed care that we have failed to embrace the enormous potential for better health care that it might offer, and we have failed to take responsible leadership in its explosive development and management. We have allowed it to be sold out to big business, where the profit motive has undermined the quality-of-care motive and where health care has become a huge new business venture to make fortunes for corporate executives and shareholders. The result of this corporate takeover by primarily nonmedical people has been indiscriminate cost-cutting in a fiercely competitive market, an almost total disregard for the care of the poor and, at times, an assembly-line-like depersonalization of health care. In fact, one of the major objections to managed care as it is now evolving under business management is that physicians are losing control of the precious doctor-patient relationship that has defined us for so many years and which was one of the major reasons that we went into medicine in the first place.

But is the concept of managed care really all bad? Isn't it possible that we might be damning the whole because of some of its flawed parts? Isn't it possible that we may be so preoccupied with its most egregious negative feature that we have overlooked its many positive virtues? We seem to have developed an almost automatic negative response to managed care.

Our anger and distrust at the corporate takeover of medicine has caused many of us to lose perspective about the good that managed care might otherwise be able to offer if responsible, cost-effective, quality care ever became the driving force. In fact, there is much to be said in support of the concept of managed care that could be markedly better than what we have had.

MELANIE STENGEL

"There has never been a more exciting time in biomedical science. It is going to be a time for enlightened leadership."

The opportunities of managed care have never been better to provide more of our citizens with comprehensive health care. It is a concept made to order for an emphasis on primary care and for the development of long-overdue, effective programs of preventive medicine through routine screening and better immunizations. It also promises to centralize medical-record-keeping and foster new opportunities for clinical research. The opportunities to cut costs legitimately are also greatly enhanced by managed care. Costs can be significantly reduced by practicing evidence-based medicine, by centralizing services, by utilizing health care teams, by reducing redundancy, and by increasing efficiency. There have been outstanding examples of well-run managed care organizations in this country where quality-of-care has been central, but unfortunately, many of those are now being bought out by huge corporate structures where profit, once again, will be the driving force.

Somehow, your generation must find a way to convince our leaders and political representatives that health care is not just another product like automobiles or computers, and should not be just another entry on the listings in the stock exchange. The principal beneficiaries of a managed care business should be the patients, not the owners. To help restructure the goals and financing of managed care will be one of your greatest challenges in the years ahead.

Although cost-cutting will be essential under any system, this preoccupation with cost reduction has come just at a time when medical education must further expand into the ambulatory setting outside of the teaching hospital. Unfortunately, the education of medical students and residents has been consciously and specifically excluded from most managed care organizations, under the belief that they bear no responsibility for medical education and that it would be too expensive to take it on. Since there are no available funds to pay for this kind of training, it will remain a major problem for medical education at all levels, and also will require creative solutions from you in the years ahead.

Managed care has also come at a time of unprecedented research advances in technology and human biology, many of which hold out phenomenal possibilities for the treatment of disease and the maintenance of health, but which by their nature will be very expensive. There has never been a more exciting time in biomedical science. Physicians and the public will demand to have these new discoveries applied. But, unless they can be shown to save money, they are likely to come into deadly ethical and financial conflict with the current limits being placed on spending by managed care. It is going to be a time for enlightened leadership, and I hope that you will be up to it.

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Fees are often based on total patient population rather than on services performed, placing a premium on lower-cost forms of care and a focus on prevention. Between 1985 and 1995, the number of Americans enrolled in HMOs tripled to 58 million. Another 91 million now belong to preferred provider organizations (PPOs), a looser form of managed care.

As a result, the rise in medical costs has indeed slowed dramatically around the nation and at Yale, with massive decreases in hospitalizations credited for much of the change. Market-bound health care plans have proved far more resistant to paying the relatively high cost of hospitalization and certain high-tech medical procedures, forcing medical providers to seek lower-cost settings for service delivery. Physicians now undertake less expensive procedures or must receive approval for ordering tests and procedures from an administrator. To the chagrin of many in the medical community, as a profit incentive has entered the system, administrators and shareholders battle to keep costs down and returns high. In many cases, clinicians have changed the style of their medical practices to increase the number of patients seen and have had to decrease the amount of time and service provided to individuals. Group practices, HMOs and associated ambulatory clinics, as well as day-surgery centers, medical hotels, home-care, hospices and day hospitals, have come to dominate the practice of medicine.

Amid the changes, no one is quite sure what to do about medical education. Most health care plans would consider educating future physicians and supporting clinical research at best part of what they call the *medical-loss ratio,* that is, money spent providing service and not profit. This causes serious dilemmas for medical schools. Robert H. Gifford, M.D., HS '66-67, associate dean for medical education and student affairs, is partly responsible for seeking out clinical training settings for third- and fourth-year medical students. As he looks for new ambulatory clinics to take on students, he says he has heard a similar refrain from several HMOs: "'Doc,' they say, 'we've got a bottom line to meet. Teaching costs us money.'" Yale must struggle—and in some cases pay—to place students into real-world settings to learn medicine.

Historically, medical education at Yale has been carried out by most faculty as an activity supported by their primary work as clinicians and researchers. They taught or provided teaching facilities because they enjoyed doing it and found it rewarding, while it also enhanced their professional reputation, freed them from bureaucratic hassles, kept them at the forefront of medical science and gave them access to a medical and intellectual community of enormous depth and breadth. Now, a managed care organization is urging the physician to move each patient as rapidly as possible through the system. "The pressure to spend all your working moments in practice rather than teaching and research is real," says Dr. Burrow, himself a clinical practitioner in endocrinology and a leading expert in thyroid disease. Given the time-consuming demands of education, students can only decrease the physician's efficiency.

A conflict of cultures has ensued within medicine. "Education can't be rushed," says David J. Leffell, M.D., B.S. '77, HS '84-87, associate professor of dermatology and surgery. He is medical director of the Yale Faculty Practice, the umbrella organization for the clinical faculty practices in 16 of the medical school's departments. "If there is increased pressure on the physician, something has to give. I worry that it will probably be education."

To ensure that this does not happen ultimately, and that its physicians remain in charge of medical decision-making, the school has taken steps to bolster its position in the changing health care economy. In 1995, it established a managed care organization of its own in partnership with Yale-New Haven Hospital's parent corporation, Yale New Haven Health. The new entity, Yale Preferred Health, was launched in response to the introduction of Medicaid managed care in Connecticut, which threatened the traditional access Medicaid patients had to Yale services.

"'Doc,' they say, 'we've got a bottom line to meet. Teaching costs us money.'"

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That was then. This is now

It is up to physicians to strengthen the teaching of medicine.

By David J. Leffell, M.D.

Medical education is a complex, integrative process. It involves not only the acquisition of knowledge, but also the development of skill in its application and the cultivation of wisdom in its execution. It is typically a gentle, ongoing process that is increasingly ill-fitted to the rigid and inflexible demands of the medical care environment.

The traditional clinical teaching encounter, in which several patients might be seen and evaluated in morning clinic, with ample time for discussion among several faculty members and students, is quickly becoming a relic of the past. Increasingly, we are being forced to compress the transmission of knowledge, skill and wisdom into time intervals that more resemble med-bites, analogous to sound-bites, than the interactive episodes that foster disposition to inquiry. And guess what? The payers don't care.

It is therefore left to us, who are most committed to teaching the next generation of physicians, to be creative, innovative and flexible in finding new ways to teach the practice of medicine. In fact, the challenge to medical education goes beyond the constriction of time available for teaching. The challenge extends to the very degree of clinical activity permitted students and residents. A third-year resident remarked recently that the biggest concern among her peers is the fact that they are "not allowed to do anything anymore." This, a direct consequence of aggressive enforcement of teaching-physician billing regulations, is likely to affect profoundly our ability to train residents, especially when it comes to procedural activities.

HAROLD SHAPIRO

Yale must take a leadership role in helping to define how medical education can accommodate the legitimate concerns of government and the pressures of the changing marketplace. Managing education must remain as much a priority as managing care.

"It is left to us to be creative, innovative and flexible in finding new ways to teach."

David J. Leffell, M.D., HS '84-87, associate professor of dermatology and surgery, is medical director of the Yale Faculty Practice.

The plan has succeeded in enrolling almost 25 percent of Medicaid patients in New Haven and its surrounding towns, and up to 10 percent statewide, says Ellen Skinner, director of managed care and marketing for the Yale Faculty Practice. Now it is courting employers throughout the region with the goal of continued growth. In early May, Yale Preferred Health announced plans to merge with Farmington-based HealthChoice, the managed care organization of Hartford's St. Francis Hospital, to create the largest provider-owned health care plan in Connecticut.

"The faculty have to run faster and see more patients. They have less time for teaching."

Since November 1994, Yale New Haven Health has owned a 50 percent share of HealthChoice.

To further meet the economic challenges, Yale is developing networks of providers through agreements with specialty and primary care practices across Connecticut and even into Rhode Island and New York. These networks, particularly in cardiology, oncology and psychiatry, will help ensure an adequate flow of patients to the medical center for teaching, and will bolster clinical revenues by aggressively negotiating contracts with managed care organizations. The school also is considering the migration of the Faculty Practice physicians into a new, free-standing entity that will enable quicker decision-making while reducing the school's financial risk. "We are being aggressive about ensuring access to patients for teaching," says Dr. Leffell. "Our core mission is at stake, so we can't afford to be passive."

MOVING PAST THE HOSPITAL

Financing for medical education historically has been cobbled together from a variety of sources not solely dedicated to training the next generation of doctors. In a sense, the budget for medical education has been the cream skimmed off the top of the advanced medical and research services provided at the medical center. Out of the School of Medicine's $434 million budget for 1995-96, less than $17 million came from student tuition. A little over 40 percent of the remaining amount was covered by overhead charged to faculty clinical practices, while 53 percent came from overhead charged against faculty research grants and contracts. A small percentage also comes from endowment income. In other words, says Dr. Gifford, "For years, students were educated by someone paid to do something else."

The two major sources of income, clinical revenue and research funding, remain stable for the time being, but all indications are that both will decline in the future. At the same time, access for students and residents to both faculty and patients is becoming more restricted. "The handwriting," Dr. Gifford says, "is on the wall. It used to work fine. Now, it's not so fine. The faculty have to run faster and see more patients. They have less time for teaching. That is even

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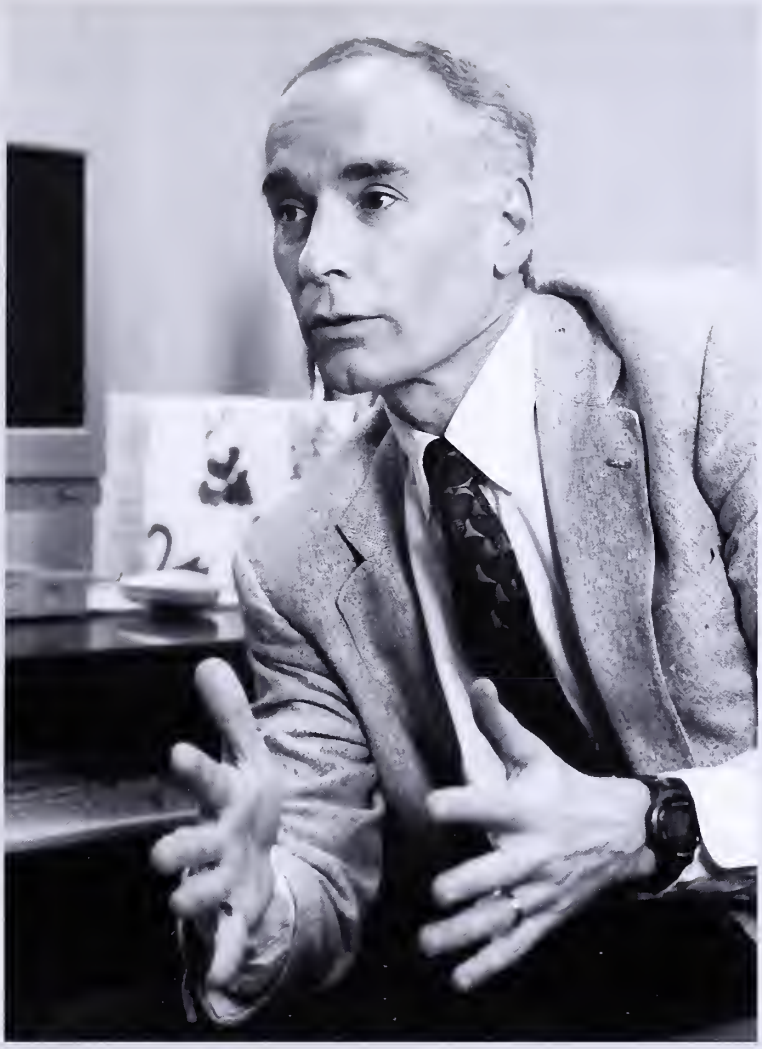
The private sector must help with the training of physicians

By Edwin C. Cadman, M.D.

When funds for training physicians were included in the Medicare budget in 1965, the federal government opened a new chapter in American medicine and made an open-ended commitment to help pay the costs of training hospital interns, residents and fellows after their graduation from medical school. In addition to usual inflationary increases, two factors have increased the costs more dramatically than economists had predicted—a more than doubling of medical school graduates annually (from 7,500 in 1965 to 17,000 today) and an influx of foreign medical graduates. The average cost to the federal government is $70,000 per trainee, and with nearly 100,000 trainees, the dollars are substantial. Of the $10 billion spent annually training physicians, $7 billion comes from the federal government.

As a cost-saving measure, the government wishes to reduce its payment to support graduate education for physicians. A current pilot program developed by the Health Care Financing Administration (HCFA) in February will gradually eliminate funds for 25 percent of all resident physicians over the next five years in New York. It is likely that this, or a similar proposal, will be enacted in the future that will affect the entire country.

Reducing these federal payments will have a substantial effect on those hospitals that have made a



PETER CASOLINO

Medical education, Dr. Cadman argues, is a shared responsibility that benefits the nation as a whole.

major commitment to education. Yale-New Haven Hospital has approximately 500 residents and 200 fellows. Our total direct costs related to resident training exceed $25 million, primarily in salaries and benefits to support both residents and faculty. We currently receive Medicare reimbursement of only $5.7 million. (The formula for Medicare reimbursement for direct costs is related to the percent of Medicare patients cared for at the training hospital.) In addition, Medicare reimburses teaching hospitals to compensate for the indirect costs associated with teaching, such as overhead related to medical records, complexity of cases, on-call rooms for residents who stay overnight in the hospital (we have 110), conference rooms and additional computer resources.

Clearly, should the federal government choose to eliminate reimbursement of educational costs for post-graduate education of physicians, the impact would be greatest among the 100 or so hospitals that train the majority of our nation's new generation of doctors.

We are deeply devoted to our educational mission, and we desire to remain a center for educational excellence. Therefore, if we were to fund this education mission by ourselves, the cost of care here would also bear this additional cost of education. We feel that this educational responsibility is a shared one with the country and, therefore, we favor a universal educational pool, the source of funds for which should come from those who benefit from a high-quality physician workforce—namely all health care providers, the insurance/HMO industry, the states (teaching hospitals provide a disproportionate share of care to the uninsured) and the federal government.

The private sector must assume a greater responsibility in preserving the national resource of excellence in physician education, since the ultimate beneficiaries of a highly competent physician workforce are the citizens of this country. Without a universal payment methodology for training doctors, the burden would reside in communities such as ours, which would be required to accept the complete financial obligation.

Edwin C. Cadman, M.D., is chief of staff and senior vice president of medical affairs at Yale-New Haven Hospital and professor of medicine at the School of Medicine.

Single-payer system may be the only cure

By John C. Marsh, M.D. '59

PETER CASOLINO

While some may argue that we need only let the marketplace take care of medical practice and the problems will sort themselves out, I am not persuaded that we have made progress in the last few years. As for the impact that managed care has had on the practice of medicine, the current situation is deplorable.

Increasing numbers of patients and physicians (and I speak as one belonging to both categories) are being moved around in systems of increasing complexity and inconsistency. Patients are being forced to leave established physician relationships because of a change in insurance plan at their or their spouses' place of employment. I have had the experience of both gaining new patients and losing old ones for this reason. The physician-patient relationship has about as much stability as that between a professional athlete and his team during the period of free agency.

While 45 million people have no access to medical care, top CEOs of managed care plans pocket millions in bonuses and salaries. Medicine has become a commodity, subject to low bids, incentives to physicians for non-referral, and even to gag rules. Clinical research and medical education have become step-children, even orphans, in the current system. I recently experienced the refusal by an insurance company of support for a patient with a unique cancer (carcinoid) for a specific, uniquely suitable form of therapy (radioactive somatostatin analog). This is similar to radioactive iodine for thyroid cancer, but it was rejected because it was a Phase I clinical trial.

Nonprofit hospitals are being absorbed by huge organizations and becoming for-profit organizations, reducing still further the opportunities for uninsured patients to receive care and for medical education for house staff and medical students.

What can be done? Physicians and the general public must agree on specific goals and convince politicians of their merit. These should include equal access to medical care by all citizens and free choice of physicians by all. This will probably mean a single-payer system, similar to that practiced in Canada. In such a system, pricing for medical services would be regulated by the government and would be universal. I am aware of the objections, especially from physicians, but, I ask, would such a system be worse, and less fair than the current hodgepodge of inconsistencies and inequities?

John C. Marsh, M.D. '59, is a Yale oncologist and professor of medicine.

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more true out in the community. The one thing lost too often is teaching."

While faculty time and financial support are being squeezed, the setting for medical education also has had to change. "A lot of figuring out what's wrong is done long before the patient arrives in the hospital," says Dr. Gifford. "If you restrict education to the hospital, you miss way more than half of the patient's story." For medical schools, this has been a particular challenge. "Hospitals made it easy for us," says Dr. Gifford. "Patients were accessible. There was time for students to be involved and it didn't cost the hospital or the doctor anything." Says Faculty Practice director Dr. Leffell: "You can't lose money anymore."

Dr. Burrow estimates that clinical faculty already donate $15 million worth of time to the school annually. Still more is being demanded of them. "We have a dedicated group of people who have taken a personal hit," says Deputy Dean Warshaw. Some resent the loss of freedom and the decrease in income that managed care has demanded. Indeed, some faculty members have opted out of medical education altogether.

A TIME OF ADJUSTMENT

The large majority of faculty members, however, have been coping with the changing nature of their profession—and have changed their practices, courses and departments to meet the new demands. For medical students at Yale, preparation for managed care now begins in the very first days on campus. Thanks in part to a $2.5 million grant from the Robert Wood Johnson Foundation, the curricu-

lum has undergone a major review and reorganization. Formerly separate and overlapping rather than complementary, departmental offerings are now integrated to bring basic science and clinical medicine into closer relationship. Several courses for first-year students have been coordinated to create what is called the Medicine, Society and Public Health Program, to help them better understand the forces and issues underlying contemporary medical practice. For Steve Kavic,

"Hospitals made it easy for us ...There was time for students to be involved and it didn't cost the hospital or the doctor anything."

M.D. '97, who graduated from the School of Medicine in May and is starting his surgical residency at YNHH this summer, the training in the business of medicine was a necessary evil. "You're caught," he says. "As a student you want to learn only medicine, but you have to learn the bytes, bits and buzzwords of managed care. It's very clear to all of us students that it's an important part of medicine and will only become more important."

Some things, however, do not change. The school's unique, 155-year-old thesis requirement, according to Dr. Gifford, remains "sacrosanct and will continue so." But the settings in which students receive much of their clinical education are diversifying rapidly. Numerous new affiliations with HMOs share the

Focus on prevention will aid medical students and their future patients

By Michael H. Merson, M.D.

HARRY BISHOP

Two phenomena occurring in the health care world are having a profound effect on medical education.

The first is the realization that, despite our extraordinary progress in the development of new medical technologies and more effective drugs, we cannot deal effectively with communicable and non-communicable diseases, such as AIDS and hypertension, through treatment alone. We have demonstrated that prevention—achieved through health promotion programs and appropriate public health laws and policies—can have a dramatic impact on such diseases.

The second is that managed care, in the ideal, puts enormous stock in the role of prevention and in confronting health issues on a population basis—rather than looking only at treatment of individuals. The very phrase "health maintenance organization" implies maintaining good health as a priority. The best way of reducing health care costs is to prevent disease from occurring at all.

Here at Yale, Epidemiology and Public Health is responsible for teaching epidemiology, biostatistics and prevention to medical students. Our task is to help ensure that all medical school graduates, regardless of their specialty, enter their residency training with a population-based perspective, so they can both treat disease and guide all their patients on how to stay healthy in the increasingly "managed" health care environment. We encourage students with a strong interest in acute or chronic disease epidemiology or public health policy to enter our master's program. We believe that all medical doctors of the future will, one way or another, need to be practitioners of good public health.

Michael H. Merson, M.D., is dean for public health and chairman of the Department of Epidemiology and Public Health.

goal of assuring sufficient ambulatory clerkships for third- and fourth-year students.

Within Yale's individual departmental residency training programs, managed care has necessitated radical restructuring. Since Medicare was created in 1965, it has provided a salary to support all residents. The expectation is that residency programs will face significant cuts to help reduce the Medicare budget. Not all view change as a threat to quality. "You can't make improvement without change," says Edwin C. Cadman, M.D., chief of staff and senior vice president for medical affairs at YNHH and professor of medicine. He is director of the hospital's residency training programs, covering 500 residents and 200 fellows training in subspecialty areas. "These are opportunities for improvement."

Changes in Medicare have forced attending physicians to supervise daily care—to approve the tests and treatments that formerly were the residents' responsibilities. While this may assure better oversight, it greatly taxes the teaching possibilities within residency programs. "The simple things in the past were the domain of nurses and trainees," says Ronald C. Merrell, M.D., chair and Lampman Professor of Surgery. "In managed care, the devil is in the detail. A large number of points that are not clinically critical but financially important must now be managed by the attending physician." Given the squeeze on attending physicians' time and the impending decrease in support from the federal government, according to Dr. Merrell, "Residency programs will have to shift, close or taper. We need to figure out another formula." Adds Dr. Cadman: "Our responsibility is to make sure the change is for the better, not the worse." Several departments have already scaled back the size of their residency programs.

One way to reduce costs is to improve the delivery of care while finding cost-saving means to reduce duplication of services and stop waste. Efficiency has become the watchword for the school as a whole. Yale Faculty Practice director Dr. Leffell says, "There are things we've done out of habit that we need to stop. Managed care is making us look in the mirror."

CHANGE AND OPPORTUNITY

Throughout the School of Medicine, clinical training programs have been reorganized to reduce costs and reflect the new realities of medical practice. "We are changing drastically," says Dr. Merrell, echoing his fellow department heads. "We're training a different kind of practitioner. We're training surgeons to work in a managed care environment and to be accountable for consumption of resources and to work as part of a large group. We're sharply focused on outcome."

Individual academic departments have established new services and reorganized previous clinical operations to meet the changing demands. "Over half our patients come in the same day as their surgery," says Roberta Hines, M.D., HS '78-84, chair of anesthesiology. "We now have a pre-admission testing center. It's educational for patients and residents, and has management benefits for us as well."

Not all departments have found the changes beneficial. Some have struggled to deal with truly global changes in treatment practices. In psychiatry, for instance, some facilities that once treated patients in a hospital setting for 90 days or more now have average stays of seven to 10 days, as dictated by managed care companies' rules. Department chair Benjamin S. Bunney, M.D., the Charles B.G. Murphy Professor of Psychiatry and professor of pharmacology, says, "It often takes more than seven days for the disorders we treat to respond to medication, and we cannot predict who will respond and who won't. We also used to work with the patient's family and community environment. We have very little time for that now."

The transition now under way may be enormously difficult and the outcome unclear, but some believe it is healthy for medicine. Theodore Marmor, Ph.D., author of *Understanding Health Care Reform* and other books on health policy, is a professor of politics and public policy at the Yale School of Management. "It may be painful but, in the

"In managed care, the devil is in the detail. A large number of points that are not clinically critical but financially important must now be managed by the attending physician."

Sorry, your time is up

By Angelo Volandes

MELANIE STENGEL

Please pay on your way out.

That was my subtle hint to patrons to vacate the restaurant booth for the next hungry bunch. My dad gave me three booths at our Manhattan restaurant to wait on during the busy lunch hour, and I quickly learned that, given limited seats and time, the more customers I served, the more money I could make. It's ironic that today as a medical student the same principle will be used to determine my income as a future physician.

Many physicians under managed care will be paid more if they see more patients and will receive bonuses for spared medical procedures. While that may make logical business sense, it seems at odds with the basic tenets of medicine. The unique problems of a particular patient may require added effort and time.

New issues complicating the patient-physician relationship are bound to surface when salaries are tied to patient care. Will patient care be compromised in our hastiness to squeeze in extra bodies? Will certain patients become stigmatized if their health care consumes an inordinate amount of time? It would be naive to think that somehow physicians are immune to the personal financial incentives by which non-medical professions often function.

Clinical teaching is now suffused with issues of economics. Rarely does a week pass whereby a mentor fails to mention that an HMO would look askance at the list of procedures ordered, or that the amount of time spent on a patient is simply not realistic, given the number of patients to be seen. Often frustrated, I ask myself: Toward what purpose? The call to medical efficiency, and thus the popularity of HMOs, is based in part on concerns about equitable health care, namely the 45 million Americans who are without access. Are any of the savings redistributed to those 45 million? If there has been any redistribution of resources, it is to the executives and stockholders of insurance companies. Why should quality time with a patient be subjugated to the demands of a profit-interested business?

> "Managed care has altered the teaching of medicine to students at a fundamental level."

Managed care has altered the teaching of medicine to students at a fundamental level. It is disheartening to think that the next generation of physicians will not have the freedom that previous generations enjoyed to exercise sound clinical judgment. Telling a patient that you have to cut his or her visit short because of the HMO has more dire consequences than the indigestion experienced from an unexpectedly hastened luncheon.

Angelo Volandes is entering his fourth year at the School of Medicine.

long run, it's good for education. It encourages people to think about the worth of medical education on its own rather than as a by-product of service delivery. Treating the educational activity within a context of a budget is better than having it clawed and scratched away on the periphery of care and treatment."

One thing is clear: the changes have already been enormous and have only begun. For resident Steve Kavic, setting out on his career in surgery, this evolution has been part of his education at Yale. "There's no question that the style of medicine I'll practice will be very different from that of my father's and grandfather's generations," he says. But medicine has always adjusted to the changing realities of the society it serves. For Dr. Kavic, that makes a career in medicine an especially inviting opportunity. "I'm very happy with my career choice." **YM**

Redefining the relationship between managed care organizations and academic medical centers

By Mike Cardillo and Nicholas A. Hanchak, M.D.

Mike Cardillo

Nicholas A. Hanchak, M.D.

Managed care has triggered far-reaching changes in the way health care is provided and financed. More efficient management of costs and an emphasis on preventive health care and disease management have been important positive contributions. Still, new financial arrangements have created challenges for academic medical institutions seeking to fulfill their mission of excellence in patient care, education and research.

Although the agendas of managed care organizations and academic medical centers appear to be in conflict, we share an interest in using the best programs possible to improve the quality and affordability of care. We likewise share an interest in preserving the medical education and research that have made American health care the best in the world. By combining our strengths, we can improve the quality of health care while also delivering it efficiently so it can be widely afforded.

One reason our interests are coming together is the development of integrated delivery systems (IDSs), which are strategic alignments of academic medical centers, community-based providers and physicians. By virtue of their role in managing the health of defined patient populations, the mission of IDSs combines the delivery of acute care with an emphasis on disease prevention and health maintenance. These networks can benefit from alliances with managed care organizations, which are already armed with information systems and targeted interventions that support disease prevention and management of chronic disease across the continuum of care.

Member-based payment models, as opposed to fee-for-service payments, encourage IDSs to achieve cost savings by delivering care more efficiently and promoting health management. The resulting savings can be used to support medical education and research to the same or even greater extent that excess fee-for-service revenues have in the past.

In addition, partnerships between academic medical centers and managed care organizations can contribute to the training of medical students. Because we view such partnerships as critical to the future of our health care system, Aetna U.S. Healthcare established the Academic Medicine and Managed Care Forum. Representatives from academic medical centers including Yale, teaching hospitals, and managed care organizations convene to discuss issues such as the funding of graduate medical education, medical research, and managed Medicare and Medicaid. Together we can find solutions that preserve the excellence of our medical education and research and fulfill the promise of managed care and academic medicine—to improve the quality and efficiency of health care in America.

Mike Cardillo is president of Aetna U.S. Healthcare; Nicholas A. Hanchak, M.D., is president of Aetna subsidiary U.S. Quality Algorithms, Inc.

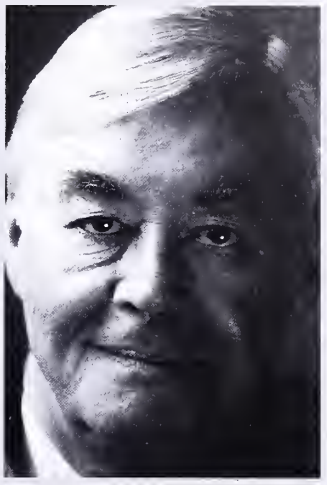
"A good from which everyone benefits"

The following is excerpted from the floor speech given by U.S. Sen. Daniel Patrick Moynihan, D-N.Y., on Jan. 21, introducing a bill to create a Medical Education Trust Fund financed by Medicare, Medicaid and the private sector. The trust fund would provide support to America's medical schools and teaching hospitals, which Senator Moynihan describes as threatened by increasing competition and the growth of managed care. Payments from the trust fund would average $17 billion each year, roughly doubling the federal commitment to medical education. The legislation is still pending.

"Medical education is one of America's most precious public resources. Within our increasingly competitive health care system, it is rapidly becoming a public good—that is, a good from which everyone benefits but for which no one is willing to pay. Therefore, it would be explicitly financed with contributions from all sectors of the health care system, not just the Medicare Program as is the case today. The fiscal pressures of a competitive health market are increasingly closing off traditional implicit revenue sources (such as additional payments from private payers) that have supported medical schools, graduate medical education and research until now.

The Medical Education Trust Fund established in the legislation I have just reintroduced would receive funding from three sources broadly representing the entire health care system: a 1.5 percent tax on health insurance premiums (the private sector's contribution), Medicare and Medicaid (the latter two sources comprising the public sector's contribution). The relative contribution from each of these sources will be in rough proportion to the medical education costs attributable to their respective covered populations.

This legislation is only a first step. It establishes the principle that, as a public good, medical education should be supported by dedicated, long-term federal funding. To ensure that the United States continues to lead the world in the quality of its medical education and its health system as a whole, the legislation would also create a Medical Education Advisory Commission to conduct a thorough study and make recommendations, including the potential use of demonstration projects, regarding the following: alternative and additional sources of medical education financing; alternative methodologies for financing medical education; policies designed to maintain superior research and educational capacities in an increasingly competitive health system; the appropriate role of medical schools in graduate medical education; and policies designed to expand eligibility for graduate medical education payments to institutions other than teaching hospitals.



U.S. Sen. Daniel Patrick Moynihan

Mr. President, the services provided by this nation's teaching hospitals and medical schools—ground-breaking research, highly skilled medical care, and the training of tomorrow's physicians—are vitally important and must be protected in this time of intense economic competition in the health system.

Yale surgeon and historian Sherwin Nuland explored the troubling medical and personal issues surrounding death in ways never done before in the best-selling 1994 book *How We Die*. His new book, *The Wisdom of the Body*, applies his multiple talents to a new understanding of

How we live

By Marc Wortman

Photographs by Gale Zucker

Few of us ever experience a truly radical change in our lives. Sherwin Nuland has. Twice. The first came early in his life, when, as an 11-year-old, he watched his mother die of colon cancer, turning his household and his life upside down. "All that I have become," he has written, "and much that I have not become, I trace directly or indirectly to her death." The second change would come a half-century later when the surgeon and clinical professor wrote *How We Die: Reflections on Life's Final Chapter.* Published early in 1994, it became an instant bestseller. The book's crystal-clear explanations of the physiological conditions leading to death and deeply felt, personal narratives of deaths he had witnessed struck an unsuspected nerve in the reading public, a craving for understanding and perspective about the often obscure and much-feared physical reality of modern death and dying. The book sold hundreds of thousands of copies, spending a total of 34 weeks on the hardcover and paperback *New York Times* bestseller lists. It won the 1994 National Book Award for nonfiction and made Dr. Nuland a high-profile writer and a frequently heard voice on end-of-life issues.

Those questions aren't the result of idle speculation. They come at the end of a long career devoted to caring and operating on thousands of patients and learning as much as possible about how to help them. "I loved being a doctor," he says. "Caring for the sick validated me. Being a writer is secondary to the thousands of hours I spent at the bedside."

Dr. Nuland retired from active surgical practice at the beginning of 1992, on the very day he began writing *How We Die.* He continues to serve on faculty committees, advises students on their thesis work and meets frequently with groups at Yale and elsewhere. He now spends large parts of his days researching at the Medical Historical Library, or writing at home in the recently restored neo-Colonial house just outside New Haven that he shares with his wife, actress Sarah Peterson, and their two teen-age children. (He also has two grown children from a previous marriage.) Sitting in his serene, book-lined study, he is a slim, robust man with a piercing look in his blue eyes. He appears younger than his 66 years. "I'm very egotistical about my physical self," he admits with a laugh. He credits regular games of tennis, a daily regimen of push-ups, and a young family for his hardy physical condition. He also recognizes his luck in the roll of the genetic dice: "People in my family die of cancer, or live unscathed to late age." So far, he appears to be on the fortunate path. He sits forward on one of the two small couches near a fireplace in his study where he carries out interviews. The National Book Award certificate is displayed on the mantel.

"We have 75 trillion cells in our bodies," Dr. Nuland says. "Every one of them has something going on constantly. Why don't things go wrong? *Why don't we die?"*

Given the book's obvious subject, however, many readers overlooked an important emphasis: Despite being what could be termed a layman's anatomy of death, *How We Die* also amounts to a remarkable portrait of human life in both its physiological and spiritual glories. The book again and again points out how, even in the throes of dying, the human body and mind are astoundingly resistant to their biological demise. Dr. Nuland's true concern in *How We Die* is not death but, in many respects, just the opposite. Much of what he explains is the human body's vast power to ward off death in all but the most overwhelming circumstances—and the ways in which death fits into the wider patterns of human development. Published this spring, his new book, *The Wisdom of the Body,* explores this idea, providing a biological explanation for the endurance and development of human life.

"We have 75 trillion cells in our bodies," Dr. Nuland says. "Every one of them has something going on constantly. Why don't things go wrong? *Why don't we die?"*

In his 1988 book on the history of medicine, *Doctors: The Biography of Medicine,* he wrote that, "The story of medicine is ... the story of my professional life." While he has stopped his medical practice, he finally has a chance to try to understand what those years in the operating room meant. Writing, he finds, is his way of knowing what he thinks about the life he has experienced. "I'm like a little kid," he says. "I want to find out things and then share it with others." His writings reflect an astounding amount of knowledge in a wide variety of fields, and the hundreds of books lining his wall evidence a mind of extraordinary reach. Since the 1980s, Dr.

Shep Nuland in the Medical Historical Library, where he spends much of his time researching. Page 20: *At home in his study a few miles away, Dr. Nuland works amid stacks of books and papers. He usually speaks his words as he sets them out in longhand.*

Nuland has edited the *Classics of Medicine Library,* a series of handsome gilt-edged and leather-bound reissues of every major work in medical history, all with his introductions. When asked about his polymathic pursuits, he demurs, "I have always felt I was not well-educated. Virtually from the cradle, I have wanted to learn more."

Always a reader in medical history, he began researching, editing and writing for the *Classics of Medicine* series during the early 1980s. In the odd free moments he found at the medical center, he would run over from the hospital to the Medical Historical Library at the School of Medicine's Harvey Cushing/John Hay Whitney Medical Library, one of the greatest collections of its kind in the world. Now retired, Ferenc Gyorgyey directed the Historical Library for many years and worked closely with Dr. Nuland, serving as translator on a volume in the History of Medicine series. They are now close friends. Mr. Gyorgyey says, "He has a fantastic brain. He works at incredible speed, and he brings a fresh perception to things. He has the courage to build a hypothesis, and he's not afraid that something unpleasant will come out of it. If he believes in something, he will tell it."

One of the most embracing of those hypotheses grew directly out of his professional experiences as a surgeon and the most personal aspects of his own life. "Biology and the human condition are the same

Continued on page 24

From *The Wisdom of the Body*

The following passages are taken from the introduction to *The Wisdom of the Body,* by Sherwin B. Nuland, M.D.

Centuries ago, when little was known of science, the mystery of the body's internal machinery enthralled ordinary people and tantalized the educated. It seemed a miracle, this bustling edifice of thought and action—beyond the capacity of mere mortals to comprehend, and yet providing here and there a hint that the inscrutable might somehow be understood if only properly directed efforts were made. In time, the right direction was indeed found and the efforts were rewarded, yet the tantalizing and the mystery not only did not lessen; they actually grew. The more became known, the more miraculous seemed the intricacies of the whole and the more urgent the drive to expand our knowledge of organs and tissues.

As knowledge grew of cells and the turbulence of chemistry within them, it became evident that the seeming chaos of our tissues has about it an overarching purpose—in this sense, not a theological or philosophic purpose, but one based on the simple biological principle of survival. If an organism is to survive, every activity within it must in some way be part of the effort. Moreover, it is imperative that there be total coordination if the outcome is to be the singular momentum that is ongoing life.

The integration of all parts of this effort has a seeming wisdom about it, by which the multiplicity of processes is somehow guided into a harmonious whole. The essence of success is the dynamism that allows each cell to respond instantaneously to even the most minor threat to its integrity and therefore to the integrity of the entire organism. There can be no chemical complacency. A high degree of radical readiness—to the point of instability, in fact—is required to allow the immediate change that corrects a tendency toward imbalance. Every disturbance sets off the calling forth of compensatory mechanisms that neutralize it. Our steadiness is a dynamic equilibrium.

To coordinate all of the instabilities in all of the cells requires that the far-flung parts of an organism be in constant communication with one another, over long distances as well as locally. In the scale of animals that includes humankind, this is accomplished by messages sent via nerves, in the form of electrical energy we call impulses; via the bloodstream, in the form of the chemicals we call hormones; and—to nearby groups of cells—via the specialized substances we call local signaling molecules. As each of these methods of communication was discovered, researchers became increasingly impressed with how well integrated is the entire array of apparently disparate activities. They came to recognize the inherent wisdom of the body. Not only did they recognize it; the term also began to appear in their writings.

The first scientist to use the metaphor of wisdom to characterize the body's seemingly intuitive integration of its diverse faculties was Ernest Starling, one of the two codiscoverers of hormones. Delivering the prestigious Harveian Oration of the Royal College of Physicians in 1923, he spoke of the regulation of bodily processes, their adaptability, and the contribution of hormones toward integrating them into a single unified system. For his epigraph, Starling chose a verse from the Book of Job (38:36): "Who hath put wisdom in the inward parts? or who hath given understanding to the heart?"

He entitled his oration "The Wisdom of the Body."

There is a certain irony in Professor Starling's epigraph. In the Hebrew original, the word translated as "heart" is *sechvi,* a term so distinctive that this is the only place in the entire Bible where it occurs; and the term's precise definition has been the focus of much learned discussion. According to some rabbinical authorities, it is equivalent to "mind," perhaps from the belief, shared with Aristotle, that the heart is the seat of the mind. The wonder of the human body is not only the wisdom of its physiology but also the breadth of its mind.

Nine years after Starling's oration, the great explicator of the body's automatic control over vegetative functions (such as digestion, circulation, and temperature control) Walter B. Cannon, of Harvard University, used the same title for a popular book he wrote. He chose to follow Starling's lead as a way of recognizing the contribution made by the English scientist to the understanding of the body's regulatory mechanisms. In the introduction to his book, Cannon quoted the French physiologist Charles Richet, who in 1900 had stated that "instability is the necessary condition for the stability of the organism."

A stable system is not a system that never changes. It is a system that constantly and instantly adjusts and readjusts in order to maintain such a state of being that all necessary functions are permitted to operate at maximal efficiency. Stability demands change to compensate for changing circumstances. Ultimately, then, stability depends on instability.

"The Wisdom of the Body" was to appear one more time, as the title of the fourth of a series of twelve Gifford Lectures presented by Sir Charles Sherrington at the University of Edinburgh in 1937-1938, several years after he won a Nobel Prize for his studies of the ways in which the nervous system coordinates bodily functions. He began the fourth lecture by suggesting to his audience that they see the human body as he did after a

long career of studying it: "Wonder is the mood in which I would ask to approach it for the moment." The lectures have been collected into a single volume which encapsulates the quest on which Sherrington based his life's work; it is called *Man on His Nature*.

The book you are holding is written by yet another man awe-struck with the amazement that is us. I offer it not in imitation of the great scientists who have preceded me, but in homage to their vision.

It is my thesis that we are greater than the sum of our biological parts. Not only that, but we have it in us to be still better than we are—and the choice lies to a significant degree in our own hands, as I have tried to demonstrate by telling the stories of people whom I have been privileged to know during my surgical career.

No matter how similar our parts to those of other animals, there are to be found within them some characteristics that make us uniquely human. Whether as overtly evident as the power of the brain that has been given us or as taken for granted as certain adaptations within our skeletal system, we are possessed of elements that make us different from any other living thing that has ever existed on this earth.

If this is true of our bodies, how much more must it be true of the qualities of emotion and thought that we alone of all the animal kingdom possess? Although focused primarily within the coordinating tissues of the brain, powers such as these originate in the contributions of every segment of us. Like everything else about human function, the myriad fragments that coalesce to form human feeling arise from the workings of the physical structure that has been given to us. The uniquely human mind is a property of the organic characteristics of the uniquely human body, just as all function is the accompaniment of the physical structure from which it arises. There is no duality of mind and body—all is one. Were it possible for René Descartes to reappear at this hour, today's neuroscience would quickly convince him of the unity. In that one, which is the summation of our humanness, I include the quality that I find most remarkable, the quality which above all else makes us distinctively what we are. By this, I mean a biologically inherent particularity that is both miracle and mystery, the particularity I choose to call the human spirit.

Notwithstanding the tragedies that humankind has visited on itself individually and collectively, and the havoc we have wreaked on our planet, we have become endowed nevertheless with a transcendent quality that expands generation upon generation, overcoming even our tendency toward self-destruction. That quality, which I call spirit, has permeated our civilization and created the moral and esthetic nutriment by which we are sustained. It is a nutriment, I believe, largely of our own making. Without it, we would wither and lose our way in the wilderness.

As I define it, the human spirit is a quality of human life, the result of living, nature-driven forces of discovery and creativeness; the human spirit is a quality that *Homo sapiens* by trial and error gradually found within itself over the course of millennia and bequeathed to each succeeding generation, fashioning it and refashioning it—strengthened ever anew—from the organic structure into which our species evolved so many thousands of years ago. It lives while we live; it dies when we die. Whatever else of a man may remain to join the consciousness of eternity, this magnificence I call the human spirit does not exist a moment beyond the moment of death. It is neither soul nor shade—it is the essence of human life.

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to me," he says. His eyes brighten at the notion that our biological existence has evolved to thrive despite constant threats from virtually every direction. "I live in awe of human physiology. The body is a wondrous mechanism with so many fail-safe devices. We are always in danger of death, and yet we don't die until old age or massive infection or trauma." With life-saving redundancy in virtually every organ system, the body has an

How We Die shows just how much it really takes to kill a person. *The Wisdom of the Body* shows how capable our biology is to develop and maintain itself.

innate capacity for nearly instantaneous communication and correction when any life-threatening event occurs. Instability is an environmental constant—the world is always changing—yet the body is continuously restoring the necessary equilibrium to the whole that promotes survival. Hormonal, neural and intercellular reactions course throughout the body, integrating into a single, self-sustaining organism.

How We Die shows just how much it really takes to kill a person. *The Wisdom of the Body* shows how capable our biology is to develop and maintain itself. All of these biological functions taken together can be directly equated with what

Dr. Nuland chats with longtime friend and colleague Robert J. Levine, M.D., a medical ethicist and chairman of the Human Investigation Committee.

would generally be seen as the evolutionally highest-order capability: wisdom.

In *The Wisdom of the Body,* Dr. Nuland explains: "If an organism is to survive, every activity within it must in some way be part of the effort. Moreover, it is imperative that there be total coordination if the outcome is to be the singular momentum that is ongoing life. The integration of all parts of this effort has a seeming wisdom about it, by which the multiplicity of processes is somehow guided into a harmonious whole."

As he writes in the prologue to *The Wisdom of the Body,* he, like many others who have studied human biology, finds that a wondrous wisdom governs the body. This is something Dr. Nuland believes we know with our bodies, if not always with our minds. It governs our lives. And it is even found in the types of more spiritual questions that we ask about life. The very title of the book evolves from early questions about the relationship between biology and the human spirit. The words originate in the Book of Job: "Who hath put wisdom in the inward parts?" The words were taken up earlier in this century by other medical writers, starting with Ernest Starling. He used them as the title of a lecture he gave in 1923 on the role of hormones in integrating bodily processes into a unified system. Then, in 1932, Walter B. Cannon, a Harvard physician who had helped explain the body's control over basic functions such as circulation and digestion, used it as the title of a popular book on the body's regulatory mechanisms. Finally, Nobel laureate Sir Charles Sherrington so titled a lecture he gave as part of a series of talks in 1937-1938, building on his studies of the nervous system's coordination of bodily functions. Dr. Nuland says, "All three men and I have been fascinated by the wonders of human biology and the human mind."

He extends the notion of bodily wisdom to equate those higher-order

qualities that make us human with basic biological functions. "What we are in the human spirit," he says, "is simply a reflection of our cellular life." Life is in constant conflict with the forces that would destroy it—and we endure by building an order that prevents or reduces the threat of death. Our communal lives celebrate this biological fact. "We create a culture that is a reflection of the biological victory over death," he says. "Beauty is the order and evidence of our ability to stay alive." The book traces out this notion, beginning at the cellular level and following it through various physiological systems, and finally to the brain and then the human spirit. "The human spirit," he says, "is the essence of the book. There's a biological basis for the human spirit."

Memoir is very much at the core of Dr. Nuland's writings about biology, and, not surprisingly, his biological theory for human wholeness grows in part out of a childhood in which the struggle for survival was continuous and death a very real threat. However, the celebration of life was also a constant. Dr. Nuland spent his childhood in a four-room tenement apartment in a teeming immigrant neighborhood in the Bronx. He shared that tiny space with an aunt, his parents, his brother, a cousin for a period and his grandmother. Yiddish was the household language. His parents could neither read nor write English. Even his name was what he terms "an afterthought." Everyone called him "Shepsel," a common Yiddish moniker in the Jewish village of Eastern Europe from which his family came. Most people who know him personally call him "Shep." "Sherwin" was a name his mother, Vitsches, heard in a Broadway show tune and then gave to the officials when she enrolled her son in school. For the young boy, his mother's death caused enormous grief and set him on a course to fight disease through medicine.

After his mother's death—his father labored from early in the morning until late at night in the garment industry—the crowded household was left in the charge of his elderly grandmother. "Bubbeh" as he affectionately called her, raised the boys until, at age 96, she too died when the future surgeon and author was 18 and a precocious college student at New York University. His description of the elderly yet extraordinarily strong woman's physical decline and the series of strokes that eventually killed her is among the most moving chapters in *How We Die.*

No member of his family had ever had formal schooling other than for religious purposes. "Our household valued learning," he recalls, "even though no one had any. It was not learning for the sake of achievement, but for developing a sense of oneself." To this day, he avers, "Knowledge makes me feel part of something larger. I have an immigrant's mentality: Nothing is ever enough. I'm always in a search to understand more." He remembers well spending each evening studying at a folding card table in the small living room between the two bedrooms while the life of the family swirled around him. Dr. Nuland has an uncanny ability to focus closely on whatever matter is before him, perhaps a skill learned in the chaos of that teeming household and community.

"Knowledge makes me feel part of something larger. I have an immigrant's mentality: Nothing is ever enough."

Gifted with a photographic memory capable of comprehending and retaining large chunks of material at a glance ("I studied in college by 'photographing' pages and they stayed in my mind"), he came to the Yale School of Medicine in 1951, graduating in 1955. He remained in New Haven as a surgical resident, between 1955 and 1961, at what was then Grace-New Haven and is now Yale-New Haven Hospital. He was in the same surgical residency group as another promising young surgeon, Richard Selzer, M.D., and succeeded him as chief resident. The following year's surgical residents included Bernie Siegel, M.D. The trio remained in New Haven as general surgeons and at Yale as clinical professors. While Dr. Nuland went into practice by himself, Drs. Selzer and Siegel worked together for 20 years. All three crossed paths regularly in the operating rooms.

Each made his mark as a surgeon, but together they have gone on to something that may be unprecedented among American surgeons. Although many individual physicians have certainly become famous writers, never have three close surgical associates found fame as writers. "It's unique," says Dr. Selzer, author of several nonfiction

books, including *Confessions of a Knife* and, most recently, *Raising the Dead.* "The surgeons of Yale have turned out to be writers. Surgeons are supposed to be mute as grass, and here we are singing arias." All three have now retired from active medical practice to devote themselves to their writing and related activities.

Each of the three writes in an entirely different vein than the others. "I don't think any jealousy exists among the three of us," says Dr. Selzer. His work mines the literary possibilities in his experiences. "I'm a 19th-century throwback," he says. "I write for the language." With a vast following, Dr. Siegel is author of the best-selling *Love, Medicine and Miracles* and other works aimed at changing attitudes in cancer patients as a means of curing or helping them to cope with their diseases. He also heads a national self-help organization called ECaP, Exceptional Cancer Patients, that supports cancer patients and their families in bringing changes to their lives. "The only one of us who is a literary talent is Dick," says Dr. Nuland, who recalls being impressed by Dr. Selzer's command of language even when they were residents. "I used to read Dick's patient charts just for the writing." Given the rigors of a surgical practice, however, none of the three began writing seriously until reaching his 40s.

Dr. Nuland explains the varying intentions among the remarkable threesome: "I write for two purposes: one to learn, the other is to find out what I think about what I've learned. Siegel writes to get his message out. I'm a little in between Siegel and Selzer. There's something in us that makes writing our life's blood at this point." Adds Dr. Selzer: "It was to surgery that we bound ourselves, but writing was our destiny."

That destiny has made them public figures, on occasion in open conflict with each other. Dr. Siegel recalls that Dr. Nuland went on Oprah Winfrey's television talk show a decade ago to argue against Dr. Siegel's work with cancer patients. "I got criticized," says Dr. Siegel, "for what was seen as the guilt, shame and blame I was causing." The Oprah experience still resonates with Dr. Siegel, who felt his work had been misrepresented. "He doesn't have a photographic memory," he says, "because he misquoted me." He terms Dr. Nuland the most intellectual and least emotional of the three, and suggests that he devote his next book "to miracles and things you can't explain." Despite these differences, Dr. Siegel believes that the three have grown much closer in their outlooks in recent years. "The key," he says, "is humanizing education. Selzer helped me see my patients as people. Out of that came a way of helping people. That's the path we've each taken now. All three of us feel that we can do more with words than with a knife." Dr. Siegel says of *How We Die,* "Helping people to deal with death is helping people to live."

While Dr. Nuland may still disagree with Dr. Siegel's approaches, he has indeed found himself, through his medical experience, needing to bring wider knowledge and understanding about the wonders of life. "All of us," he says, "need to be aware that we are a magnificent mystery. There is a treasure everywhere we look. We can study all the embryology we want, but every time a kid comes out, it's a brand-new miracle."

Dr. Nuland fears that modern medicine has, in part, lost sight of the humanity of its patients and the human spirit he believes essential to medical practice. He has written articles criticizing the biotechnically based and managed-care-induced move to apply objective standards of evidence to each case. He believes this undermines the human essence of the doctor-patient relationship. He says, "The physician's art of taking a patient's history and developing a sense of who it is they're taking care of is being lost." He asserts that a surgeon should grasp the individual wisdom of each body being treated. "Basic decisions now are coming from secondary sources—what the literature says. Medicine should be about individualization of diagnosis, care and follow-up. Objectification undermines this."

Death and end-of-life issues remain an important concern. He blames medicine's ethos for some of the great difficulties modern society

"The surgeons of Yale have turned out to be writers," says colleague Richard Selzer, M.D. "Surgeons are supposed to be mute as grass, and here we are singing arias."

has in dealing with death. The profession's constant need to diagnose and treat mistrusts the body's own wisdom at the end of life. "Dying is very hard," he says. "However, the dreadfulness of death is to a significant extent due to attempts to stave it off. At certain points we have to step back, and death won't be so bad."

Dr. Nuland knows death intimately. *How We Die* begins with the drama surrounding the death from myocardial infarction—a massive heart attack—of his very first patient as a medical student at Yale, including his own despair when his heroic efforts at open-chest heart massage failed to revive the man. Closing the circle, he brings the book to its uneasy conclusion with reflections provoked by the 1989 colon-cancer death in New York of his beloved older brother Harvey—and memories of their mother's death of the same disease. Many readers have experienced an anguish similar to Dr. Nuland's own about the questionable medical and personal decisions he made to extend a battle, on behalf of his brother, that he knew could not be won.

It is the humane character of Dr. Nuland's own response to his brother's and others' deaths that has led thousands of readers to call or write him about the book and their own experiences with the deaths of loved ones. Three years after the book appeared, he continues to hear daily from readers. "It has become a ministry," he says. "People just need to talk about death."

The lessons Dr. Nuland takes from the life he has led—and its coming end one day in death—is that "because of that ending, we have a necessity to soak up the goodness available to us every day. Our lives are sprinkled with sorrow, but we transcend those periods. I've had my sorrows, but somehow things roll back." Those who have read his books—or been under his medical care—know that our ability to overcome even our deepest losses, too, comes from the wisdom of the body. It's a wisdom to which he has devoted a lifetime. **YM**

At work in his study, Dr. Nuland is reminded by the poster of a lecture he gave in China on two successive days. "At the second, there was standing room only and I was very impressed with my popularity," he says. "When I got home, I asked a friend to translate the poster. It says, among other things, 'Attendance mandatory.'"

Mission critical

The field of anesthesiology looks beyond its traditional role in the OR and finds the future lies also in intensive care, pain management and, unexpectedly, prevention.

FRANK POOLE

Roberta L. Hines, M.D., an energetic and enthusiastic champion of anesthesiology, became chair of the Department of Anesthesiology at Yale School of Medicine and chief of anesthesiology at Yale-New Haven Hospital (YNHH) in the fall of 1995. This outstanding clinician, educator and clinical investigator has seen the field of anesthesiology take a more global approach to patient care, expand pain management and offer diverse practice opportunities for young men and women.

A New Hampshire native, Dr. Hines came to Yale in 1978 as a surgical intern after receiving a degree from Dartmouth Medical School. Following internship, she completed residency training at YNHH in surgery and

FRANK POOLE

Previous page: *Roberta L. Hines, M.D., in an operating room at Yale-New Haven Hospital, leads a department of 72 attending and 56 resident physicians.*
Above: *The department opened its pre-admission testing center in 1995, directed by Richard Wiklund, M.D., to better prepare patients for surgery. The screening that takes place there often reveals conditions, such as hypertension, that might otherwise go undetected and untreated.*

anesthesiology, serving one year as chief resident in anesthesiology. She joined the Yale faculty as an instructor in 1982, and in May 1994 she was named professor upon her appointment as acting department chair.

Dr. Hines' research interests include critical care medicine, right ventricular function of the heart, cardiovascular and respiratory physiology, platelet function, new inotropic agents and renal function. This work parallels Dr. Hines' work at YNHH, where she has served as director of the recovery room, cardiothoracic anesthesia and the cardiothoracic intensive care unit.

The department that Dr. Hines leads comprises 72 attending and 56 resident physicians, one physician associate and six certified registered nurse anesthetists, and provides anesthesia services annually for more than 30,000 surgical procedures. When the section of anesthesiology was established as part of the Department of Surgery in 1955, there were six attending physicians and five residents; by 1971 it had become a department.

Dr. Hines spoke recently with Helaine Patterson, director of the Office of Public Information. A portion of their conversation follows.

WHAT CHALLENGES ARE FACING ANESTHESIOLOGY TODAY?

Anesthesiology is at a critical point in its identity as a specialty. Traditionally, we have identified our role as intraoperative physicians. We've spent so much time in the operating room—obviously important—in reducing overall operative mortality and allowing surgical subspecialties to develop. That's the good news.

But the downside is that the specialty's growth has been hampered by the fact that we were not really known by many other specialists except surgeons, so the full breadth and the intensity of what we do has not been appreciated by internists and pediatricians. Only within the last 10 years—when many of us have begun to look outside the operating room for new avenues to expand anesthesiology—have other medical specialties and the population, in general, begun to appreciate what we do. The classic line, put people to sleep, has become a very small part of what we do.

We are, in a true sense, intensivists, caring for severely ill patients, managing multisystem diseases and relieving pain. Most people don't understand the other aspects of anesthesiologists' work. Much of what we do outside the operating room has just begun to become focused, particularly in pain management, intensive care and pre-admission testing. Many anesthesiologists also are taking a more primary care role. That's going to raise people's eyebrows, and they're going to say, "What is someone who's really in tertiary care doing giving primary care to the sickest patients?"

WHAT, IN FACT, ARE ANESTHESIOLOGISTS DOING IN PRIMARY CARE?

This developed as more and more of our patients—more than 40 percent—are coming into the hospital either the day or morning of surgery. It became clear that we couldn't see patients who are ill or have multisystem organ disease at 6 o'clock in the morning and have them appropriately prepared by 7:30 a.m. for their surgery. As a specialty, we said that's unacceptable. We couldn't understand people's medical conditions and get them optimized, so the field of preoperative testing and evaluation developed.

In October 1995, we opened our anesthesia pre-admission testing center with the premise that we would want to see everyone, doing thorough history and physical examinations, reviewing the appropriateness of laboratory evaluations, and optimizing their care in a prospective fashion—seeing patients seven to 10 days before surgery so they could come back at 6:30 a.m. and have their surgery at 7:30 a.m. the same day.

In assuming that role, we've taken a much more primary care role. We're now identifying people's primary hypertension—diseases that people didn't know they had. Many of these people didn't have a primary care physician. A case in point: A 67-year-old gentleman who didn't go to the doctor regularly was referred by a surgeon for hernia repair. We were the first people to identify that patient's profound diastolic hypertension and to control blood pressure with the aid of our cardiologist. We not only lessened the likelihood of adverse events occurring during the procedure, but we also impacted his longevity and other factors by identifying a fairly significant cardiovascular risk factor that no one ever knew he had.

"We're now identifying people's primary hypertension—diseases that people didn't know they had. Many of these people didn't have a primary care physician."

WITH THE ADVENT OF LAPAROSCOPIC SURGERY, DO ANESTHESIOLOGISTS HAVE A NEW OR DIFFERENT ROLE?

The role is not really different, but again it's a challenge. When laparoscopic surgery began, we thought that patients were going to do better because the surgery was less invasive and that they would go home sooner. The patients would come in, be healthy, have their gallbladders taken out laparoscopically, and go home. We've begun to realize that our surgeons are getting so proficient with laparoscopic procedures that we're no longer seeing just healthy patients. We're seeing sicker patients for laparoscopy, and we're beginning to realize that, just like before, the surgical procedure may simplify some aspects of anesthetic management. Dealing with patients with advanced medical conditions, our role is much greater in maintaining those patients in an optimal state for the surgeons to do their procedures, because special physiologic derangements occur with laparoscopic surgery that aren't a major concern in healthy patients. In sick patients, particularly those with cardiovascular disease, they can be quite profound.

SHIFTING AWAY FROM CLINICAL PRACTICES IN ANESTHESIOLOGY, PLEASE DESCRIBE CURRENT CLINICAL RESEARCH IN ANESTHESIOLOGY AT YALE.

One of the hottest areas is appropriate testing for patients undergoing surgical procedures, and how to optimally match testing with the procedures. Part of the interest has been cost-motivated, and we now do things in a more structured fashion. Ongoing research here specifically has looked at tests a particular patient would need for a particular surgery. Does every patient need an electrocardiogram (EKG)? Does that affect outcome?

We've recently revised our policy. We've been able to show that a large group of patients don't need routine bloodwork or routine electrocardiograms. Basically, people thought it was heresy to discard those practices, but we've been able to show that there's no increase in anesthetic complications if appropriate guidelines are followed.

Similarly, we're looking at other laboratory tests and more specifically matching them with outcomes in patient diseases and, therefore, taking an epidemiological approach—once again, working in an area where anesthesiologists traditionally would not. We're making choices every day with testing modalities, and we're repeating them in a more structured, systematic, research approach based upon patients' histories, exercise tolerance and other disease states, particularly emphasizing patients with cardiovascular disease. Does everybody who has angina need a stress test? Does everybody need invasive testing to evaluate cardiac disease before coming for surgery? We clearly know that's not true, and we can stratify those patients who then need to move on to catheterization or certain medications versus those who could be taken to the operating room on their already-charted medical management. We've made decision trees based upon ongoing epidemiological work.

The other area akin to pre-admission testing is in pediatrics, where controversy has focused on

parental presence during pediatric anesthesia and anxiety-related issues with parental presence. Zeev Kain, M.D., director of pediatric anesthesiology, has been working with Linda C. Mayes, M.D., in the Child Study Center, on a battery of issues related to preoperative anxiety and ways to reduce it in parents and children. Dr. Kain published data showing that parental presence may not always be good during pediatric inductions—a conclusion that, once again, has forced us to evaluate our old norms. The old school of thought was that parents would quiet their children. He's shown in children less than four years of age that the presence of parents—particularly if the parents are anxious—actually increased the need for anesthetic agent and increased anxiety during awakening. His ideas are interesting and clearly controversial. Most children's hospitals like to say that parents can be present, and clearly we do at Yale, but situations may arise where having parents present is not best for their children. Having child psychiatry involved in anesthesiology is another area one wouldn't have imagined, historically.

IN WHAT OTHER AREAS ARE YALE ANESTHESIOLOGISTS CONDUCTING CLINICAL RESEARCH?

We are very active in cardiac anesthesia because that parallels our clinical activities. We're a leading center in cardiac surgery, which extends itself into anesthesia. We're one of a handful of centers around the country that routinely does intraoperative transesophageal echocardiography. This is an advanced method of imaging the heart while surgery is actually taking place. We have taken the same principles and technology that cardiologists use to evaluate cardiac function and brought that into the operating room. This provides instantaneous appreciation of what cardiac performance is during cardiac surgery and helps our surgical colleagues judge the adequacy of their valve replacement. Does the patient need a replacement? Can he or she have a repair? We work with them in a close relationship to formulate their surgical plan and give them an idea of how successful they can expect it to be. It's a more sensitive indicator that a patient is having problems during cardiac surgery based upon information we get from this monitor than we've ever had before. That's clearly innovative, and we were actually the first anesthesia department in the country to report on the use of this modality in the operating room. Paul G. Barash, M.D., professor of anesthesiology, reported that work in 1984, and we now use it for all adult cardiac cases.

"Without Luke Kitahata's discovery ... pain management as we know it today would not exist."

WHAT'S HAPPENING IN BASIC RESEARCH?

Luke M. Kitahata, M.D., the professor of anesthesiology who founded Yale's pain center, continues to be an international leader in spinal opiate receptors and research in pain management. He is world-renowned for being one of the first investigators to come up with the notion that we could take medicines that we traditionally used, like morphine and other opiates, and put them in the spinal cord directly to affect it. At a much lower dose, these medicines have exquisite and sensitive pain relief. Dr. Kitahata's basic science work led to the entire field of patient-controlled analgesia using opiates and epidural opiates. Without his discovery that anesthesiologists can put opiates in the central nervous system, reduce the amount given to patients, and thereby reduce the potential for side effects of respiratory depression, urinary retention, nausea, vomiting and other negatives, pain management as we know it today would not exist.

IS PAIN MANAGEMENT ALSO MOVING FROM THE OPERATING ROOM AND POST-OPERATIVE CARE INTO OTHER AREAS OF PATIENT CARE?

Pain management has divided itself into two factions. Acute pain management focuses more on the time of surgery and deals with the pain in surgical incisions and related issues. The second area takes a multidisciplinary center approach to manage chronic pain syndromes, such as reflex sympathetic dystrophy (a chronic syndrome that occurs following work-related injuries or trauma) and low-back pain.

Our Center for Pain Management, located at Temple Medical Center in New Haven, has physicians from neurology and psychiatry, psychologists, as well as anesthesiologists who have special credentials in pain management. Here, we diagnose the patients' pain. But because many chronic pain syndromes are difficult to diagnose from a traditional view, we are looking at new modalities specifically to help diagnose more

HAROLD SHAPIRO

"Pain," says Dr. Hines, "is still the largest black box." Above she consults with Lloyd Saberski, M.D., a faculty member at the department's Center for Pain Management, where clinical research is helping to uncover the sometimes-mysterious pathology behind symptoms.

complex pain processes, and then, secondarily, look at new ways to treat them, maybe even non-pharmacologically.

Lloyd Saberski, M.D., associate clinical professor of anesthesiology, performs a procedure called epiduroscopy. With this procedure, new and innovative diagnostic techniques for the management of back pain have been developed. In addition, he and his colleagues are looking at whether certain syndromes previously thought to affect only peripheral nerves may have a central etiology. With pain syndromes, particularly in the extremities, many people have thought they couldn't possibly be mediated by something going on in the central nervous system, and that it had to be at that specific location. As we know, low-back pain has been very difficult to treat by surgery and traditional pain management. In spite of surgery and narcotics, the patient may not get much symptomatic relief. Anatomically, the surgeon goes in, takes out the disc, and things look like they ought to be fine. But the patient still has incapacitating pain, can't go back to work, has weakness in his or her legs or other problems. It may be that, indeed, more than the anatomical component is occurring. These are the patients that may benefit from epiduroscopy.

Pain management, in the sophisticated sense as we know it, has developed within the last 10 years. Pain is the area that, I think, is still the largest black box. We've been traditionally focused on treating the symptoms, making patients feel better. Now we're taking a step back to examine the

real pathology causing this pain and to understand the complex mechanisms eliciting pain in order to interrupt those pathways.

WITH THE POPULATION AGING AND BABY BOOMERS TURNING 50, SURGERY IS BEING PERFORMED AT A LATER AGE. IS THIS PRESENTING MORE CHALLENGES AND RISKS FOR ANESTHESIOLOGY?

It clearly is. Because of patients' ages, they get significant cardiovascular disease. Even patients who aren't coming for cardiovascular surgery present an issue because they have to be managed as if they have significant cardiac disease, and it changes our approach to interoperative management and monitoring them. That also has been part of the impetus for us to see these patients earlier in our pre-admission testing center to make sure their underlying cardiac conditions, high blood pressure, diabetes or other factors are well under control. One of the newest areas of interest, as you can imagine, is geriatrics in anesthesiology because patients over 70 present some unusual problems, such as greater risk for hypothermia and a decreased ability to metabolize drugs.

WHO WILL TREAT THESE PATIENTS AND OTHERS? WHAT IS THE PHYSICIAN SUPPLY IN ANESTHESIOLOGY? WHO'S INTERESTED? ARE MORE WOMEN ENTERING THE FIELD?

I should preface this by saying that you're obviously getting one woman's opinion: I'm very optimistic, but not all my colleagues share my optimism. The data shows that we have been training too many physicians and too many anesthesiologists in general. We have finally recognized that and taken good steps toward bringing the professional pendulum back. Moving into a much more perioperative approach clearly has helped. If we traditionally were going to keep our focus in the operating room, the number and kind of physicians that we train would be very different from sending people out into the intensive care units, pain centers and pre-admission testing centers. Since the specialty has evolved and grown, it has aided that supply situation. We're putting different kinds of people into the specialty and helping with issues of resident training.

Zeev Kain, M.D., left, and colleagues have found evidence that questions some long-held beliefs about children undergoing surgery. In some cases, especially among children younger than four years, parental presence may increase the child's anxiety before and after surgery and increase the need for anesthetic agent.

FRANK POOLE

We do not need to train 1,400 anesthesiologists every year, which is the number we've been training nationally for several years. Realistically, we need to train between 800 and 900 per year, and the model is set that people are going to move out of the operating room and into perioperative management, pain management or ICU as part of their practice techniques.

I also see a different outlook for people entering the field. Their interests are much broader. They possess an eager sense to look at all aspects of patient management, not just traditional anesthesia in the operating room. They have greater interest in basic science and understanding the modalities of pain management. We're seeing a different kind of individual coming into anesthesia, one with more diversified interests. They still have a keen interest in clinical anesthesia, but now clinical anesthesia with something added—that little bit of basic science, pain management or ICU care. This is positive and will help us develop into multidisciplinary practice, where we've been for many years in the operating room. Now we're multidisciplinary out of the operating room.

I'm very, very optimistic. Applications from people interested in anesthesia last year are beginning to take an upswing. We've done a good job of marketing ourselves and letting people know that things are not the doom and gloom that were painted a few years ago. We are seeing a more diverse group of people interested in the specialty, particularly with women coming in.

WHY ARE MORE WOMEN ENTERING THE FIELD?

The major reason has been the increased visibility of female role models in academic anesthesia. This, combined with the specialty's multidisciplinary nature, allows a great deal of career flexibility. Opportunities exist to combine conventional kinds of practice with the newer, expanded areas of the specialty. A person can tailor practice, spending 50 percent of his or her time in the operating room and the other 50 percent in ICU or in pain management. It also provides an opportunity to develop a practice that utilizes all aspects of one's medical and surgical expertise.

IS MANAGED CARE HAVING A MAJOR IMPACT ON ANESTHESIOLOGY?

In the operating room, we are being forced to practice in a more efficiency-based model. The major impact is on activities outside of the operating room. We no longer are getting reimbursed at the same level for pain management, pre-admission testing and intensive care work.

IT SEEMS, THOUGH, THAT THE PROFESSION IS SHOWING THAT THESE ACTIVITIES ARE EXTREMELY VALUABLE.

They're phenomenally valuable, but the insurers don't always see things as we do in terms of value-added. One of the difficult situations that we're facing is that we're getting paid less for those outside-of-the-operating-room activities. Just at the time when we're blossoming outside of the OR, people want us to return to the OR, or at least they're telling us that they're not going to pay us for activities that we do outside of the OR. That's a real challenge for the department, which is committed to maintaining those outside activities. We're not going to retrench into the OR only, so one of the most difficult juggling matches for me is how we can maintain our academic presence outside of the OR in a fiscally responsible way.

LAST OCTOBER, ANESTHESIA CELEBRATED THE 150TH ANNIVERSARY OF THE FIRST USE OF ETHER. COULD YOU PROJECT WHAT ANESTHESIA MAY BE LIKE IN THE FUTURE?

In pain management, we're clearly going to see great development, both in finding the mechanisms for some pain syndromes and in identifying the mechanisms and developing specific and sophisticated ways to treat them. More specific modalities, pharmacologically, may not have any pain relief properties per se, but they may prevent the transmission of the painful stimulus, offering an entirely new approach to pain management.

OTHER ADVANCES?

The other area where we're going to have a great impact as anesthesiologists is in patient outcome following surgery. We've already had a dramatic impact in reducing death during surgery, but what we haven't done as well as we will over the next few years is in looking at much more specific endpoints. With the physiological work going on in our perioperative group, we will be able to treat more specifically renal dysfunction and mesenteric dysfunction, some of those more specific end-organ problems that we haven't been able to focus our attention on.

I see us getting much more directed and pre-emptive. In the past we've said, "This is a problem, let's work at treating the problem when the patient has it." Now we're saying we've done that very well. We need to look at the mechanisms for

PETER CASOLINO

"I'm very, very optimistic. We've done a good job of marketing ourselves and letting people know that things are not the doom and gloom that were painted a few years ago."

these problems and prevent them from happening. I see us taking a much more basic and scientific approach to some modalities.

I also think that we're going to see in the near future that very healthy patients probably aren't going to come into hospitals any more for their anesthesia. There is an increasing interest in the mode of office-based anesthesia. The geography of where we provide anesthesia, I believe, is going to change, and people who practice in hospital settings are going to be treating sicker and sicker patients, with more complex and sophisticated disease processes.

WILL A NEW FIELD OF AMBULATORY ANESTHESIOLOGY EVOLVE?

Not a new field, but an expansion and diversification of our present role. This is best demonstrated by looking at the areas outside of the traditional operating room setting where anesthesia is being performed. Such areas include: radiology, radiation therapy and electroconvulsant therapy. People are actively looking at whether we can safely give anesthesia for arthroscopy in physicians' offices. Does everyone who comes for an arthroscopy have to come into the hospital? That may not be the case. Similarly, can we provide some gynecological anesthesia in the office for in vitro fertilization, or do patients have to come into the hospital OR? We're just beginning—with the epidemiological evidence that we've gotten with outcome studies in our pre-admission testing area—to see whether we can safely perform anesthesia in nonhospital locations. That will be the issue.

My concern is that managed care will want us to do that because it's less expensive. But, as physicians, we will have to be the patients' advocates. We need to get that data and assess whether it really is as safe to give anesthesia for arthroscopy in the office as it is to give it in an outpatient anesthesia facility with a recovery area and nurses trained to monitor those patients. As we move outside of traditional operating-room anesthesia, we have to take what we've learned and see whether it can be modified appropriately. These principles clearly can't be abandoned.

My concern is that people are going to say that just because anesthesiologists are not in the operating room, we don't need to do all the things that we've learned over the last 150 years. That challenge will provide us with our next opportunity to demonstrate our excellence and commitment to patient care. **YM**

Through the past, darkly

Lessons from an earlier American drug epidemic show hyperbole, not fact, often dominates public discourse.

By Michael Fitzsousa

Photographs by Harold Shapiro

In the early 1970s, medical historian David F. Musto, M.D., MA '61, HS '64-67, charted new territory with his book *The American Disease,* a history of illegal drug use in the United States that toppled assumptions about substance abuse, law and public policy. It would be a decade before the next major book on the topic was published, and more than 20 years before the number of researchers in the field would grow large enough to warrant a major conference.

That moment came last fall, when 15 scholars from around the nation gathered in New Haven for *Historical Perspectives on the Use and Abuse of Illicit Drugs in the United States.* Chaired by Dr. Musto, professor of child psychiatry and of the history of medicine at Yale, the meeting brought together senior scholars David T. Courtwright, Ph.D., author of the 1982 book *Dark Paradise;* Peter Bourne, M.D., drug czar under President Carter and author of a recent Carter biography; John C.

Learning the rules of political football

Peter G. Bourne, M.D., witnessed the collision of drugs and politics first-hand as director of the U.S. Office of Drug Abuse Policy during the Carter years. First recruited by then-Georgia Gov. Jimmy Carter while on the psychiatry faculty at Emory University, Dr. Bourne quickly learned just how crucial a savvy understanding of politics is to making progress in drug policy.

At the Yale conference last October, he told a story illustrating this point. "I started off with the rather naive view that, if you had access to the president, you could do whatever you wanted," said Dr. Bourne, author of *Jimmy Carter: A Comprehensive Biography from Plains to Post-Presidency*, published in February. But he recalled one early meeting between President Carter and California state Sen. (and '60s radical) Tom Hayden, in which Mr. Hayden steadily berated the president for failure to exert more power over corporations.

"Carter finally said, 'Listen, I'm just the President of the United States. I don't have that much power!'" Dr. Bourne recalled, smiling. "And I thought, if the president does not have the power to achieve what he wants, how can I? ... If you can't propose things that will draw support, or at least co-opt the opposition, you really don't get anywhere." He concluded that one of the greatest obstacles was the entrenched interests of career administrators. "The substance of the issue was really very secondary to their goal of building political power," said Dr. Bourne. "For example, I thought the DEA [Drug Enforcement Agency] would be overjoyed to see declining rates of overdose mortality, but that was the last thing they wanted. They wanted the threat to grow and grow and grow so their budget would grow and grow and grow."

But even that explanation can be elaborated upon. Dr. Musto recalled that while interviewing Harry J. Anslinger, the federal narcotics commissioner from 1930 to 1962, he asked why the Narcotics Bureau never used social scientists to estimate the number of addicts. Mr. Anslinger replied that that number was "dynamite" and the Bureau was not about to let its estimation escape control. "If the number went up, we weren't doing our job," Mr. Anslinger said, "and if it went down, our budget was in danger." As a result, Dr. Musto concluded, many of the estimates in the Anslinger era remained remarkably stable.

When he was named drug czar under President Jimmy Carter, Peter Bourne, M.D., thought that anything was possible. He quickly learned how politics interfered with discussion of the substance of issues.

"[Declining overdose mortality] was the last thing they wanted. They wanted the threat to grow and grow and grow so their budget would grow and grow and grow."

Ruth Engs, Ph.D., of Indiana University, has proposed that there are recurrent cycles of "clean living" movements in the United States that especially target drugs and alcohol.
Page 37: *David F. Musto, M.D., moderated discussion among 15 scholars from across the United States.*

Burnham, Ph.D., professor of history at Ohio State University; and Ruth C. Engs, Ed.D., professor of applied health science at Indiana University. A dozen more historians delivered papers on topics ranging from *Captain Hobson's Horror Stories* to *Women and Addiction in the United States* to *Opiate Use in the Jazz Age.*

Drug abuse has been a powerful political issue in the U.S. for more than 100 years, and several of the conference presenters described the remarkable rhetoric used at both ends of the spectrum for political gain. "For many people," says Dr. Musto, "there is no sense of history about drugs; many are not aware that this is our second drug epidemic this century." (The first one peaked between the years 1900 and 1920 and produced the Harrison Act of 1914, restricting what had been an open trade in opiates and cocaine.)

Joseph Spillane, Ph.D., assistant professor of history at the University of Florida, outlined this early period in his paper on *Cocaine Before Prohibition: Patterns of Use in the United States 1880-1915.* Jill Jonnes, Ph.D., a journalist and the author of *Hep Cats, Narcs, and Pipe Dreams: A History of America's Romance with Illegal Drugs,* detailed the spread of drug culture in post-World War II Baltimore.

In both these periods, as in the more recent past, law enforcement agencies have sought greater authority to control drugs. At times, they consolidated power by exaggerating the dangers of illicit drug use, Dr. Musto and his colleagues argue. "The talk hasn't changed much since the 1920s," Susan L. Speaker, Ph.D., of Bucknell University said during her account of the crusade of Capt. Richmond P. Hobson, who drew much of his own anti-narcotics rhetoric from the temperance movement of the 19th century. On the other side of the debate, advocates of a more lenient drug policy also have favored hyperbole over scientific and historical accuracy.

"The historian is often caught in the middle," Dr. Musto says. "Trying to be accurate makes both

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Michael Fitzsousa is the editor of Yale Medicine.

Scholars met in the Beaumont Room to present papers and discuss the history of illicit drug use in the United States, a field that began two decades ago with the publication of Dr. Musto's The American Disease.

sides uneasy. Neither can understand why, after studying it for so many years, you don't agree with their side. There's a religious intensity in the polarization that occurs over drug policy."

In uncovering primary source material, drug-policy historians have demonstrated that:

▶ The power of laws to control drug use has been more modest than had been assumed in the decades before the 1960s.

▶ The use of illicit drugs has had great swings, with the peaks and valleys relatively far apart. The period from one low point to the next may be a lifetime.

▶ Widespread use of a drug can fall dramatically if it is perceived to be dangerous.

▶ Americans oscillate from viewing illicit drugs as a useful tool for self-realization to seeing them as so dangerous that any use would reduce one's full potential. "The underlying theme," Dr. Musto says, "is maximizing one's individual potential, either by using drugs or abstaining."

"There's a religious intensity in the polarization that occurs over drug policy."

▶ Drug use is viewed as an epidemic especially when the middle class is affected. On the other hand, drug use frequently has had a false or exaggerated link with ethnic minorities, "and this link intensifies the punishments mandated by laws."

A second conference is planned for 1998 to further encourage collaboration among researchers in this growing discipline. (The 1996 conference was sponsored by the Section of the History of Medicine, the Yale Child Study Center and the National Institute on Drug Abuse.) "It's just beginning as a field. These [scholars] delve into areas where there's no one else to talk to among most history faculties," says Dr. Musto. "It has been good to facilitate this kind of contact and cooperation."

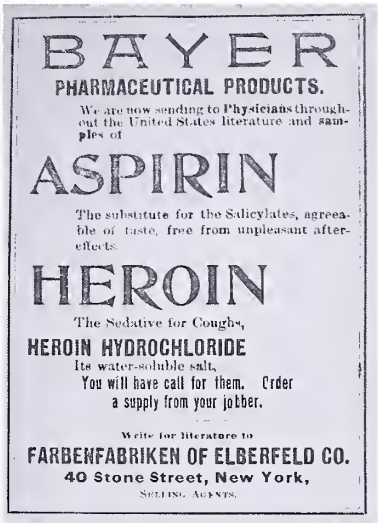
For those who came to New Haven, the conference was a chance to meet the pioneer scholars of the field. Dr. Courtwright, whose *Dark Paradise* was the second book published on the topic, said Dr. Musto was "the first person to go into the archives, look at the evidence using primary sources and write a balanced account of U.S. drug policy." Added Dr. Burnham: "This conference is a tribute to David Musto and his work." **YM**

An earlier epidemic

For Americans born after World War I, it may come as a surprise that the experience with now-illicit drugs is rooted further back in history than the psychedelic 1960s or even the 1950s heroin epidemic of Claude Brown's *Manchild in the Promised Land.* Turn-of-the-century advertisements show the public's early embrace of narcotics, including heroin and cocaine; portraits of anti-drug crusaders give a human face to the harsh rhetoric of temperance and punitive movements against drug use.

Source: David F. Musto, M.D.

Above: *Capt. Richmond Pearson Hobson, a naval hero of the Spanish-American War, campaigned against alcohol until the success of Prohibition, and then turned his energies against heroin and later marijuana.*



Heroin and Aspirin were trademarks of the Bayer Co., which introduced the drugs to the medical profession in 1898 and 1899, respectively. Ownership of the names was lost in the aftermath of World War I.

In 1889, coca wine was recommended for baseball players and other athletes. The most popular coca wine, vin Mariani, *offered a discount to clergy and orphanages.*

Above: *Harry J. Anslinger, head of the Federal Bureau of Narcotics for three decades, testifying before Congress in the early 1960s. He had a profound faith in the deterrent effect severe penalties had upon drug use.*

Neurosurgery becomes a department

Dennis Spencer named first chairman and chief

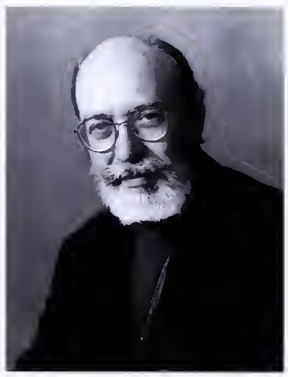
The School of Medicine and Yale-New Haven Hospital (YNHH) have established a Department of Neurosurgery and named Dennis D. Spencer, M.D., to be the first leader of this free-standing department. Neurosurgery previously had been a section within the Department of Surgery.

Dr. Spencer, also the Harvey and Kate Cushing Professor of Neurosurgery at Yale and an attending surgeon at YNHH, is internationally known for the surgical treatment of neurological diseases causing medically intractable epilepsy.

The new department's program encompasses epilepsy surgery, neuro-oncology, neuropsychology, neurovascular surgery, pediatric neurosurgery, stereotactic radiosurgery, and stereotactic and functional neurosurgery. The Functional Imaging/Neuropsychology Laboratory supports many of these activities.

Dr. Spencer envisions that in future years neurosurgery at Yale will provide an environment in which basic discovery remains the driving force, increasingly high standards of patient care will be the expected outcome, and the highest quality of education will result. "As our faculty neurosurgeons and surgeons-in-training deliver increasingly complex treatments for patients with many neurological diseases, they will combine clinical and basic science experience to provide a unique appreciation and understanding of the human nervous system and its disorders," the new chair/chief predicts.

Neurosurgery at Yale was organized in 1918 under Drs. Samuel Harvey and William German. Both men trained under Dr. Harvey Cushing, considered to be the father of American neurosurgery. In 1934, Dr. Cushing and Dr. Louise Eisenhardt, a longtime collaborator in neuropathology, came to Yale, which was developing a strong tradition in surgery of the nervous system. Later in the decade, Dr. Cushing, with two other colleagues, established the Medical Historical Library.



Neurosurgery continued to expand at Yale, and during the 1940s a three-year training program was formalized at the New Haven Hospital. Dr. John Fulton, a Yale neurophysiologist, conceived the idea of a journal and in 1944 he published the first issue of the *Journal of Neurosurgery* with Dr. Eisenhardt as editor.

Dr. Spencer became head of neurosurgery in 1987, replacing Dr. William F. Collins, chief from 1967, who had become chairman of the Department of Surgery in 1985. Dr. Spencer developed a widely used surgical approach for patients with temporal lobe epilepsy and, together with D. Eugene Redmond, Jr., M.D., Yale professor of psychiatry, pioneered stereotactic cellular replacement therapy for patients with Parkinson's disease.

Dr. Spencer also directs the surgical component of the comprehensive Yale Epilepsy Program, in which faculty and fellows conduct research, train surgeons and other health professionals, and treat patients from throughout the world. The interdisciplinary epilepsy program embraces neurosurgery, neurology, neuropsychology, psychiatry, social work and neuroradiology.

Dr. Spencer has centered his own research on the neurobiologic study of human tissue involved in epilepsy. In this work, he and his colleagues have employed *in vivo* and *in vitro* electrophysiology, microdialysis, confocal and electron microscopy studies, molecular biology and magnetic resonance spectroscopy to examine brain tissue removed during surgery. Laboratory discoveries have helped to define the pathogenesis of human epilepsy and to place basic research into the context of human disease.

A native of Iowa, Dr. Spencer received a B.S. degree in 1967 from Grinnell College in Iowa, a B.M.S. degree in 1969 from the University of South Dakota Medical School, and an M.D. degree in 1971 from the Washington University School of Medicine. He completed his six-year neurosurgery residency training and his fellowship at Yale in 1977, the same year he joined the Yale medical school faculty and YNHH medical staff.

Routine care and oral medication reduce spread of HIV to infants

Pregnant women who are infected with the AIDS-causing virus may dramatically reduce the rate of transmission of the virus to their unborn infants if they receive routine obstetrical care and take the medication zidovudine orally during their pregnancy, according to Yale University School of Medicine researchers.

The Yale findings, reported in the *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, represent a different way of counseling, testing and treating pregnant women who are infected with the human immunodeficiency virus (HIV) causing AIDS, says Warren A. Andiman, M.D., HS '76, professor of pediatrics.

From 1990 to 1993, a total of 267 infants were born to 245 HIV-infected mothers who were treated at Yale-New Haven Hospital's high-risk obstetrical unit during their pregnancy with the medication zidovudine (AZT). The rate of HIV infection transmitted from the mothers to their babies was reduced from 19 percent to 5 percent, Dr. Andiman says.

The study is one of a handful of U.S. studies that have begun to show this same phenomenon, notes Dr. Andiman. "Our results are more robust because all of the data were collected at a single institution, where delivery of care was uniform." The study bolsters efforts "to encourage widespread, perhaps universal, education and counseling about HIV infection," Dr. Andiman concludes. "All women of childbearing age need to be offered an opportunity to be tested for HIV. Those found to be infected should then be offered treatment with AZT."

The research also contains tremendous implications in preventing the transmission of HIV from mothers to children. This approach is especially significant for pregnant women in developing countries, where neither financial resources nor the technical sophistication exists to undertake a rigorous program of administering intravenous medications during labor and delivery.

Oral AZT costs approximately $1.50 per pill, so five 100 mg pills a day would cost only $7.50 per day to prevent infection in a child. Compared with the tens of thousands of dollars needed to treat an HIV-infected infant for life, oral AZT taken daily during the last part of pregnancy represents a cost of less than $1,000.

This research was supported, in part, by grants from the National Institute of Allergy and Infectious Diseases and the National Institute on Drug Abuse.

Co-authors with Dr. Andiman

Medicine at NASA

ER CASOLINO

Left: *Daniel S. Goldin, administrator of the National Aeronautics and Space Administration (NASA), gave the keynote address at the annual meeting of the Associates of the Cushing/Whitney Medical Library in April.* Above: *He attends the opening of the exhibit* Medical Benefits of Aerospace Research *with Martin E. Gordon, M.D. '46, chairman of the Associates and clinical professor of medicine. The exhibit, at the medical library during April and May, highlighted NASA contributions to medicine, including advanced imaging and monitoring techniques and telemedicine initiatives to deliver care to remote regions.*

are B. Joyce Simpson, R.N., M.P.H., a research nurse and administrative coordinator of the pediatric AIDS program in the department of nursing at YNHH, and Eugene D. Shapiro, M.D., professor of pediatrics and of epidemiology and public health at Yale medical school and an attending physician at YNHH.

"Kangaroo Care" may help infants born prematurely

Premature infants may get a boost if their parents spend an extended period each day holding them close. To explore this idea, health professionals in pediatric neonatology at the School of Medicine and Yale-New Haven Children's Hospital, along with colleagues at the Yale Child Study Center, are evaluating a new technique designed to promote the growth of infants with very low birth weights.

Kangaroo Care for Premature Infants, or skin-to-skin care, was first pioneered in 1979 in Bogota, Colombia, in an effort to reduce the mortality among premature infants. Wearing only a diaper, the infant is placed on a parent's chest and remains in that position for up to several hours per day.

"We are comparing it to our standard parent-infant interaction to see if some of the same developmental complications that occur in preterm babies can be decreased through a few hours of skin-to-skin contact each day," says Richard A. Ehrenkranz, M.D., HS '72-74, professor of pediatrics and of obstetrics and gynecology, who directs the three-year study funded by a $4,500 gift from Ronald McDonald House Charities.

Adds colleague Michael D. Kaplan, M.D., a research fellow at the Child Study Center: "This allows us to learn more about mechanisms of growth in the early neonatal period, and it gives parents an opportunity to provide direct care for their infants and increase feelings of competence."

Other researchers include Mario Rojas, M.D., a neonatology fellow, and Linda C. Mayes, M.D., the Arnold Gesell Associate Professor of Child Psychiatry, Pediatrics and Psychology.

Asthma research expands at Yale

"Asthma is so common now that it has become a major health care issue," says Jack A. Elias, M.D., director of the new Specialized Center of Research to understand the causes of asthma. "In the last 15 years, asthma has become an increasingly severe health problem, even reaching epidemic proportions."

Approximately 15 million children and adults in the United States suffer from asthma, and its frequency appears to be particularly prominent in inner-city areas. Since the early 1980s, national statistics show that the prevalence of and death rates due to asthma have increased by approximately 40 percent.

Dr. Elias, professor of medicine and chief of pulmonary and critical care medicine at the School of Medicine, heads a multidisciplinary team of Yale physicians in internal medicine, pulmonary medicine, critical care medicine, and occupational and environmental medicine. They join scientists from the section of immunobiology, the departments of pathology, laboratory medicine and comparative medicine, and the John B. Pierce Laboratory to conduct studies designed to understand the inflammation in airways of patients with asthma.

The research's major focus deals with the cellular and molecular biology of asthma. "Our research centers on three main themes," Dr. Elias notes. "The first is the study of cytokines, small proteins that cells make to communicate with one another. Secondly, we are exploring certain kinds of cells, called T lymphocytes, which are small cells that are considered to be the 'orchestra leaders' of the inflammatory response in the airways of people with asthma.

"Thirdly, intense studies will be undertaken of a particular type of occupational asthma seen in patients who are exposed to chemicals frequently found in plastics and spray paint. A subset of people are sensitive to and experience asthma attacks when they come in contact with these chemicals. A particularly high frequency of this type of asthma has been noted in sick patients who are auto-body workers in Connecticut.

"We hope that these molecular studies will lead to an improved understanding of the basic science of asthma and to the development of improved treatments for it," Dr. Elias says. "The ultimate goal of all of the studies will be to generate the type of knowledge upon which new treatments for asthma can be based."

To conduct this research the National Heart, Lung and Blood

Public lectures examine 21st-century germs

Exotic-sounding microorganisms like hanta and ebola viruses, mad cow disease and hemorrhagic fevers have commanded attention in newspapers, novels and films. This spring, Yale medical faculty presented medical perspectives on these global-village germs in an eight-evening lecture series, titled *Pathogens 2000: Rising Tides of Virulent Diseases,* to more than 100 individuals.

"The pathogens or germs of today and tomorrow present problems that are just as complex as those of previous centuries," said James D. Kenney, M.D., associate dean for postgraduate and continuing medical education. "Our global society faces new vulnerabilities due to these microorganisms, some of which are resistant to medication, suppress the human immune system, and can pose threats of epidemic proportion." Educational support for the *Pathogens 2000* series was provided by The Patrick and Catherine Weldon Donaghue Medical Research Foundation, based in Hartford, Conn.

Speakers and topics included Jose R. Santana, M.D., internal medicine resident physician, *Diseases of Travelers: Unexplained Pulmonary Hemorrhage in Nicaragua;* Lynn Tanoue, M.D., assistant professor of medicine, *Viral Pneumonias: Your Last Breath;* Robert W. Ryder, M.D., John Rodman Paul Professor of Epidemiology and Medicine, *Emerging Hemorrhagic Fevers: The Crimson Tide;* Frank J. Bia, M.D., professor of medicine and laboratory medicine, *Parasites for the 21st Century;* Howard Levitin, M.D., professor of medicine, *Chronic Fatigue Syndrome: Still the Enigma;* Robert T. Schoen, M.D., associate clinical professor of medicine, *Tick-Borne Diseases: Present Siege;* Michael O. Rigsby, M.D., assistant professor of medicine, *The New Threat of Tuberculosis: Biological and Social Modifiers;* and John Booss, M.D., associate professor of neurology and laboratory medicine, *The Vulnerable Brain: Prions and AIDS.*

Institute, a component of the National Institutes of Health, selected Yale as one of seven sites in the United States for a research center and awarded $8.6 million to the school over the next five years.

The Yale Asthma Research Program encompasses six major projects, with these leaders:

▶ **Interleukin-11 in Viral Asthma**. *Dr. Elias.* These studies investigate the role that the cytokine interleukin-11 plays in viral infections and the mechanism by which viral infections lead to asthma attacks.

▶ **Regulation of Th2 Effector Function in the Airways**. *Kim Bottomly, Ph.D., professor of immunobiology and biology, and associate investigator at the Howard Hughes Medical Institute.* These studies investigate the processes that regulate the generation and function of a specific lymphocyte population, known as Th2 lymphocytes, and the role that they play in mediating asthma.

▶ **Molecular Analysis of IL-5 Gene Transcription**. *Anuradha Ray, Ph.D., assistant professor of medicine (pulmonary).* Dr. Ray's study is focusing on a cytokine called interleukin-5 (IL-5) that plays an important role in asthma. Interleukin-5 recruits a particular type of white blood cells, called eosinophils, to the lungs of people with asthma. These cells are believed to be responsible for many of the manifestations of asthma. Her studies are designed to determine what processes regulate the production of interleukin-5.

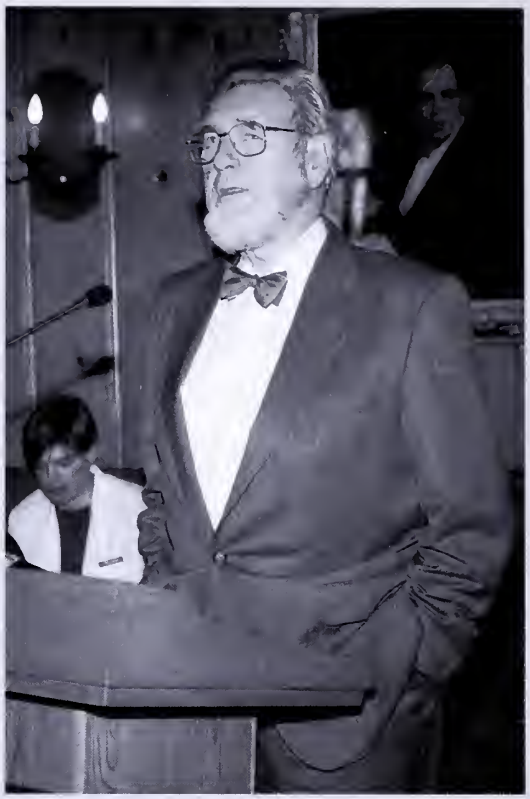
▶ **Transgenic Modeling of Airway Inflammation in Asthma.** *Dr. Elias.* This study is centering on the use of transgenic technology, in which human genes can be implanted into laboratory mice. These studies will allow Dr. Elias and his colleagues to determine which genes are likely to generate asthma-like features, such as inflammation, wheezing and mucous production, that people with asthma experience.

▶ **Cytokines and Adhesion Molecules in Hapten-Induced Airways Hyperresponsiveness.** *Gregory P. Geba, M.D., assistant professor of medicine (pulmonary).* This study is concentrating on the development of a new model of asthma in laboratory mice, based on generating a delayed form of airway inflammation. Dr. Geba and his colleagues will be determining what triggers the inflammatory response and what turns it off. In addition, they will explore the mechanisms by which inflammatory cells enter the airways of these animals.

▶ **T Cells in the Pathogenesis of Human Isocyanate Asthma.** *Carrie A. Redlich, M.D., associate professor of medicine (occupational and environmental medicine).* This research is designed to study the mechanisms of inflammation in the airways of adults exposed to chemicals used in the auto-body industry in Connecticut.

—Helaine Patterson

Two days, two surgeons general



ANITA TELLIER

The two physicians to hold the post of U.S. Surgeon General most recently visited the School of Medicine this winter, drawing standing-room-only crowds of students, faculty and administrators at their respective presentations on two consecutive days. These high-profile, outspoken individuals continue to command the attention of both the public and the Yale medical community. Joycelyn Elders, M.D., who stepped down as surgeon general in 1994, addressed the topic *Medical Education and Personal Responsibilities*. She frankly told the hundreds gathered in Sterling Hall's Mary S. Harkness Auditorium, "We've got the best doctors and the best nurses. We all know we have those things. But we do not have the best health. Health is more than the absence of disease." The previous day, at Yale's Medical School Council, C. Everett Koop, M.D., Sc.D., who frequently speaks out on contemporary health issues, described the educational program of the Koop Institute, based at Dartmouth. This summer, Dr. Koop adds yet another position to his active schedule when he becomes visiting professor of public health (health policy) in the Department of Epidemiology and Public Health at Yale.

PETER CASOLINO

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PETER CASOLINO

A new vision for ophthalmology

Bruce Shields becomes chairman and first Sears professor

The new chair of the Department of Ophthalmology and Visual Science, M. Bruce Shields, M.D., credits his early interest in the field to two uncles who were ophthalmologists. He was attracted, he says, "because ophthalmology combines medical and surgical aspects, and also deals with a wide range of patients, from children to the elderly.

"As a physician," he says, "you can establish long-term relationships with patients, just as family physicians do, getting to know them and helping them deal with their visual conditions."

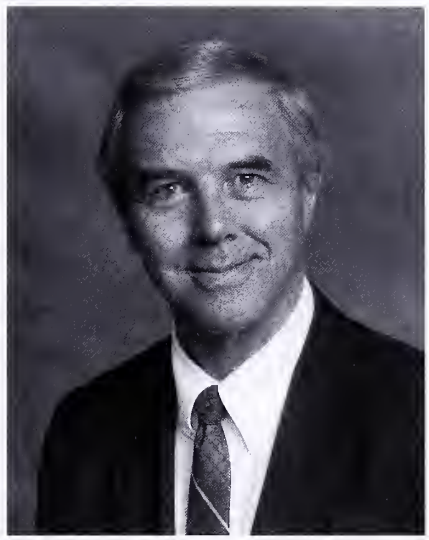
This spring, the Yale Corporation voted Dr. Shields to become the first recipient of the Marvin L. Sears Professorship. Drs. Shields and Sears, both internationally known leaders in ophthalmology, share a strong professional interest in the multifaceted problem of glaucoma, a condition in which individuals lose their vision because of abnormally high pressure in the eye. There are more than 100 types of glaucoma, and approximately 1 to 2 percent of the population suffer from it.

Dr. Shields, who also is chief of ophthalmology at Yale-New Haven Hospital, joined the medical faculty in November after serving 22 years as a faculty member at Duke University, as staff surgeon at the Durham, N.C., Veterans Affairs Medical Center, and as a consultant at the Veterans Affairs Medical Center at Asheville. He trained at Duke, completing his residency there in 1974.

Dr. Shields, who succeeds Dr. Sears as chairman, plans to build on the strengths of the department that Dr. Sears created in 1971 and led until 1993. During his chairmanship, the Yale Eye Center opened at 330 Cedar St. Here, the Boardman Building houses clinical services, and the Brady Laboratory and Brady/Boardman connector provide adjoining space for basic science vision research and visual neurobiology.

Dr. Sears, now in his 36th year at Yale, continues to teach clinical medicine to resident physicians and basic research to postdoctoral fellows, treat patients, and direct his own research laboratory studies. His work in adrenergic pharmacology resulted in the development and approval of timolol, which has become the mainstay for the medical therapy of glaucoma. Foundations, professional colleagues and grateful patients contributed funds toward establishing the Sears professorship.

Dr. Shields, a native of Okmulgee, Okla., received a B.S. degree in 1962 from Phillips University in Enid, Okla., and an M.D. degree in 1966 from Oklahoma University School of Medicine. He took a one-year rotating internship at the U.S. Naval Hospital in Philadelphia and served three years in the U.S. Navy, being discharged in 1970 as a lieutenant commander. He completed his residency in ophthalmology at Duke University and a fellowship in glaucoma at the Massachusetts Eye and Ear Infirmary in Boston.



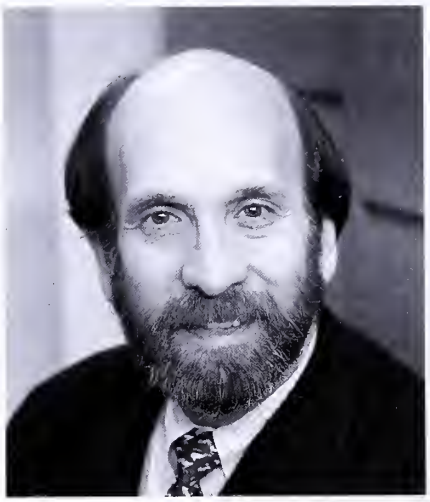
M. Bruce Shields, M.D.

During his career, Dr. Shields has centered his clinical practice, research and teaching on glaucoma and directed Duke's glaucoma service. In recent years, he has been

Continued on page 50

Orthopaedics chair follows mentor as the first Southwick professor

Gary E. Friedlaender, M.D., chair of the Department of Orthopaedics and Rehabilitation, has been named the first Wayne O. Southwick Professor of Orthopaedics and Rehabilitation, an endowed professorship established last year in honor of one of his mentors.



The Wayne O. Southwick Professorship, the first endowed chair in the department of orthopaedics and rehabilitation, was established through contributions from Dr. Southwick's former trainees, colleagues, friends and patients. Dr. Southwick, who became chief of orthopaedic surgery at Yale in 1958, was named professor emeritus of orthopaedics and rehabilitation in 1993.

Dr. Friedlaender, who also is chief of orthopaedics and rehabilitation at Yale-New Haven Hospital (YNHH), specializes in oncology reconstruction. He and his Yale colleagues pioneered a bone transplant procedure that has helped spare the limbs of hundreds of individuals who have had cancer, other diseases or injuries. An expert on the influence of chemotherapy and radiation therapy on intact bone, fracture repair and bone grafts, immune responses to bone transplants, and the safe and efficient banking of bone for transplantation, Dr. Friedlaender founded the Yale Bone Bank and served as its first director from 1979 to 1988. He has written extensively on tissue banking, fracture healing and bone allografts, and coedited three textbooks on these subjects.

A 1969 graduate of the University of Michigan School of Medicine, Dr. Friedlaender completed his internship and assistant surgical resident training at the University of Michigan Medical Center. He first came to Yale in 1972 as a National Institutes of Health postdoctoral research fellow in orthopaedic surgery, oncology and immunology. After completing his orthopaedic residency training at Newington Children's Hospital and YNHH in 1974, he became director of the Naval Medical Research Institute's Tissue Bank Division, a post he held until 1976.

Dr. Friedlaender became an instructor in surgery (orthopaedics) in 1974 and was promoted to assistant professor in 1976, associate professor in 1979 and professor of surgery in 1984. He became professor of orthopaedics and rehabilitation and the first chair of the department of orthopaedics and rehabilitation when it was established in 1986. He has been director of orthopaedic research at the medical school since 1981 and has directed the orthopaedic oncology and transplantation immunobiology research laboratory since 1976.

Dr. Friedlaender serves as a surgical consultant at several area hospitals and an adviser to many national and international organizations. Last year, he received a Distinguished Service Award from the American Association of Tissue Banks. He has been awarded fellowships and grants from the National Cancer Institute and the Orthopaedic Research and Education Foundation, among others.

Surgeon Barbara Kinder appointed to Carmalt chair

Barbara Kinder, M.D. '71, HS '71-76, a specialist in endocrine surgery and chief of surgery at the West Haven campus of the VA Connecticut Healthcare System, has been named the William H. Carmalt Professor of Surgery.

Dr. Kinder, who has spent her entire career at Yale, completed her internship and residency training in surgery at Yale-New Haven Hospital and also was a postdoctoral fellow in pharmacology. She became an instructor in surgery at the medical school in 1976, was promoted to assistant professor a year later, and became professor of surgery in 1990.

She served as chief of surgery for Yale University Health Services from 1985 to 1989 and chief of the division of endocrine surgery in the medical school's Department of Surgery from 1987 to 1992. She has been chief of surgery at the VA since 1989.

Dr. Kinder has authored or co-authored numerous articles published in medical and scientific journals on topics both in her field (such as hyperparathyroidism and thyroid cancer) and about her field (such as the differences that male and female surgeons experience during their careers). When she was appointed to her VA post, she was one of fewer than a dozen female chiefs of surgery at VA hospitals nationwide.

Dr. Kinder is a founding member of both the American and International Associations of Endocrine Surgeons. She also is a member of the New England Surgical Society, Eastern Surgical Society, The Endocrine Society, Connecticut Society of American Board Surgeons, New England Cancer Society and the Association of VA Surgeons, among others. She is a fellow of the American College of Surgeons; her other honors include the Leah Lowenstein Award for medical student teaching in 1987 and the Association of Women Surgeons' Distinguished Members Award in 1996.

The Carmalt chair previously was held by Dr. Kinder's late husband, C. Elton Cahow, M.D., who died Jan. 2.

Psychiatrist Bradley Peterson holds Meers-Jameson chair

Bradley S. Peterson, M.D., director of neuroimaging and of clinical research at the Child Study Center, has been named the Elizabeth Meers and House Jameson Assistant Professor in Child Psychiatry.

Dr. Peterson has focused his research on the neuroimaging of developmental neuropsychiatric disorders, the role of risk and protective factors in developmental psychopathologies, and the neurobiology and treatment of Tourette's syndrome and obsessive-compulsive disorder. In addition, he is interested in exploring the psychoanalytic perspectives of these disorders.

A 1987 graduate of the University of Wisconsin Medical School, Dr. Peterson came to the Child Study Center as a National Institute of Mental Health postdoctoral research fellow in 1990 after completing his general psychiatry residency training at Massachusetts General Hospital. From 1992 to 1994, he continued work at the Child Study Center on a child psychiatry clinical fellowship. He was named director of neuroimaging at the center in 1993 and became an assistant professor of child psychiatry there a year later, when he was also named director of clinical research.

Dr. Peterson has authored or co-authored more than two dozen articles for medical journals, many of which deal with the pathogenesis and treatment of Tourette's syndrome. He also has written chapters in a number of books, including *Advances in Neurology,* the second edition of the *Handbook of Child and Adolescent Psychiatry* (in press) and *Treatment Resistant Obsessive-Compulsive Disorder* (also in press). He authored a chapter for *Child Psychiatry Clinics of North America: Neuroimaging* (in press), which he also edited.

Since coming to Yale, Dr. Peterson has received numerous awards for his research. These include two Eli Lilly Pilot Research Awards from the American Academy of Child and Adolescent Psychiatry, the Dean's Young Faculty Award from the School of Medicine, and Independent Investigator awards from the March of Dimes Birth Defects Foundation, the Tourette Syndrome Association, the Dana Foundation and Janssen Pharmaceutica. In addition, he has been presented a Young Investigator Award from the National Association for Research on Schizophrenia and Depression and a Career Development Award from the National Institutes of Health.

Continued from page 47

developing glaucoma treatments involving the application of laser technology in which he concentrates on treating the most advanced types of glaucoma.

A prolific author, Dr. Shields has written more than 25 chapters and 130 scientific journal articles. However, his best-known work is the *Textbook of Glaucoma,* now in its fourth U.S. edition. It also has been translated into German, Japanese, Portuguese and Spanish.

Dr. Shields serves as president of the American Glaucoma Society, a director of the American Board of Ophthalmology, and a member of the program committees for the American Academy of Ophthalmology and the Association for Research in Vision and Ophthalmology.

Dr. Shields plans to place a major emphasis on the educational programs at Yale for both students and physicians-in-training.

In the years ahead, Dr. Shields, who considers himself first and foremost to be an educator, plans to place a major emphasis on the educational programs at Yale for both students and physicians-in-training, and to provide quality continuing medical education for community ophthalmologists.

—Helaine Patterson

At Dartmouth, a preview of historic things to come

Dartmouth has called upon a Yale medical professor and two luminaries from Yale's alumni body for a three-day international symposium this fall to celebrate Dartmouth Medical School's bicentennial.

Pasko T. Rakic, M.D., Sc.D., chair of Yale's Section of Neurobiology and the Dorys McConnell Duberg Professor of Neuroscience; Francis S. Collins, Ph.D., who earned his doctorate in physical chemistry at Yale, was a fellow in genetics and pediatrics at the medical school, and now heads the National Human Genome Research Institute; and Daniel J. Callahan, Ph.D., who earned his B.A. degree from Yale and is a noted medical ethicist and director of the Hastings Institute, will be among more than two dozen major figures from science, medicine, ethics, and related fields taking part in the Dartmouth symposium.

Dartmouth Medical School's founder, Dr. Nathan Smith, left Hanover, N.H., in 1813 to become one of the founding faculty members of the Yale School of Medicine. Dr. Smith's standing in the medical community of that day is captured in the statement of a member of the Yale faculty who said Dr. Smith "was more extensively known than any other medical man in New England, or indeed than any man in any profession." That was high praise indeed for the son of a farmer who had till that point spent his entire career in rural northern New England. Dr. Smith actually had a hand in the founding of no less than four New England medical schools, later being active in the establishment of medical schools at Bowdoin and the University of Vermont.

The Dartmouth symposium, *Great Issues for Medicine in the 21st Century: A Consideration of the Ethical and Social Issues Arising Out of Advances in the Biomedical Sciences,* will take place Sept. 5 to 7 in Hanover, N.H. Half-day sessions will focus on genetics, neuroscience, health care and world population. Dr. Rakic is chair of the session on neuroscience and will deliver an address titled *The Importance of Being Well Placed* and *Having the Right Connections.* Dr. Collins will be one of several people delivering addresses in the genetics session. And Dr. Callahan is among half a dozen individuals representing different perspectives on the health care community who will participate in a panel discussion on the rationing of health care.

HOOD MUSEUM OF ART, DARTMOUTH COLLEGE. GIFT OF EDMUND RANDOLF PEASLEE, CLASS OF 1836

Nathan Smith, *by Ulysses Dow Tenney.*

There is no registration or admission charge for attendance at the symposium, and it has been certified for AMA Category I CME credit. Those wishing more information about the full program for Dartmouth's Bicentennial Symposium may call the Dartmouth Medical School Bicentennial Office at (603) 650-4037.

He saved the day; now he's a knight

Yale physiologist Boulpaep honored by King of Belgium

In Belgium, a knight is correctly called *chevalier* in French, or *ridder* in Dutch. So might people address Emile L. Boulpaep, M.D., as Chevalier Boulpaep?

"In principle, yes, but I hope they don't," says Dr. Boulpaep. A genial professor of cellular and molecular physiology at the School of Medicine, he was knighted last summer by King Albert II of Belgium, who customarily grants titles of nobility. Last year, the King honored only 11 individuals with titles.

The title of knight honors Dr. Boulpaep for his work with the Belgian American Educational Foundation Inc., which has provided nearly 3,000 graduate and postdoctoral fellowships for Belgians and Americans. The Belgian title—rarely given to anyone outside Belgium—also presents him with a challenge rarely faced by anyone in the United Sates: the need to come up with a coat of arms and a motto.

The foundation is a successor to the Commission for Relief in Belgium (C.R.B.), organized by Herbert Hoover during World War I to aid a hungry nation deprived of food during the German occupation. After the 1918 Armistice, the commission's remaining funds were used to rebuild Belgian universities and to launch the fellowship program. "The foundation is the daughter of the C.R.B.," says Dr. Boulpaep. Although he's been a resident of the United States for 30 years, he remains a citizen of Belgium, where America still reaps the good will sown by the post-war relief effort.

PETER CASOLINO

Emile L. Boulepaep, M.D., and his salamander-adorned coat of arms.

Dr. Boulpaep first came to the United States in 1964 on a Belgian American Education Foundation fellowship. When the foundation faced financial problems a few years later, he led efforts to revamp its organization and add to its assets. He has been involved ever since, taking on tasks from interviewing prospective fellows to serving—since 1976—as president. "I wanted to save this foundation," he says. In 20 years as the foundation's president, he has increased its assets tenfold.

Dr. Boulpaep talks of the "good understanding" that the foundation has fostered between Belgium and the United States, and of the many fellows who have become leaders in science, business and other fields. Four fellows went on to become prime ministers of Belgium; two have won Nobel prizes. ▶

AAAS members honored for contributions to science

The American Association for the Advancement of Science (AAAS) elected 283 members as fellows. The following individuals from the School of Medicine were recognized for their contributions to medical science at the Fellows Forum in February during the AAAS Annual Meeting in Seattle: Emile L. Boulpaep, M.D., professor of cellular and molecular physiology; Edwin C. Cadman, M.D., professor of medicine and senior vice president of medical affairs and chief of staff at Yale-New Haven Hospital; Peter Jatlow, M.D., professor of laboratory medicine and psychiatry; Keith A. Joiner, M.D., professor of medicine and epidemiology (microbiology); Michael Kashgarian, M.D., professor of pathology and biology; Robert J. Levine, M.D., professor of medicine and chairman of the Human Investigation Committee; and Vincent T. Marchesi, M.D., the Anthony N. Brady professor of pathology, cell biology and biology.

Continued from page 51

Since his knighthood was announced by royal decree on Belgian Independence Day, July 21, 1996, Dr. Boulpaep has been busy as usual, directing medical studies in his department, co-editing a new physiology textbook, and conducting kidney research. In November he traveled to Belgium to meet with the Council of the Nobility, a group that has helped him create his motto and coat of arms. The motto can be in French, Dutch or Latin; he's chosen Latin (which he studied in school). His motto is *Educatio Iungit Populos,* which translates as *education unites people.* "The foundation is a link between two countries.

His coat of arms incorporates the themes of education and medicine, with three rings in the center representing the three roles of a university: teaching, research and service.

His coat of arms also includes a salamander—functionally, to represent his research in physiology ("I'm known as the guy who uses salamanders as a model to work with and to study renal/kidney function.") "Symbolically, the salamander in Europe is the symbol of fire," Dr. Boulpaep explains. "It is thought that the salamander can separate good fire from bad fire, and this animal is associated with distinguishing good from bad—just as is done in the interpretation of scientific data and in the evaluation of students."

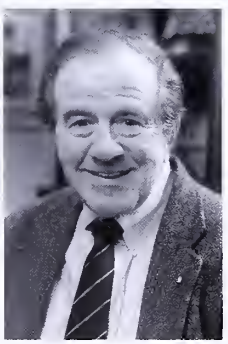
In heraldry, the background is symbolic, too. His coat of arms' background is blue for Yale. The council artists have created something that "looks like a coat of arms, not like objects placed together surrealistically."

Meanwhile, Chevalier Boulpaep, who anticipates receiving his coat of arms this summer, is pleased with the way that his Yale colleagues address him. "They still call me Emile," he says.

❖ ❖ ❖

Myron Genel, M.D., professor of pediatrics and associate dean for government and community affairs, was one of the speakers at the American Medical Association's 1997 National Leadership Conference in Philadelphia in March. Dr. Genel's topic was *The Role of the American Medical Association in Support of Clinical Research.*

Robert J. Levine, M.D., professor of medicine and chairman of the Human Investigation Committee, led a delegation of the Citizen Ambassador Program on Medical Ethics on a 15-day visit to the Czech Republic, Poland and Hungary in September. This predominately American group of physicians and other health professionals, lawyers and clergy met with their Central European counterparts to exchange information and perspectives.



Theodore Lidz, M.D., Sterling Professor Emeritus of Psychiatry, received the 1997 Distinguished Service Award from the American College of Psychiatrists in March. In accepting the award, Dr. Lidz said that he viewed his selection as "an affirmation of the importance of psychotherapy and sociotherapy, and particularly the critical role of the family in understanding and treating patients," especially those with schizophrenic disorders.

Ira S. Mellman, Ph.D. '78, professor of cell biology and director of the Biological and Biomedical Sciences Program, lectured in January at the National Institutes of Health. His topic was *Cell Biology of Antigen Presentation: MHC Class II Transport, Dendritic Cell Development, and Other Strange Tales.*

Marvin Moser, M.D., clinical professor of medicine, is the keynote speaker at a 10-month series of hypertension symposia, which began in February. The symposia are sponsored by the National Heart Lung & Blood Institute and are being held in cities throughout the United States, including Boston, Chicago, Los Angeles, Houston, Indianapolis, Seattle and Miami. Dr. Moser has been the senior medical consultant for the past 23 years.

Howard A. Pearson, M.D., professor of pediatrics, received the distinguished career award last fall from the American Society of Pediatric Hematology/Oncology. The award is given in recognition of outstanding service and significant scientific contributions to the understanding and treatment of blood diseases and cancer in children.

Wilfred Reguero, M.D., clinical professor of obstetrics and gynecology, was recipient of the first Wyeth-Ayerst Hera Gold Award for Improvement in Women's and Children's Health Outcomes. The presentation was made during the Zitter Group's 1996 Congress on Health Outcomes and Accountability in November in San Francisco. Dr. Reguero, who is chairman of the Department of Obstetrics and Gynecology at the Hospital of Saint Raphael, was honored for the Project MotherCare Neighborhood Mobile Clinic.

'Physician: Impossible'

With stage talent to rival their MCAT scores, the second-year class proves that nearly anything can be accomplished. Only don't give up that career in medicine just yet.

Photographs by Peter Casolino

It has become as predictable a part of second year as the national board exams in June and premonitions of life on the wards. For medical students, the second-year show is the exhilarating product of time and effort that culminates in two rollicking performances each spring semester.

For faculty and administrators, the experience is even more hair-raising, since it is tradition to lampoon the most familiar and respected figures on campus. For the audience (even for those who miss half the inside jokes) the second-year show is unfailingly entertaining.

This year's offering by the Class of 1999, *Physician: Impossible,* took the shape of an episode of the television series *Nova* documenting the making of a physician. Kerri Cavanaugh, playing the part of the filmmaker, led viewers through the admissions process, first-year classes, anatomy, Dr. Emile Boulpaep's shower, Match Day and a 12-step meeting of Academicians Anonymous. And as now seems obligatory, they satirized one faculty member in particular with the following (to the tune of Rogers and Hammerstein's *How Do You Solve a Problem Like*

The cast prays in supplication, with a nod to The Sound of Music, *while singing* How Do You Solve a Problem Like Frank Bia?

Cast members occupy a backstage corner of Harkness Auditorium before the premiere of Physician: Impossible *in February. Clockwise from rear: Geoff Emerson, Michelle Sanders, Richard Torres, Alison Days, Gilbert Ortega and Danica Barron.*

Maria? From the musical *The Sound of Music):*

... He tells jokes that we all like
And he seems to like the mike
He could keep us all in lecture for a year.

Cause his slides are nice and gory,
And we know his whole life story:
He's from Cornell,
He did real well,
Now he's here.

(refrain)
How do you solve a problem like Frank Bia ...

Dr. Bia, a much-beloved teacher with a reputation for being a ham, then hopped up on stage and tap-danced.

In a skit titled My Fair Angela, *Shahram Salami counsels Jessica Harberer (as legal eagle and pronounced Southerner Angela Holder) on how to speak proper English.*

Josh Broder, left, and choreographer Sherri Sandifer in the opening number, (Never Seen a) Place Like Yale, *sung to the tune of a song from the musical* Aladdin.

Matt Cooperberg, left, co-producer Jose Prince, right, and fellow cast members look for their places during the final rehearsal.

Camille Hylton, right front, and the chorus launch into the dance number, Miss Histology *(to the tune of the Miss America Pageant theme).*

"Hello Harkness, my old friend," *sings David Gershfield (as Art Garfunkle), accompanied by Richard Torres (as Paul Simon) in* The Sounds of Sirens.

But the real show-stopper, according to co-producer Jose Prince, was the surprise appearance Saturday evening by Deans Gerard N. Burrow and Robert Gifford, who played themselves in one of the show's three twist endings. In this version, the school is revealed to be a front for the federal witness protection program, run locally by the two deans. Their scene ends with the two of them sunning themselves on a beach, waxing nostalgic about good old New Haven.

"We sure had it great," mused Dr. Gifford. "Yes," Dr. Burrow replied, "but after an appearance in the second-year show, I just had to call it quits."

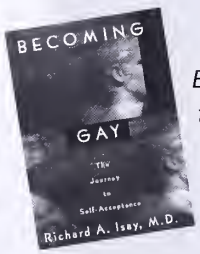
—Michael Fitzsousa

STUDENT NEWS

Cynthia A. Brandt, M.D., M.P.H., fellow in medical informatics, received the Best Traditional Poster Award from the American Medical Informatics Association (AMIA). The award and a check for $250 were presented at the 1996 AMIA Annual Fall Symposium in Washington. Dr. Brandt's poster was *Visualizing Immunization Logic in a Rule-Based Expert System.*

Ruth A. Potee, Class of 1998, has been awarded the 1996 Family Medicine Interest Group (FMIG) Leadership Award by the American Academy of Family Physicians during its annual National Congress of Family Practice Residents and National Congress of Student Members meeting held in Kansas City, Mo., in August 1996. The award recognizes medical students for their outstanding leadership abilities and invaluable contributions to their local FMIG.

NEW BOOKS



Becoming Gay: The Journey to Self Acceptance, by Richard A. Isay, M.D. '61, HS '62-65, Pantheon Books (New York) 1997.

Waiting for a Miracle: Schools Are Not the Problem, by James P. Comer, M.D., HS '64-67, Maurice Falk Professor in the Child Study Center and Psychiatry, Dutton (New York) Fall 1997.

The Cancer Chemotherapy Handbook, Fifth Edition, by David S. Fischer, M.D., clinical professor of medicine, Mosby (St. Louis, Mo.) 1997.

Yale student edits national newsletter

Medical students are primary readers of paper or electronic versions of *IMpact*

PETER CASOLINO

As editor of IMpact, *Yale medical student Nirav Shah entices readers with an electronic version of the newsletter on the Internet.*

What can happen when medical students try to organize a community gun-exchange program? When employers have access to employees' computerized medical records? When an experienced physician is called to a scene that, as he puts it, "could weaken you at the knees"?

Nirav R. Shah, who this fall will begin his fourth year as a Yale medical student, hopes that his fellow students around the country will consider these matters—and read about them in *IMpact, the Internal Medicine Newsletter for Medical Students*, established in 1994 to show medical students that internal medicine is an exciting and meaningful career.

IMpact, a quarterly newsletter, covers all kinds of issues related to "internal medicine and medicine in general," says Mr. Shah, who became editor about two years ago. *IMpact* was then fairly new, and he set out to increase circulation by consistently offering interesting, relevant and accessible material.

He soon added an electronic edition to the regular eight-page printed one. He put the printed version of *IMpact* on the Internet, he says, because online reading is convenient—indeed, downright natural—for today's medical students. (The Internet address is: http://www.acponline.org/journals/impact/impmenu.htm). He points out that many have used computers since they were youngsters, and they're familiar with facilities—like his own Harkness dormitory at Yale—that are linked to the information superhighway.

"Medicine itself is moving toward more dissemination of information online," he notes, adding that the American College of Physicians (ACP), which sponsors *IMpact*, was moving parts of the *Annals of Internal Medicine* onto the World Wide Web when he proposed the electronic version.

Each issue of *IMpact* has a theme, such as innovations in medical education, computers in medicine, or student activism. Generally, each includes feature articles, *Questions and Answers*, *Significant Figures* (statistics) and *Humanities*. (Mr. Shah says, "It's too easy to forget the humanistic side when you're studying science at 3 a.m.") He also writes an *Editor's Letter* on the theme of each issue. "I try to do 'pro-and-con,' then say, 'This is what I think'," he says. "Editors have to take a stand."

He includes material from Yale medical faculty and especially students, as well as from the ACP. "I get submissions from medical students from all around the world via e-mail," he says.

Mr. Shah's first issue featured a fourth-year medical student's report on how Yale was revamping curriculum in the first two years. In the issue on computers, his *Editor's Letter* noted that computerized patient records could be misused, but he stressed that good medical care requires good information and called for measures (like better software) to protect confidentiality.

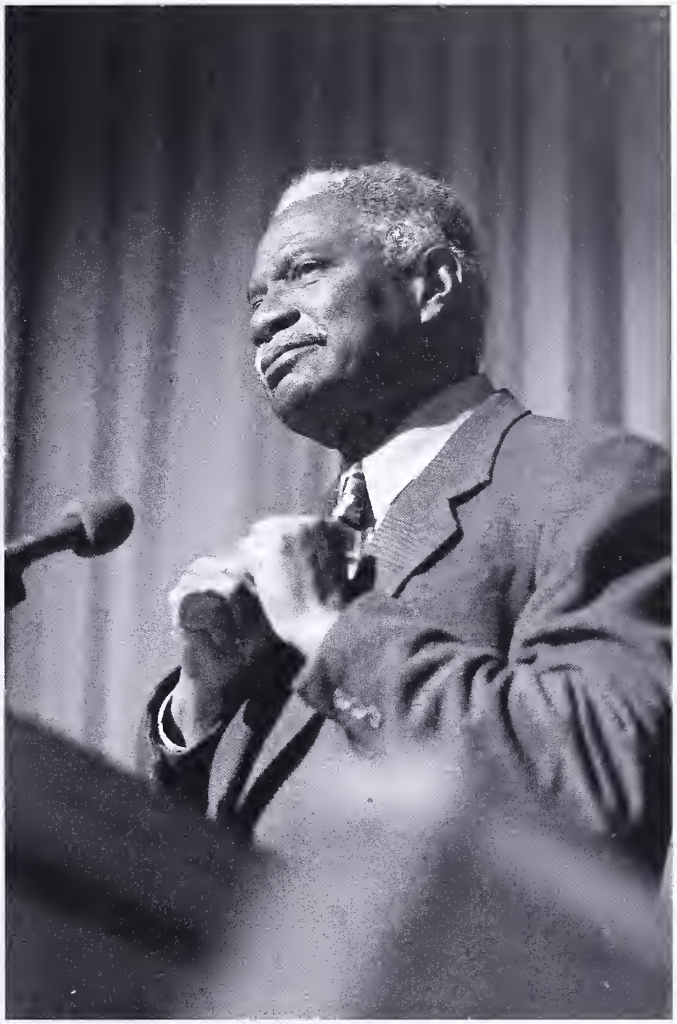
The activism issue included one student's report on a successful program to feed the hungry and another's wry account of an arduous—and unsuccessful—effort to run a community gun-exchange program as part of local crime prevention efforts. A recent humanities piece focused on a story about a doctor who received a call from a patient who had just committed murder.

Mr. Shah, whose parents are from Bombay, grew up near Buffalo, N.Y. He plans a career of research and practice in internal medicine. He's pleased that *IMpact's* print circulation is now more than 10,000 per issue, that 200 users accessed the electronic table of contents in one recent month, and that so far more than 250 medical students have joined the American College of Physicians as a result of the electronic edition's offer of free membership.

"Lift Every Voice"

Photographs by Michael Marsland

Actor, playwright and civil rights activist Ossie Davis, right, spoke to students and faculty who filled Mary S. Harkness Auditorium in recognition of Martin Luther King Jr. Day in January. Mr. Davis, author of the Tony Award-winning play *Purlie Victorious*, has appeared in *Raisin in the Sun* and *I'm Not Rappaport* on Broadway, *The Client* and four films by Spike Lee, including *Do the Right Thing*. He spoke about his life as an actor closely involved in the civil rights movement in an address titled *Scenes from Our Story: We Are Still Marching*, following a performance by the Yale undergraduate singing group Shades, middle right.



Mr. Davis is greeted by James P. Comer, M.D., M.P.H., a friend of many years and the Maurice Falk Professor of Child Psychiatry.

Robert H. Gifford, M.D., associate dean for medical education and student affairs, presents one of 11 Distinguished Community Service Awards during the observance. Among the recipients were medical and public health students A.J. Babineau, Kathryn Cunningham, Alison Days, Benjamin Doolittle, Dionne Otey, Scott Porter, Neda Sharghi and Obinwanne Ugwonali.

Third-year medical student Sherri Sandifer plays and sings the African American anthem *Lift Every Voice* to close the program.

Marier named dean at LSU

Robert L. Marier, M.D. '69, M.H.A., medical director and chief administrative officer at the Medical Center of Louisiana, has been appointed dean of Louisiana State University (LSU) School of Medicine in New Orleans.

Dr. Marier, who assumed the deanship last November after serving for a year as acting dean, graduated from Yale School of Medicine in 1969 before taking his residency in internal medicine at Massachusetts General Hospital. He returned to Yale as a postdoctoral fellow in infectious disease from 1974 to 1975. He served in the U.S. Public Health Service as an epidemic intelligence officer at the U.S. Centers for Disease Control before joining the Yale faculty as assistant professor of medicine from 1975 to 1978.

Dr. Marier moved to New Orleans in 1978 to join the medicine faculty at LSU. He also served as associate dean and chairman of the Department of Public Health and Preventive Medicine. Dr. Marier, whose undergraduate degree is from Boston College, earned a master's degree in health services administration from the Tulane School of Public Health in 1990.

He was a founding member of United Services for AIDS in Louisiana and has served on the Governor's Commission on Telecommunications and the Louisiana Health Care Commission. He and his wife, Joanne, are the parents of two daughters, Rebecca and Alicia.

Beck Institute honors a founder of cognitive therapy

Aaron T. Beck, M.D., in a portrait at the University of Pennsylvania School of Medicine.

Aaron T. Beck, M.D. '46, professor emeritus and director of the Center for Cognitive Therapy at the University of Pennsylvania, was honored by the department of psychology of Assumption College in Worcester, Mass., with the establishment of the Aaron T. Beck Institute for Cognitive Studies. The Beck Institute will sponsor education and training projects in cognitive therapeutic skills for students and postgraduate professionals.

Dr. Beck established an international reputation as a founder of cognitive therapy by pioneering the formulation of cognitive models of various psychiatric disorders and by developing and testing specific psychotherapeutic applications to the disorders. His research in psychopathology has identified specific risk factors for suicide and specific psychological configurations in depression, anxiety disorders and personality disorders. Three of the various inventories and questionnaires that Dr. Beck developed are among the most widely used in research and clinical practice: the *Beck Depression Inventory, Beck Hopelessness Scale,* and *Beck Suicide Ideation Scale.*

Annual conferences at the new institute will address research and therapeutic developments in cognitive therapy, as well as ethical and moral issues faced by both therapists and clients. For the community at large, the institute will strive to provide information that illuminates the contributions of cognitive factors to the resolution of problems in living.

40s

Earl J. Simburg, M.D., HS '41-43, was appointed to the Mental Health Advisory Committee of the Hemlock Society in November. He also was awarded a Meritorious Service Award by the Community of the Alta Bates Medical Center in Berkeley, Calif., at its annual meeting in February, and was reappointed to a three-year term on the Alta Bates Foundation Board of Trustees.

Donald W. Seldin, M.D. '43, HS '43-46, Sc.D.H. '88, was profiled in a recent issue of *Science.* The article recounts how his efforts in mentoring talented students at the University of Texas Southwestern Medical School at Dallas, his vision of the school as a top research center, and his commitment to excellence were major factors in Southwestern's rise from an obscure, eight-year-old medical school in 1951 to the front rank of medical schools and university research centers. Dr. Seldin retired in 1987 after 36 years of service and now serves as a part-time advisor to the school.

Edith M. Jurka, M.D. '44, was a featured speaker at the first International Conference on the Psychology of Consciousness in April in Monterey, Calif. Her talk was titled *Brain Determinants of Personality Characteristics.*

Reese A. Matteson, M.D. '44, reports his impending retirement from his ENT practice in Danville, Ill. He is enjoying travel, having recently returned from Thailand and Nepal. A trip to Poland, Slovakia and Hungary is in the works.

Samuel D. Kushlan, M.D. '35, HS '35-37, passes along this note from **Raymond A. Gagliardi,** M.D. '45, HS '48-51, of Boca Raton, Fla. "Though retired from practice, I continue as historian of the American Roentgen Ray Society (ARRS). I have just published, as editor-in-chief, the third volume of *History of the Radiologic Sciences.* [Chairman] Bruce McClennan from Yale was editor of the volume of *Diagnosis* (the others being *Radiation Oncology* and *Radiation Physics).* Ray organized a mini reunion for classmates of 1945 in Orlando on April 6.

O. Roger Hollan, M.D. '45, HS '45-46, has been honored by the establishment of a professorship in his name at the University of Texas Health Science Center in San Antonio.

50s

Leonard S. Krassner, M.S. '51, M.D., HS '57-59, recently marked 10 years as medical director at Choate Rosemary Hall in Wallingford, Conn. Dr. Krassner continues to serve as president of Yale Alumni in Pediatrics.

Joseph S. Pagano, M.D. '57, the Lineberger Professor of Cancer Research and director of the Lineberger Comprehensive Cancer Center at the University of North Carolina (UNC) at Chapel Hill, received the 1996 North Carolina Award in Science, the state's highest civilian honor. The award was presented by Gov. Jim Hunt. Dr. Pagano was cited for his internationally recognized research into viruses and human cancer, for founding the UNC cancer center, and for his leadership of cancer initiatives.

Donald H. Harter, M.D., HS and postdoctoral fellow '57-58, is a senior

scientific officer for the Howard Hughes Medical Institute (HHMI), director of the HHMI's National Institutes of Health Research Scholars Program, and clinical professor of neurology at George Washington University School of Medicine.

60s

Carl R. Fischer, M.P.H. '68, executive director of the Medical College of Virginia Hospitals for the past 11 years, was elected chairman of the board of the University HealthSystem Consortium (UHC), a national alliance of 77 academic health centers. Mr. Fischer has been an active member of the consortium since its inception, most recently serving a second term as chair of one of its governing committees.

Charles A. Dinarello, M.D. '69, HS '69-75, professor of medicine at the University of Colorado School of Medicine, was awarded the Ludwig Heilmeyer Gold Medal for his contributions to cytokine biology in internal medicine. The medal, presented at the annual meeting of the Heilmeyer Society last November, is the highest award granted by this organization of internal medicine professors in Germany, Austria and Switzerland. Dr. Dinarello has published more than 400 original research articles on cytokines, particularly on interleukin-1. He serves on the AIDS Program Advisory Council of the National Institutes of Health and the Board of Scientific Advisors of the National Institute of Allergy and Infectious Diseases.

70s

Robert J. Lerer, M.D., HS '70-73, an Ohio pediatrician and board member of Caring Partners International, has traveled during the last five years as a medical missionary to Nicaragua, Cuba, Russia, India and China. He also set up programs to provide ongoing care to children with disabilities and handicaps in Mexico and India. Dr. Lerer was one of the original founders of the Fair Haven Community Clinic in New Haven in 1971.

Frederick L. Greene, M.D., HS '70-76, professor of surgery at the University of South Carolina School of Medicine, was awarded the 1996 Distinguished Service Award by the Columbia (S.C.) Medical Society for his introduction of an anti-violence program into that city's school system.

John P. Docherty, M.D., HS '71-74, professor and administrator at New York Hospital-Cornell Medical Center, was named chief medical officer and executive vice president of Merit Behavioral Care Corp. in Park Ridge, N.J., a managed behavioral health care organization.

Jerry H. Morewitz, M.D., post-doctoral fellow '77-79, director of geriatric psychiatry at Eastern Virginia Medical School in Norfolk, was named chairman of its department of psychiatry and behavioral sciences in January. Dr. Morewitz had served as interim vice chairman of the department since 1994.

Paul E. Collier, M.D. '79, was a speaker at the Society for Clinical Vascular Surgery in Sewickley, Pa., in March. His topics were: *How Essential Is the Intensive Care Unit after Carotid Endarterectomy?; Do Clinical Pathways for Major Vascular Surgery Improve Outcomes and Reduce Costs?; Office Removal of Silastic Catheters and Ports Is Safe and Cost Effective;* and *Are*

Alumni/ae on campus

Lewis Landsberg, M.D. '64, HS '65-70, was guest speaker at Medical Grand Rounds in February. Dr. Landsberg discussed *Obesity-Related Hypertension and the Insulin Resistance Syndrome.* Informal teaching sessions followed with house officers and attending staff throughout the day.

Since 1990, Dr. Landsberg has been the Irving S. Cutter Professor and chairman of the Department of Medicine at Northwestern University Medical School in Chicago, where he was director of the Center for Endocrinology from 1990 to 1993. From 1972, he served on the faculty at Harvard Medical School, becoming professor of medicine there in 1986. His research has focused on catecholamines and the sympatho-adrenal system, as well as nutrition, obesity and hypertension.

Dr. Landsberg's son, Judd W. Landsberg, M.D. '96, is a resident in medicine at the Yale-New Haven Hospital. [See related alumni/ae news item on opposite page.]

—Nicholas P.R. Spinelli, M.D. '44

Send news of alumni/ae on campus to Dr. Spinelli in care of the Office of Alumni Affairs, P.O. Box 7613, New Haven, CT 06519-0613.

Preoperative Antibiotics Administered Preoperatively?

80s

Eric Holm, P.A. '80, was elected to the board of trustees of the new clinician-led, multi-specialty group practice created by the reorganization of Harvard Pilgrim Health Care's Health Centers Division in Metro Boston. Mr. Holms is a physician associate in orthopaedics at the Copley and Post Office Square Health Centers.

Marian T. Hannan, M.P.H. '81, is president-elect of the Association of Rheumatology Health Professionals, a division of the American College of Rheumatology, and also senior research associate at the Hebrew Rehabilitation Center for the Aged in Boston.

Glenn C. Isaacson, M.D., HS '82-83, has been appointed professor and chairman of the Department of Otorhinolaryngology at Temple University Health Sciences Center in Philadelphia. Dr. Isaacson was appointed deputy chair of otorhinolaryngology/bronchoesophagology at Temple in 1993, and was named acting chairman of the department in 1995.

90s

Timothy A. Jacobs, Ph.D., M.P.H. '91, of Tampa, Fla., is a consultant in international public health and infectious disease epidemiology. He practiced public health and disease control in Vietnam in 1993 and Port-au-Prince, Haiti, in 1994 and 1995. Dr. Jacobs is profiled in *Who's Who in America, in Medicine, and in the South and Southwest.* He and his wife, Carolyn, adopted a daughter, Jenny, in Hanoi in 1993.

Sujai D. Nath, M.D., HS '92-95, in private practice of general neurology, has joined the medical staff of South Florida Baptist Hospital in Plant City.

Joseph Kwangho Choo, M.D. '93, married Je Un Kim in December in Memorial Church at Harvard University. Dr. Choo completed his residency in internal medicine at Brigham and Women's Hospital and has begun a fellowship at Massachusetts General Hospital.

Debra Howard, M.D. '94, and Adam Schussheim, M.D., were married in December. Dr. Howard is an assistant chief resident in internal medicine at New York Hospital-Cornell Medical Center, and in July begins an endocrinology and metabolism fellowship at Columbia-Presbyterian Medical Center.

Andreas Klein, M.D. '95, and his wife, Jen, announce the birth of their son, Aaron Rothwell Cameron Klein, on April 1, 1996, in Boston, where Dr. Klein is a junior resident at the New England Medical Center.

Judd W. Landsberg, M.D. '96, a resident in internal medicine at Yale-New Haven Hospital, was married last year in Houston to Sarita I. Ordonez, a recent graduate of New York University School of Law.

Anne S. Bittker

Anne Stern Bittker, 78, a former *Yale Medicine* editor and School of Medicine public relations officer, died Feb. 2 at Connecticut Hospice in Branford. She was 78.

Mrs. Bittker received a bachelor's degree from Connecticut College and began a career in advertising and public relations in New York City. She later worked for Research Publications Inc. and was a public relations officer for the New Haven Foundation. The wife of Boris I. Bittker, Sterling Professor Emeritus of Law at Yale, Mrs. Bittker joined the news bureau of Yale School of Medicine in 1966. From 1968 to 1970, she was associate managing editor of *Yale Medicine.*

Howard D. Christiansen

Howard D. Christiansen, M.P.H., of Moreland, Idaho, died Dec. 21 of an apparent heart attack. At the time of death, he and his wife, Morita, were serving a mission for the Church of Jesus Christ of Latter-day Saints in Indianapolis. He was 63.

Dr. Christiansen received a bachelor's degree in agronomy from Brigham Young University and, in 1967, a master's degree in public health from the Yale School of Medicine. He worked in the nuclear weapons industry for various contractors of the Department of Energy. For two years, he worked for the Montana Board of Health, retiring in 1995.

Arthur L. Coleman, Jr.

Arthur L. Coleman Jr., M.D., of Olean, N.Y., died on Dec. 23. He was 73.

Dr. Coleman graduated from Phillips Academy Andover in 1941, Amherst College in 1945 and the Yale School of Medicine in 1948. He completed his radiology and pediatrics internships at Lenox Hill Hospital in New York City and his residency at the Mallinckrodt Institute of Radiology and Barnes Hospital in St. Louis. He served in the U.S. Army Medical Corps. Dr. Coleman was the director of radiology in several New York hospitals, including the French-Polyclinic and Sisters of Charity.

Frank H. D'Andrea

Frank H. D'Andrea, M.D., died on Nov. 27 in Shoreham, Vt. He was 90.

Dr. D'Andrea was accepted into Yale University at age 16 and received a bachelor's degree in 1926 at the age of 19. He continued on at Yale and received a medical degree in 1929. After interning at Stamford Hospital in Connecticut, he began his anesthesiology practice in 1935. He was one of the first 100 board-certified anesthesiologists in the country. Dr. D'Andrea was director of the anesthesia departments at both Stamford and St. Joseph's hospitals and was a consultant for Greenwich and Norwalk hospitals. He served as chairman of the medical board at Stamford Hospital and Southwestern Connecticut Rehabilitation Center.

Dr. D'Andrea retired from practice in 1974, moving to Vermont with his daughter and her family. He then served as a volunteer medical missionary with the Catholic Medical Mission Board for 10 years, teaching anesthesiology and practicing medicine in Papua, New Guinea; Guyana; and Colombia. In 1995 Dr. D'Andrea's achievements were honored in a video celebrating the 100th anniversary of Stamford Hospital, with which he was affiliated for 45 years.

Iza Sznejerson Erlich

Iza Sznejerson Erlich, M.S.W., died Feb. 9 at Yale-New Haven Hospital. She was 77.

Mrs. Erlich, an assistant clinical professor of psychiatry in social work in the Department of Psychiatry, was born in Russia and raised in Poland, immigrating to the U.S. at the outbreak of World War II. She received bachelor's and master's degrees in psychology from the New School for Social Research in New York City. She then earned a master's degree in social work at the University of Washington School of Social Work. From 1963 to 1983 she was a psychotherapist with Yale University Health Services in the Department of Mental Health. In 1983 she graduated from Western New England Institute for Psychoanalysis, where she became the first social worker to be admitted for psychoanalytic training. After

graduating from the institute, she went into private practice as a psychoanalyst in New Haven.

Sarah M. Ferguson

Sarah M. Ferguson, M.P.H., died Nov. 23 at Hartford Hospital in Connecticut. She was 85.

Miss Ferguson received a bachelor's degree in nursing from Columbia University, an R.N. degree from Boston Children's Hospital, and then a master's degree in public health in 1955 from the Yale School of Medicine. She was head of pediatric services for Cornell Medical Center in New York City for 20 years. Miss Ferguson also worked as a visiting nurse in Connecticut. In 1987 she was honored as Woman of the Year for Rocky Hill, Conn.

Paul F. Finlayson

Paul F. Finlayson, M.D., M.P.H., died March 1 at his home in Wahroonga, Australia. He was 60.

Dr. Finlayson received a medical degree and a diploma in psychological medicine from the University of Sydney, and a master's degree in public health from Yale in 1972. In 1989 he was awarded a doctorate in medicine from Sydney University. Dr. Finlayson worked as a staff psychiatrist for public hospitals for 36 years until his early retirement in 1994 because of ill health. At the time of his death, he was a clinical senior lecturer in psychiatry for the University of Sydney Medical School and a consultant psychiatrist. Dr. Finlayson pioneered and worked on three unique community programs: the Ku-ring-gai Neighbourhood Service, the Grief Support Telephone Service and Dial-A-Mum Telephone Support Service for people in distress. In a recent list of the Queen's Birthday Honours, he was recorded among the Members of the Order of Australia.

J. Wister Meigs

J. Wister Meigs, M.D., of North Branford, Conn., died March 19 at the Evergreen Woods Health Center. He was 82.

Dr. Meigs was a 1936 graduate of Princeton University and in 1940 received a medical degree from Harvard Medical School. He completed his internship at Pennsylvania Hospital in Philadelphia and his residency at Massachusetts General Hospital. From 1945 to 1947, Dr. Meigs served in the office of the surgeon general of the Army as a major attached to the industrial hygiene laboratory. In 1947 he joined the faculty of Yale as an instructor in the Department of Epidemiology and Public Health and served as director of residency training in preventive medicine while at Yale. Between 1953 and 1968, Dr. Meigs was chief of medical services to the New Haven Works of the U.S. Steel Corp.

During the mid-1970s, his studies in occupational medicine led to a six-month research trip to Japan to work at the Atomic Bomb Casualty Commission. After 1973, Dr. Meigs' work focused mostly on cancer epidemiology. He became director of the Connecticut Cancer Epidemiology Unit at Yale, where he expanded the use of the Connecticut Tumor Registry as a source of reliable data for cancer researchers. Dr. Meigs also worked as a consultant on safety and health to the United Illuminating Co., the Upjohn Co. and the Olin Corp., and was a founder of the Occupational Medical Association of Connecticut.

David M. Pugh

David M. Pugh, M.D., died Jan. 29 at his home in Mission, Kan. He was 67.

After receiving his bachelor's degree from the University of Rochester in 1951, he served as an officer during the Korean conflict. Dr. Pugh received his medical degree from Yale in 1958. He completed his internship at Bethesda Naval Hospital and his residency and a cardiology fellowship at the University of Washington. Dr. Pugh had been a professor of cardiology at Kansas University Medical Center since 1964. He was instrumental in starting CPR training in the Kansas City area and in training medical professionals in advanced cardiac life support.

Edward H. Soule

Edward H. Soule, M.D., died Dec. 1 at his home in Rochester, Minn. He was 80.

Dr. Soule received a bachelor's degree from Bowdoin College in Maine in 1939, a medical degree from Yale in 1943, and completed his internship at Maine General Hospital in Portland in 1944. From 1944 to 1946, he served in the Navy Medical Corps. After his discharge, he returned to Maine General Hospital as a resident in pathology. In 1948 Dr. Soule became a resident in pathology at the Mayo Clinic and entered the Mayo Graduate School of Medicine. He served as an assistant to the staff from 1951 to 1952, and was appointed to the permanent staff as a consultant in surgical pathology in 1952, a post he held until his retirement. Dr. Soule joined the faculty of the Mayo Graduate School of Medicine in 1956 and was promoted to assistant professor in 1959 and associate professor in 1964. From 1969 until his retirement, he was a professor of pathology and head of a section of surgical pathology.

Robert K. Watson

Robert K. Watson, Ph.D., died Feb. 21 at Yale-New Haven Hospital. He was 55.

Dr. Watson received a bachelor's degree in psychology from Antioch College in Ohio in 1964 and a Ph.D. degree in clinical psychology from the University of Chicago in 1972. He opened the first sleep disorders center in Connecticut at Griffin Hospital in Derby in 1980 and, in 1985, opened the New Haven Sleep Disorders Center. Dr. Watson held a clinical appointment at Yale in the Department of Medicine from 1988 to 1992 and was a lecturer in the Department of Psychiatry from 1983 until his death.

Benjamin Wiznia

Benjamin Wiznia, M.S.W., died Feb. 22 at Yale-New Haven Hospital. He was 86.

Mr. Wiznia emigrated from Poland to the United States in the early 1920s. He graduated from City College of New York and received a master's degree in history from Columbia University and a master's degree in social work from Fordham University. Mr. Wiznia was a psychiatric social worker for nearly 50 years. Early in his career, he worked on American Indian reservations in Arizona and, subsequently, with the Veterans Administration there. He was the chief psychiatric social worker at the VA Connecticut HealthCare System's West Haven campus and a clinical instructor of psychiatry at the Yale School of Medicine.

Arthur L. Coleman Jr., M.D. '48
December 23, 1996

Frank H. D'Andrea, M.D. '29
November 27, 1996

Kent Ellis, M.D. '50
December 1, 1996

Sarah M. Ferguson, M.P.H. '55
November 23, 1996

Alice Dershimer Friedman, M.D. '45
February 5, 1997

Henry H. Henstell, M.D. '33
December 26, 1996

Sidney Hurwitz, M.D. '54, HS '69-71
November 13, 1995

Louise G. Hutchins, M.D. '36
September 3, 1996

Louis Jack, M.D. '23
November 19, 1996

Gerald R. Nowlis, M.D. '48
September 30, 1996

Dorothy G. Pederson, M.P.H. '55
September 18, 1996

Edward Hersey Soule, M.D. '43
December 1, 1996

A letter from the AYAM president

By Lycurgus Davey, M.D. '43M

It is with reflective pleasure that I view my past two years as president of the Association of Yale Alumni in Medicine (AYAM). The term started on a note of uncertainty within the Office of Alumni Affairs. Art Crovatto, M.D. '54, H.S. '54-61, was stepping down as director. As an alumnus, he showed both a special dedication to the medical students—our future alums—and a faculty for promoting greater communication among alumni groups. We feared a real gap in our activities would be created with his leaving. Bill Jenkins came over from the Office of Development and filled in that gap with such energy, enthusiasm, expertise and cooperative spirit that he fairly blew away all doubts. His long hours of work and effort have put an indelible personal stamp on the results.

In our Executive Committee meetings, attended by upwards of 20 people three times a year, we've noticed growing attendance and a wider geographical mix, with attendees more often traveling from afar. For me, the most refreshing part of these meetings has been the presentations by the president of the Student Council, Alicia Arbaje '99. The exceptional quality of Yale medical students is exemplified by their activism. Another special group at the meetings are the medical school representatives to the Association of Yale Alumni convocations on the main campus.

The alumni affairs office still has a desk for our consultant and former director, Nick Spinelli, M.D. '44. On Mondays, he is joined with a degree of regularity by Jack Ogilvie, M.D. '34, along with Sam Kushlan, M.D. '35, chairman of bequests and endowment on the Alumni Fund Board. Their combined wisdom represent an important contribution to our efforts to improve contact and service to all alumni.

Contact with alumni has been enhanced by the Outreach Program, which was launched in Boston in the spring of 1995. Meetings have extended west to San Francisco and San Diego, south to Orlando, and locally in New Haven and Westchester County, N.Y. Except for a tremendous turnout in Washington, D.C., these gatherings have been intimate in scale with camaraderie, spirit and general good feeling. This program has been my favorite, as I could share with others my gratitude and obligation to the school for fostering, in our medical education, the ideals and principles that have boosted our professional lives a cut above others.

No effort was made to solicit funds at these gatherings, as this was not our duty, but neither were the more pressing needs of the school kept secret. When Dean Gerard Burrow was able to be present, he reported on the state of the school and usually mentioned in passing the crying need to refurbish the Harkness dormitory as well as the antiquated anatomy laboratories. They have changed from their origins in the 1930s only in being more crowded, with well over 100 students cramped in the same stuffy space that once housed 50.

For our day-to-day needs, thanks must be extended to Patty DiNatale who has filled in ably in the past six months for the ailing Connie Tolliver, the perennial mother of all alumni activities. Connie is recovering nicely from a stroke suffered in January of this year—fortunately not a severe one. With the aid of a rehabilitation program, an early return to the office may be possible.

Finally, I must express my pride and pleasure in having served as your president. With justifiable confidence built on long association, I pass on the "torch" to my successor, Nicholas M. Passarelli, M.D. '59, HS '59-65.

Lycurgus "Bill" Davey, M.D. '43M is the outgoing president of the Association of Yale Alumni in Medicine.

Grateful patients, grateful doctors

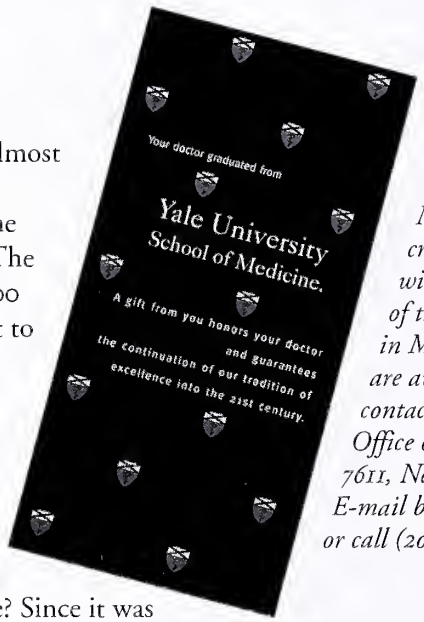
Stethoscope, syringe, scalpel, clamp, tin cup.

By David Davison

May I have $110 million please?
(Pause)
Yes.

It was probably not this simple for Jon Huntsman, a cancer patient who expressed his gratitude to his physician by contributing this record-breaking sum a few years ago to fund a building now known, not surprisingly, as the Huntsman Cancer Institute at the University of Utah.

A more likely scenario in today's world was experienced recently by Alan W. Stone, M.D. '65, a Washington, D.C., internist, who was asked by a patient, "Doctor, what is your favorite charity?" In the past, Dr. Stone had been unsure how to respond. On this occasion, he pulled out of his desk drawer a brochure titled *Your Doctor Graduated from Yale University School of Medicine* and mailed it to his patient. In a straightforward and low-key style, the brochure provides information about making a donation to the school. It acted almost as a third party between Dr. Stone and his patient. The result was a $1,000 contribution sent to Yale School of Medicine by a grateful patient.



This brochure was conceived by Andrew McGowan, M.D. '58, and created in consultation with the board of directors of the Yale Alumni Fund in Medicine. The brochures are available free by contacting: Bonnie Sargent, Office of Development, P.O. Box 7611, New Haven, CT 06519. E-mail bonnie.sargent@yale.edu or call (203) 785-6760.

Is the doctor-patient relationship contaminated by such an exchange? Since it was the patient who brought up the subject, Dr. Stone saw no problem. "In that circumstance I was comfortable answering 'Yale School of Medicine.' I found it was helpful to have the brochure available. It's something tangible to use."

The brochure served Dr. Stone and the patient/donor as a useful tool, explaining the reasons why a donation to Yale is worthwhile, representing the school's message of need for support of its teaching and research missions, and providing the simple but essential details about where to send a gift.

In certain circumstances, it can be helpful to both the doctor and the patient for the third-party intermediary to be a volunteer or a professional development officer. Judith Winslow, associate director of the Yale Cancer Center, has had the unusual experience of acting first in the role of grateful patient, then as a dedicated volunteer, and finally, this past year, as a full-time professional development officer. Ms. Winslow, who was treated successfully for fibrosarcoma more than 20 years ago, helped found the Patient to Patient group at Memorial Sloan-Kettering Hospital and served on the board of its fund-raising auxiliary. When Vincent T. DeVita Jr., M.D., director of the Yale Cancer Center, decided he wanted a full-time development specialist to help increase fund-raising activity for cancer research, he invited Ms. Winslow to join his team.

As a development officer representing the school and the

David Davison is director of development for the School of Medicine. Write to him at the Office of Medical Development, 100 Church Street South, Suite 211, New Haven, CT 06519, or via e-mail at david.davison@yale.edu.

Yale Cancer Center, she can ask appropriate and essential questions that might be awkward for the physician to ask the grateful patient, or vice versa. For example, a patient might not want to ask the doctor about either the tax advantages of a particular method of giving, or the gift recognition policies and opportunities provided by Yale. Tax breaks and public praise are probably not the reason the person wants to make a gift, but with the right answers available through a tactful interpreter like Judith Winslow, a more generous gift can result that benefits everyone involved.

While the nuances and intimacies of the doctor-patient relationship cannot be generalized, there often may be very appropriate times to ask for gifts. What if a physician has a very trusting, long-term relationship with a patient, and knows that the patient's family is generous and philanthropic in the community. When and how is it okay to ask?

"If a patient undergoing treatment brings up the subject of a contribution with the physician, then it's appropriate," Ms. Winslow offers. "If time has passed since successful treatment, and a physician is trying to fund expanded research in his laboratory, for example, it might be fine to reach out to former patients and ask for help."

Volunteer support groups are often formed to provide platforms for activity and outlets for people dedicated to supporting biomedical research and patient care. Benefit dinners, charity auctions and theater parties are the common result.

Once in a while, gratitude walks through the door unannounced. Early this year, George Zepko walked into the Development Office and introduced himself. Seven years ago, suffering from Marfan syndrome, he received a new ascending aorta and aortic valve from Dr. John Elefteriades. Dr. Lawrence S. Cohen was, and still is, his cardiologist. Now Mr. Zepko wanted assistance in devising the best tax-wise strategy for leaving a large portion of his estate to Yale in honor of his doctors. The development officer asked him what had motivated the decision. He replied, "It's my way of thanking Dr. Cohen and Dr. Elefteriades for what they have done for me."

Much of the time, a patient's interest and generosity is more than a case of personal gratitude. It can be a long-term involvement developed through an understanding of the needs and the opportunity to cure disease.

Stephen G. Waxman, M.D., Ph.D., chairman of the Department of Neurology, has received support from grateful patients and their families since before coming to Yale from Stanford in 1986. He points out his responsibility to communicate in depth with each patient about their disease, and emphasizes the ongoing dialogue that often develops with chronic-disease patients. For example, multiple sclerosis (MS) patients need to know about upcoming drug-trial options, as well as the long-range potential for research progress. Dr. Waxman has taken the time to keep former patients regularly informed about the progress of his own research in MS and spinal-cord injury. In special cases, where patients have asked for more information regarding gift possibilities, he has involved the Development Office to write proposals and make personal visits.

"Yale physicians give the best care possible to every patient, irrespective of the ability to pay," says Dr. Waxman. "No one thinks about gifts or gratitude. However, we educate patients about their disease and about the importance of training and research in medicine. When it's appropriate, we let patients and families know that if they wish, they can help in the effort to advance the frontiers. We've found that once they understand that progress is being made, they often want to become partners."

Gratitude, obviously, cuts both ways for Dr. Waxman and Yale. "The gifts of private individuals, including patients, are invaluable to our research efforts. We couldn't succeed without that help."

ARTICLE THIRD.

(b) I give and bequeath the sum of FIVE HUNDRED THOUSAND DOLLARS ($500,000) to establish and maintain a professorship in neurosurgery in the Yale University School of Medicine. This bequest is made in memory of my late husband, CHARLES EDWARD NIXDORFF, and the net income therefrom to be expended to establish and maintain a professorship in recognition of the many contributions to medicine of DR. WILLIAM J. GERMAN; accordingly, it is my request that the holder of this professorship shall be designated by the University as THE NIXDORFF-GERMAN PROFESSOR OF NEUROSURGERY.

Left: *From the last will and testament of Elizabeth S. Nixdorff, who died in 1974. Dr. German, a renowned professor at Yale (and father of John German, M.D. '62), had treated her husband. When she created her will in 1966, she consulted her personal physician, Nicholas P.R. Spinelli, M.D.'44, who helped her decide to fund a professorship at Yale.*

It's a Yale thing

To the editor:
I read with interest your article about the free clinic in San Francisco started by two Yale medical school graduates (*Pure Medicine,* Fall/Winter 1996). You may be interested to know that about the time the Drs. Gibbs started their clinic, I started one in Biddeford, Maine. I am a graduate of Yale College 1956 and the medical school 1960. I have also had two sons graduate from Yale College, in 1986 and 1994.

Our clinic is slightly different from that of the Drs. Gibbs in that our staff is all volunteer, and we are open three evenings a week. We see only patients without health insurance and we provide free general medical care on site as well as free non-narcotic medications.

I have enclosed a recent article from *Parade* magazine about our clinic, as well as a copy of our annual report.

I much enjoyed your clear and concise article. Perhaps free clinics are a Yale thing.

Francis J. Kleeman, M.D. '60
Biddeford, Maine

How to reach us

Yale Medicine welcomes news and commentary. Please send letters to the editor and news items to *Yale Medicine,* P.O. Box 7612, New Haven, CT 06519-0612, or via electronic mail to **ymm@yale.edu,** and include a daytime telephone number. Submissions may be edited for length, style and content.

A HEALTH-CARE STORY FOR OUR TIME

How A Small Town Started A FREE CLINIC

'MOST OF THE time I can pay the doctor," said Kathy Daniels. "But my son's been sick a lot lately. Two weeks ago, I had to pay $85 for medicine. Now I say, 'Do I take him to the doctor? Do I pay my electric bill, my phone bill? Or do I buy food?'"

Daniels, 23, was waiting quietly in the hallway of the Biddeford Free Clinic in Biddeford, Maine, with her toddler son, Cody, perched on her lap. She was telling me about her problems finding affordable health care.

Neither Kathy nor her husband, Philip (a spray painter who earned about $290 a week after deductions), could afford insurance. Philip's company offered a health plan but, at $50 a week, it cost too much for the family's budget. Their annual income of about $25,000 disqualified them for Medicaid in Maine, where

Patients, staff and board members of the Biddeford Free Clinic in Maine.

had the task of finding a location. When the City of Biddeford heard about the plan, it offered to donate space in a former school building and to pay for the utilities. Dr. Kleeman raised money by speaking at dozens of churches and to community groups, and he persuaded drug companies to donate supplies.

Today, the clinic treats about 60 patients a week. It accepts only the uninsured, most of whom are families with annual incomes up to $30,000 and individuals who earn up to $15,000. "If patients are nasty or obnoxious, they can be asked to leave," noted Kleeman. "And we won't see people who are drinking or on drugs. We don't want to subject our volunteers to that kind of behavior."

Earl Jordan, 63, comes once a week to pick up medicine for his hypertension. Jordan, who has no insurance, retired from his job at a frozen-food company to take care of his wife, Marguerite, 71, who has Alzheimer's. "I don't get Medicare until I'm 65," he said. "If the clinic wasn't here, I'd be in a lot of trouble."

Alumni/ae. Please use this space for news of your personal and professional activities, for publication in *Yale Medicine.*

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Avenues for innovation

Yale's position on the commercialization of university-based scientific research has evolved from modest support to active encouragement in recent years. Now, with a new branch of the University's Office of Cooperative Research on the medical campus, biomedical discoveries made at Yale are more likely than ever to be developed for the practical advantage of patients.

Commencement and the '97 Match

Medical and public health graduates marched forth under a clear blue sky in May, as Commencement exercises recognized the best and the brightest. Residency placement results on Match Day also brought good news for many. The complete list next issue.

MELANIE STENGEL

New dean speaks at EPH opening

David A. Kessler, M.D., above right, talks with Dean for Public Health Michael H. Merson, M.D., before the dedication of renovated space for Epidemiology and Public Health in early June, as Yale Medicine *went to press. Dr. Kessler, who addressed the public health assembly and met alumni/ae at a reception later in the day in the Medical Historical Library, becomes the 15th dean of the School of Medicine on July 1. Additional coverage in the Fall issue of* Yale Medicine.

Reunion fun

What does it take to get a reunion rolling? This June it was The Cellmates, a band of rocking Yale researchers that includes BBS Program Director Ira Mellman, Ph.D., left, on bass and Pharmacology Chair Leonard Kaczmarek, Ph.D., on guitar.

Above: Members of the Class of 1957 pose for a photograph on the steps of Sterling Hall of Medicine at the end of Alumni Reunion Weekend.

PHOTOGRAPHS BY PETER CASOLINO

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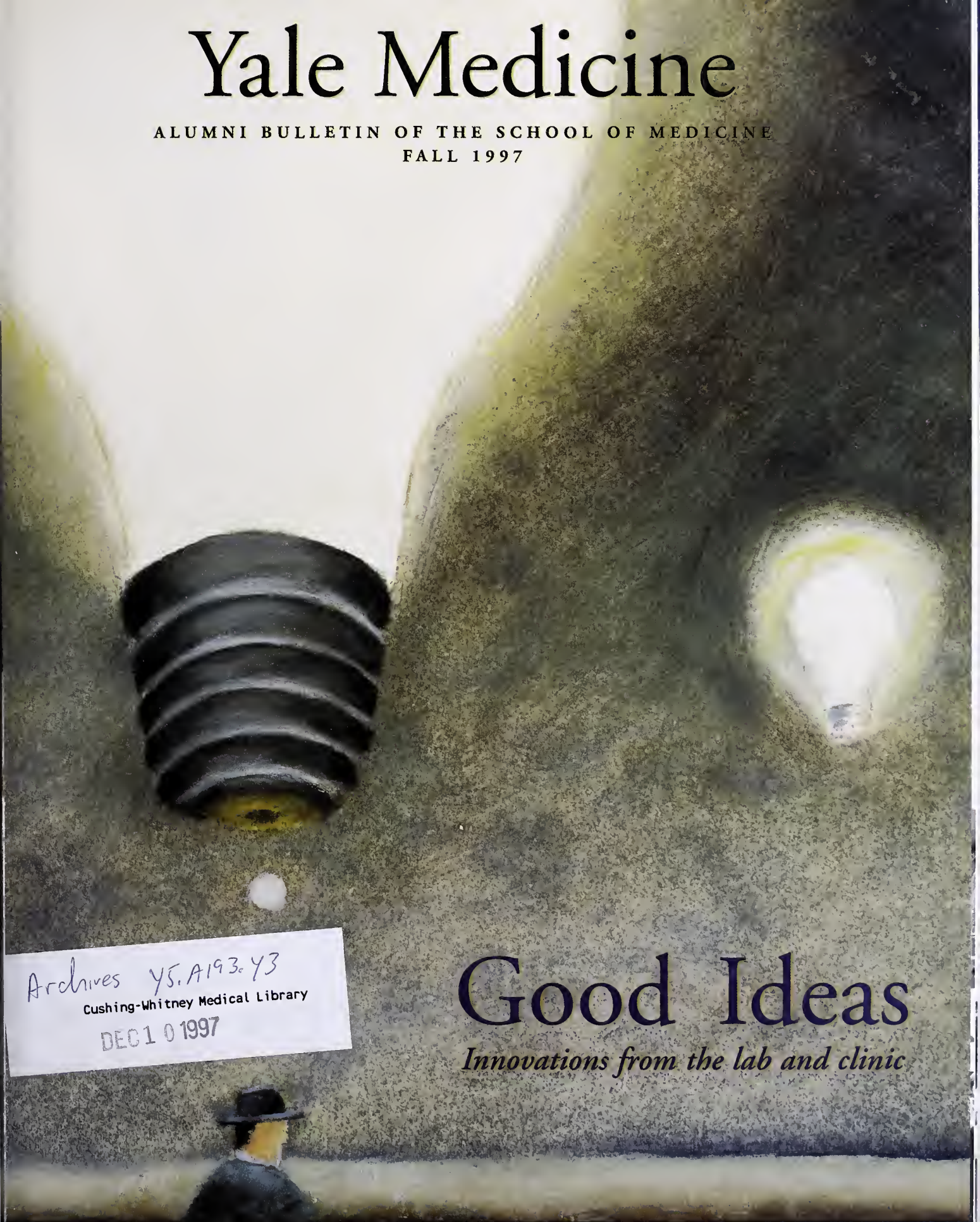
FALL 1997



Good Ideas

Innovations from the lab and clinic

vid Kessler arrives as dean • A new pharmaceutical firm • Health on the reservation

FEATURES

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DEPARTMENTS

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Market

Driven

Yale's expanded Office of Cooperative Research links the realms of academia and industry, translating scientific discoveries into better care for patients and support for future research.

By Karen Schmidt

Photographs by Frank Poole

When Ira Mellman, Ph.D., and his colleagues began studying the biology of dendritic cells and their role in the immune system, like most basic scientists they didn't have a specific clinical goal in mind.

"We got involved because they looked like interesting cell-biologic creatures," says Dr. Mellman, professor of cell biology and director of the Program in Biological and Biomedical Sciences. Dendritic cells change shape and function dramatically as they develop through distinct stages, first capturing a foreign protein, then taking information about the invader to the lymph nodes to educate T-cells. "They play a critical role in initiating the immune response," Dr. Mellman says.

It became clear that the ability to control the development of dendritic cells might lead to new therapies to treat autoimmune disorders such as rheumatoid arthritis and Crohn's disease. The next step, Dr. Mellman thought, would be a genomic study to determine "what genes were being turned on and turned off at each of the three stages of dendritic cell development." That requires highly specialized technology, so he approached a genomics company and spoke to a pharmaceutical firm about funding the work.

But when Gregory E. Gardiner, Ph.D., director of the University's Office of Cooperative Research, heard about the work, he proposed a different approach to the funding. Dr. Gardiner suggested establishing a new drug discovery company based on Dr. Mellman's techniques for exploiting dendritic cells' unique properties. The Office of Cooperative Research has already drafted a business plan for Dendritic Cell Sciences Inc., and is working on securing investors.

When Dr. Gardiner arrived in February 1996 from a position as group director of research and development operations for Pfizer Central Research in Groton, Conn., he brought scientific expertise and more than two decades of experience in the pharmaceutical industry. His goal: to promote the University's intellectual as-

When cell biologist Ira Mellman, second from left, uncovered new knowledge about the properties of dendritic cells, Jon Soderstrom, Ben Muskin and Gregory Gardiner, from left, of the Office of Cooperative Research saw the seed of a new business venture.

"We got involved because they looked like interesting cell-biologic creatures. … They play a critical role in initiating the immune response,"

Recent discoveries about dendritic cells, Ira Mellman says, may lead to better treatments for autoimmune disorders such as rheumatoid arthritis and Crohn's disease.

sets and find the best ways to manage and develop them. The idea is to take the discoveries and inventions hatched inside the halls of academia and put them out in the world where they can earn the University some revenue, and more importantly, do some good.

"One reason a major research university like Yale must concern itself with technology transfer has to do with revenues, to be sure," says Yale Provost Alison F. Richard, Ph.D. "But of equal importance is the value of making discoveries quickly available to the benefit of society."

For example, Stephen G. Waxman, M.D., Ph.D., chair of the neurology department, is working on technology that could be used to treat cerebral edema and glioma, a kind of brain cancer. "If we're going to use society's dollars, we should try to deliver something for society," says Dr. Waxman, professor of neurology, pharmacology and neurobiology. The marketplace, he adds, is often the vehicle that brings new discoveries to the public. "If you discover penicillin and keep it in the laboratory, it can't benefit society. It is important to have a bridge that can take laboratory results and, with appropriate academic safeguards, carry them into the clinical domain."

Karen Schmidt is a New Haven-based writer specializing in science and medicine and a student in the Department of Epidemiology and Public Health.

NURTURE AND *NATURE*

"University researchers have always wanted their results, their ideas, their discoveries, to flower in the community," says Carolyn W. Slayman, Ph.D., deputy dean for academic and scientific affairs at the medical school. In the past it was publication in a journal, not commercialization, that served as the transfer point. "You put your results out there and you hoped people would see them and use it."

That doesn't work anymore, Dr. Gardiner says. If a company can't be assured of exclusive rights to a new invention, it has no incentive to spend, say, $350 million to bring a new drug to the market. That reality has led academic scientists into a sometimes unfamiliar world of patents, licensing, start-up companies and venture capital. But some universities, including Yale, have been slow to embrace the idea that academia can work with industry without losing sight of its educational mission.

"In my 27 years at Yale, I have seen a very gradual evolution in the attitudes of the University's scientists, engineers and administration toward the commercialization of University-based scientific research," says Yale President Richard C. Levin, "an evolution of attitudes from skepticism, to modest support, to active encouragement." Former medical school Dean Leon E. Rosenberg, M.D., HS '63, now senior vice president for scientific affairs at Bristol-Myers Squibb Co., has observed the same progression. "I think that Yale was certainly very cautious about the involvement of its faculty with the private, for-profit world."

Involvement with business was not supposed to be the scientist's role in society, says Alan C. Sartorelli, Ph.D., the Alfred Gilman Professor of Pharmacology. Instead, the scientist was encouraged to cultivate a kind of noble detachment. "We were supposed to be pure and they not so pure because they were interested in money," he says.

"Our mission is primarily an educational one," says OCR leader Gregory Gardiner. "As long as any business arrangement furthers that mission in more than just a monetary way, we'll consider it."

The right chemistry

Sometimes the idea for a new therapeutic compound comes from a biologist. Sometimes the idea comes from a medicinal chemist. At Yale, close collaboration between the two has led to the design of some remarkable drugs.

From the first antiviral compound, discovered by William H. Prusoff, Ph.D., professor emeritus and senior research scientist, to the more recent anti-AIDS drug d4T, licensed to Bristol-Myers Squibb Co. in 1986 and now marketed under the brand name Zerit, Yale research has benefited from such a collaboration. Zerit, a reverse transcriptase inhibitor, grew from a collaboration between Dr. Prusoff and the late Tai-Shun Lin, Ph.D., a medicinal chemist. In 1985, Dr. Prusoff and Dr. Lin began investigating whether the compound would inhibit the growth of HIV.

"It's an interactive process," says Yung-Chi Cheng, Ph.D., the Henry Bronson Professor of Pharmacology, professor of medicine, and director of the Developmental Therapeutics program of the Yale Cancer Center. The program links researchers from labs throughout the medical school. Licensed inventions in just the past few years include an anti-hepatitis B compound that is in Phase III clinical trials, two anti-cancer treatments in Phase I clinical trials, and two other antivirals expected to go into clinical trials within a year, Dr. Cheng says.

Dr. Cheng stresses the importance of maintaining the department's strength in chemistry. "Our chemistry strength is weakening," he says. "The situation needs to be addressed in order to continue discovering compounds."

"In my 27 years at Yale, I have seen a very gradual evolution in the attitudes … toward the commercialization of University-based scientific research, an evolution of attitudes from skepticism, to modest support, to active encouragement."

Yale President Richard C. Levin

But two of Yale's biggest biomedical successes in recent years were developed in close partnership with industry: the anti-AIDS drug Zerit and Lyme disease vaccines for people and animals. The newly expanded Office of Cooperative Research, which now has a branch in the Sterling Hall of Medicine, has been working closely with Yale scientists to develop and, where appropriate, commercialize their discoveries.

For example, the office is formulating a business plan for a drug discovery company based on the work of Professor Yung-Chi Cheng, Ph.D., the Henry Bronson Professor of Pharmacology, professor of medicine, and director of the Developmental Therapeutics program of the Yale Cancer Center. Dr. Cheng's work on antiviral drugs has already led to numerous patents, and his current work could lead to antiviral agents that could be used against hepatitis, herpes, Epstein-Barr virus and cytomegalovirus.

Richard L. Edelson, M.D. '70, chairman of the Department of Dermatology, is continuing work on improving a photopheresis treatment for a type of lymphoma; his new discoveries about the process of photopheresis could lead to treatments for leukemia and chronic inflammatory and autoimmune diseases.

Technology transfer is the only practical way to take these discoveries out of the lab and into a clinical setting where they may someday help treat patients, says Jon Soderstrom, Ph.D., associate director of the Office of Cooperative Research and one of three people who staff the medical school branch.

"If we're doing research in the life sciences, I would say we have an obligation to see it receives the broadest exposure possible," Dr. Soderstrom says. The office's job is to link the worlds of business and academia, and to take the burden off scientists, who may not have the business savvy to know which strategy is best to develop a particular discovery.

"The scientists," Dr. Soderstrom says, "can continue to be the scientists."

FROM ACADEMIA TO INDUSTRY

Yale scientists have been studying Lyme disease since the malady was identified here in 1975. But when the team working on a Lyme vaccine was ready to move into clinical trials, it was time to transfer the technology out of academia and into the private sector. It wasn't just a matter of money, says team member Richard A. Flavell, Ph.D., chief of immunobiology and a Howard Hughes Medical Institute investigator. It was common sense.

PETER CASOLINO

Deputy dean Carolyn Slayman with OCR representatives Soderstrom, left, and Muskin. "They have been so successful at generating interest among the faculty that they have more potential startup companies than there is space for in New Haven."

"We did what you should do and can do in a university. We proved the concept to be correct," says Dr. Flavell. After showing the vaccine worked in animals, it was up to a pharmaceutical company—SmithKline Beecham, in this case—to handle the clinical trials and regulatory approvals.

"I want to be doing research," Dr. Flavell says, as opposed to "writing the standard operating procedures for how a drug should be made." Dr. Flavell, who previously served as chief scientific officer and vice president for research and development at Biogen, one of the first biotechnology companies, knows the technology transfer field from both sides.

"The university is the place where basic research is done, and it's not the place where applied research is done," he says. "Most basic research is done in universities, so technology transfer is an essential component of the development of applications of publicly funded research. It's a natural process, and it should be encouraged."

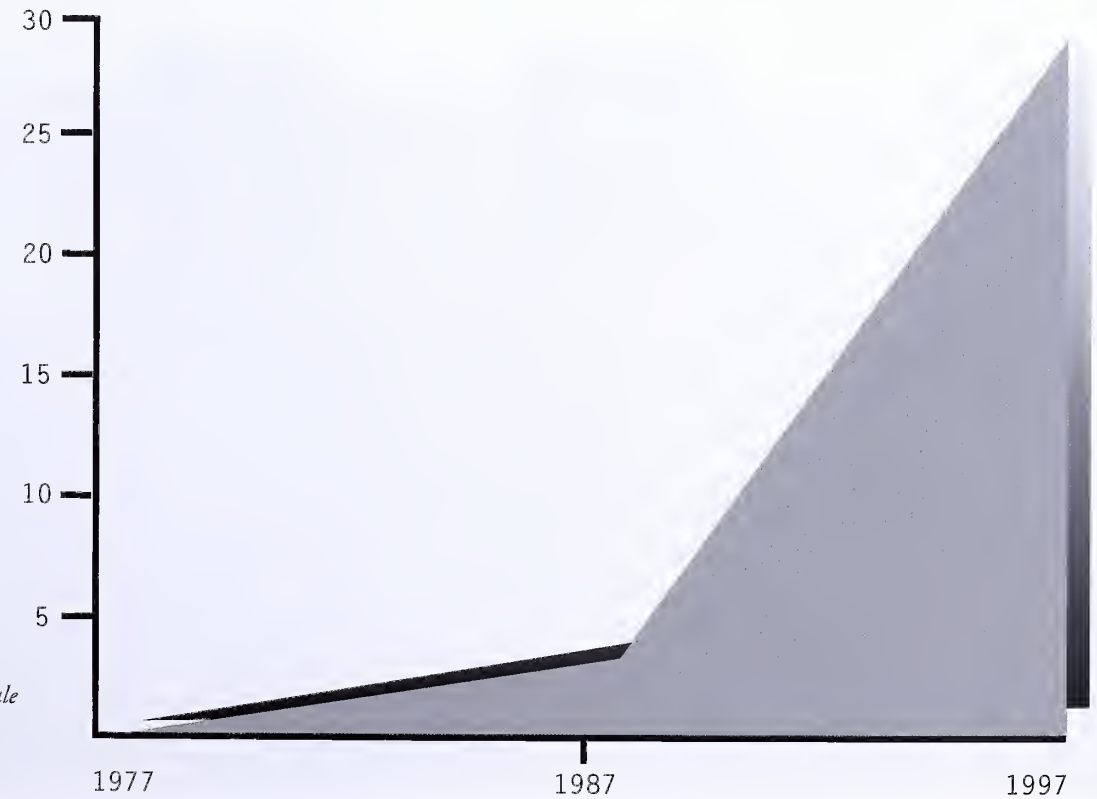
But even top research universities like Yale have been reluctant to tackle the complicated financial and ethical issues that may crop up when discoveries made on campus succeed commercially. University administrations may be concerned that a faculty member's commitment to an outside, private enterprise could mean less time and energy devoted to classroom, clinical or scholarly pursuits.

The reluctance could also stem from unfamiliarity with industry. Until about a quarter-century ago, biologists didn't have to concern themselves with conflicts of interest or conflicts of commitment because commercialization was often not even a possibility, Dr. Flavell says. The reason was simple: Unlike engineers or chemists, "biologists had never been involved in anything that would lead to a commercial product," he says.

Even though great discoveries, such as the structure of DNA, were being made, until gene cloning became possible in the early 1970s there was a general belief that molecular biology would not lead to anything truly useful. "Biologists just weren't used to that kind of thing," he says.

In addition, until 1980 federal law gave universities only limited rights to license inventions that resulted

Cumulative Royalty Income to Yale University, 1977-1997 (in millions of dollars)



Most of the growth is attributable to Zerit, an AIDS drug discovered at Yale that has been used to treat hundreds of thousands of people with HIV.

from government-funded research. Says Dr. Gardiner: "What really started the university technology transfer offices going is that the federal government said universities can take title to a patent."

The Bayh-Dole amendments, enacted by Congress in the early 1980s, led to the establishment of technology transfer offices, including Yale's. But the offices carried a heavy burden of paperwork and tended to focus on regulatory compliance instead of business development.

"The Bayh-Dole amendments have had the net effect of causing all invention disclosures to be treated equally," Dr. Gardiner said in a presentation to the Yale Corporation in February. But all inventions are not alike: Of more than 850 invention disclosures made at Yale since the office was established, 75 percent of the revenue earned through fiscal 1997 (close to $30 million) was generated by just 10 inventions.

Instead of treating all discoveries the same, the new model of technology transfer is designed to actively identify the best opportunities for academic/private partnerships. The technology transfer office works closely with Yale scientists to find potentially marketable discoveries, then develops a plan.

"There's a broader approach to how ideas and discoveries should flow from a university to the corporate world," says Dr. Slayman, the deputy dean who works closely with the office. The technology transfer office also is able to provide an essential degree of business sophistication. "Yale has to be known as a place to be taken very seriously."

The best way to develop a particular discovery may be a traditional licensing arrangement. It may involve contract research with a pharmaceutical company, or a corporate alliance to benefit both a company and the university. And the best way to market a discovery may be with a brand-new business venture, funded by outside venture capital. "We're essentially trying to perform a business development function," Dr. Soderstrom says.

Jeff Collinson, managing partner of Collinson Howe & Lennox in Stamford, is an investor in Neurogen and Alexion, two companies based on Yale discoveries. Both of those ventures, he says, were established with little or no help from the University. "There was really no interface with technology transfer on either of those investments," says Mr. Collinson, a 1963 Yale College graduate.

Now there is more of an effort to facilitate the process. "They're far more proactive than they were," he says. "There is a focal point, a catalyst to make these things happen, an organization to surface potentially fundable technologies."

Science and business require two very different sets of skills, and the Office of Cooperative Research staff is equipped to bridge the gap. Dr. Soderstrom says that when a scientist comes to him with a new discovery "the question I have to ask is, what can I do with it?"

Dr. Soderstrom has to determine first how to keep potential competitors away from a discovery. Then he has to figure out what product or service might result

WHO'S WHO AT **OCR**

When Gregory E. Gardiner, Ph.D., took the helm of the Office of Cooperative Research in 1996, he brought expertise from both the corporate and scientific worlds.

As group director of research and development operations for Pfizer Central Research in Groton, Conn., Dr. Gardiner designed and implemented Pfizer's external biotechnology investment strategy. Since his job at Pfizer was to evaluate potential licensing and research opportunities for the company's pharmaceutical business, Dr. Gardiner already had extensive hands-on experience building partnerships between universities and industry.

Dr. Gardiner has impressive research credentials as well: He holds a doctorate in physical chemistry from Fordham University and was a Sterling Fellow in Chemistry at Yale from 1969 to 1972, before joining Pfizer in 1974.

Dr. Gardiner's appointment was quickly followed by an expansion of the office and the opening of a branch in the medical school. Staffing that office are Jon Soderstrom, Ph.D., who came to Yale from Oak Ridge National Laboratory, and R. Bennett Muskin, who was vice president and director of JCL Clinical Research Corp. in Knoxville, Tenn., a small biotechnology company.

from it and, finally, whether the need for the product or service is large enough to pay for its development. The idea, he says, is to translate a discovery into something that makes sense in terms of a product. It isn't always easy for the scientist to determine what might form the basis for a profitable business.

"You see all sorts of ideas," Mr. Collinson says, "and a number of them are quite interesting. But they don't all form the basis for starting a company." He is looking for discoveries that have a good chance of producing salable goods or services, ones that will offer an investor a good return. "From the perspective of a scientist in his lab, that's a difficult distinction," he says. But Dr. Gardiner and his staff have a good sense of a discovery's business potential, says Mr. Collinson. "It's a useful screening process."

RECRUIT, RETAIN, REWARD

A strong, business-like program to find partners to develop technology offers clear financial rewards for the University. What may be less clear are the ways that program can help recruit, retain and reward faculty members.

"Our best and brightest faculty need technology transfer," says Louis Berneman, managing director of the Center for Technology Transfer at the University of Pennsylvania. "They want to see the results of their research benefit the public."

The income can also help support continuing research, both by established professors, junior faculty and students. "Here's a source of money for us as a university to assist young people, as well as to help more senior people who need carry-over grant funds," says Dr. Sartorelli.

Development of Yale-based businesses benefits the city and state, too. "Yale's intentions are to be an active, helpful and contributing partner in the growth of the high-tech industry in our state," Yale President Levin says. "Although the commercialization of new research discoveries cannot always be transformed into more local jobs, Yale is generating new economic vitality near the University." Yale scientists have established eight public companies and more than 30 private companies, employing more than 750 people; about 25 of the companies are located in greater New Haven.

Keeping companies in the city is one objective of the Office of Cooperative Research. A lack of space is a problem that could be greatly alleviated by the development of a new business incubator on land in the Route 34 corridor, a project that's still in the pre-planning stages. A technology incubator provides a supportive environment to attract and retain young, start-up firms, usually offering tax and other incentives. Science Park,

Gregory E. Gardiner

Jon Soderstrom

R. Bennett Muskin

John S. Swartley

Dr. Soderstrom, who holds a Ph.D. in Psychology/Industrial Engineering from Northwestern University, worked as director of program development and, before that, director of technology licensing in Oak Ridge's Technology Transfer office.

Mr. Muskin holds a degree in physics and engineering and did graduate work in biomedical engineering at Drexel University. Mr. Muskin brings to the office first-hand experience as an entrepreneur in technology-based health care companies. Prior to joining Yale, he put together the business plan and financing for his first company in 1991 and later licensed the technology to a leading medical device and supply company. Subsequent to this experience, Mr. Muskin was recruited to be the director of business development and strategic planning for two small biotechnology companies specializing in immunodiagnostics.

The newest member of the office's medical school staff is John S. Swartley, Ph.D., who arrived in September. He left the Emory Medical School faculty, where he studied the genetics of bacterial pathogens. He also consulted for Emory's technology transfer office.

A fertile ground for new technology

Yale has always been a fertile source for new technology, but medical scientists have scored a couple of major successes in recent years.

Two of the biggest successes—the anti-AIDS drug Zerit and Lyme disease vaccine under development—might never have happened if not for partnerships with pharmaceutical companies.

Both the reverse transcriptase inhibitor Zerit (d4T) and the Lyme disease vaccine required enormous amounts of capital to bring them through development and to the market (a process still under way in the case of the Lyme vaccine). Since new ventures don't have that kind of capital, both of those discoveries were licensed to large drug companies—Bristol-Myers Squibb for Zerit and SmithKline Beecham for the Lyme disease vaccine. Both companies had the capital and the necessary experience to develop the drugs.

Licensing to existing companies isn't always the best way to bring a discovery to market, though. Eight public companies and more than 30 private ones have been formed over the years to develop Yale technology. The publicly traded firms are valued at more than $1 billion, and include: **Enzo Biochem**, **Neurogen**, **GeneLabs Technologies**, **Ariad Pharmaceuticals**, **Alexion**, **Vion Pharmaceuticals**, **Sparta Pharmaceuticals**, and **Innovir Laboratories**.

Neurogen is an example of a company that developed Yale intellectual assets through venture capital. "When the founders left Yale, they didn't even have a patentable invention to license," said Office of Cooperative Research Director Gregory E. Gardiner, Ph.D., speaking in February to the Yale Corporation. "But they did have some excellent ideas about GABA receptors which could lead to new drugs in at least four different therapeutic categories."

The ideas needed to be proven in a research-intensive environment, Dr. Gardiner says, and the move paid off: Eight years later, Neurogen has four drugs in clinical development and at least three more in the immediate pipeline.

Among the private companies developed with Yale technology are:

- **Analytica of Branford**, founded by the discoverers of electrospray mass spectrometry, a key biotechnology tool
- **Genaissance Pharmaceuticals**, a company that applies DNA sequencing to drug discovery, which started in Science Park in 1993 and continues to grow
- **CuraGen**, a New Haven bioinformatics company started with four people in 1993 that has since seen employment rise to 100
- **Exelixis**, a developmental biology company in Cambridge, Mass.
- **Gene Logic**, a genomics company started in New Haven and recently relocated to Baltimore
- **International Biotechnologies**, a medical imaging company located in Science Park that went public but was acquired by Kodak in 1995
- **Molecular Diagnostics**, a biotech diagnostics venture started in 1980 in West Haven and acquired by Bayer in 1989.

The development of new companies can be expected to continue at a steady pace, says Jon Soderstrom, Ph.D., the OCR's associate director. About another 10 companies are now in development, with two "fairly far along in the process," Dr. Soderstrom says.

The work of Yale scientists was the basis for Zerit, above, one of the new generation of highly effective AIDS medications. Medical school investigators also invented a vaccine for Lyme disease, which is spread by the deer tick, Ixodes scapularis, *background.*

a technology incubator and research park with close ties to Yale, is a model for that sort of development. Located in a state-designated Enterprise Zone in New Haven, Science Park is home to about 100 companies that employ 2,000 people.

"Greg and his staff have been so successful at generating interest among the faculty that they have more potential startup companies than there is space for in New Haven," Dr. Slayman says. "The most visible thing that could happen in the future, besides the steady growth, would be if we could successfully develop the Route 34 corridor."

"Yale University, working closely with the city and state, intends to step up to the plate and do its part to generate new business opportunities in the New Haven area," says Dr. Richard, the provost. "There truly is local urgency to Yale's engagement in technology transfer in order to generate revenue and jobs."

Even if the Route 34 complex spurs new businesses to start up nearby, and even if Yale has a strong connection to many of the companies, University officials are clear that business interests will not be allowed to overshadow Yale's primary mission, which is academics.

"Yale remains deeply committed to student education, which we consider to be our central responsibility and defining mission," Dr. Richard says. "One of the tensions in forming industrial collaborations is to make sure they enhance rather than detract from student education." But alliances with industry can enhance education by exposing students to the latest technologies and lab techniques, and better prepare students for careers in the pharmaceutical and biotechnology industries. "It's less a case of academia adopting an industrial approach to education," she says, "than it is a case of industry adopting an academic approach to scientific discovery."

"Our mission is primarily an educational one," Dr. Gardiner says. "As long as any business arrangement furthers that mission in more than just a monetary way, we'll consider it."

Though some may worry that faculty members could get caught in conflicts when they work too closely with moneymaking enterprises, policies on conflict of interest and conflict of commitment are strictly spelled out, Dr. Slayman says.

The policy lists some examples that would be a clear violation: If a scientist uses a Yale laboratory to do product-testing research, paid for by a company in which he is a 20 percent owner and founder, seeking to validate advertising claims made about a product sold by that company; if a clinician makes patient referrals to a diagnostic company in which she or her immediate family has a significant ownership interest; or if a faculty member steers a graduate toward a research project that could substantially enhance the value of a company in which the faculty member has a significant ownership interest.

Some situations would be allowed with proper disclosure and oversight, such as if a scientist who is a member of a company's scientific advisory board conducts research sponsored by that company. The clearly defined policies alleviate concerns by letting faculty members know what's appropriate and what isn't. "I think it's healthy that we've put these mechanisms in place," Dr. Slayman says.

The real concern, Dr. Gardiner says, would be if scientists lacking business savvy tried to start companies completely on their own to commercialize discoveries. "The companies we're talking about have sophisticated investors who put money into them," he says. With plenty of attorneys and other professionals monitoring operations, the potential for problems is greatly reduced.

THE FUTURE

Looking ahead, Dr. Soderstrom projects conservatively that new businesses will be formed at a judicious rate of about three a year. "We are going to focus a lot of time and energy on spinning out companies," he says.

So far, Dr. Gardiner says, technology transfer has not had an enormous impact on the University's research budget. The royalties for the fiscal year that ended June 30, 1997, totaled about $13.5 million—equal to about 5 percent of the university's $280 million research budget, and up from about 2 percent the previous fiscal year. The average for all U.S. universities stands at about 1 percent, Dr. Gardiner says.

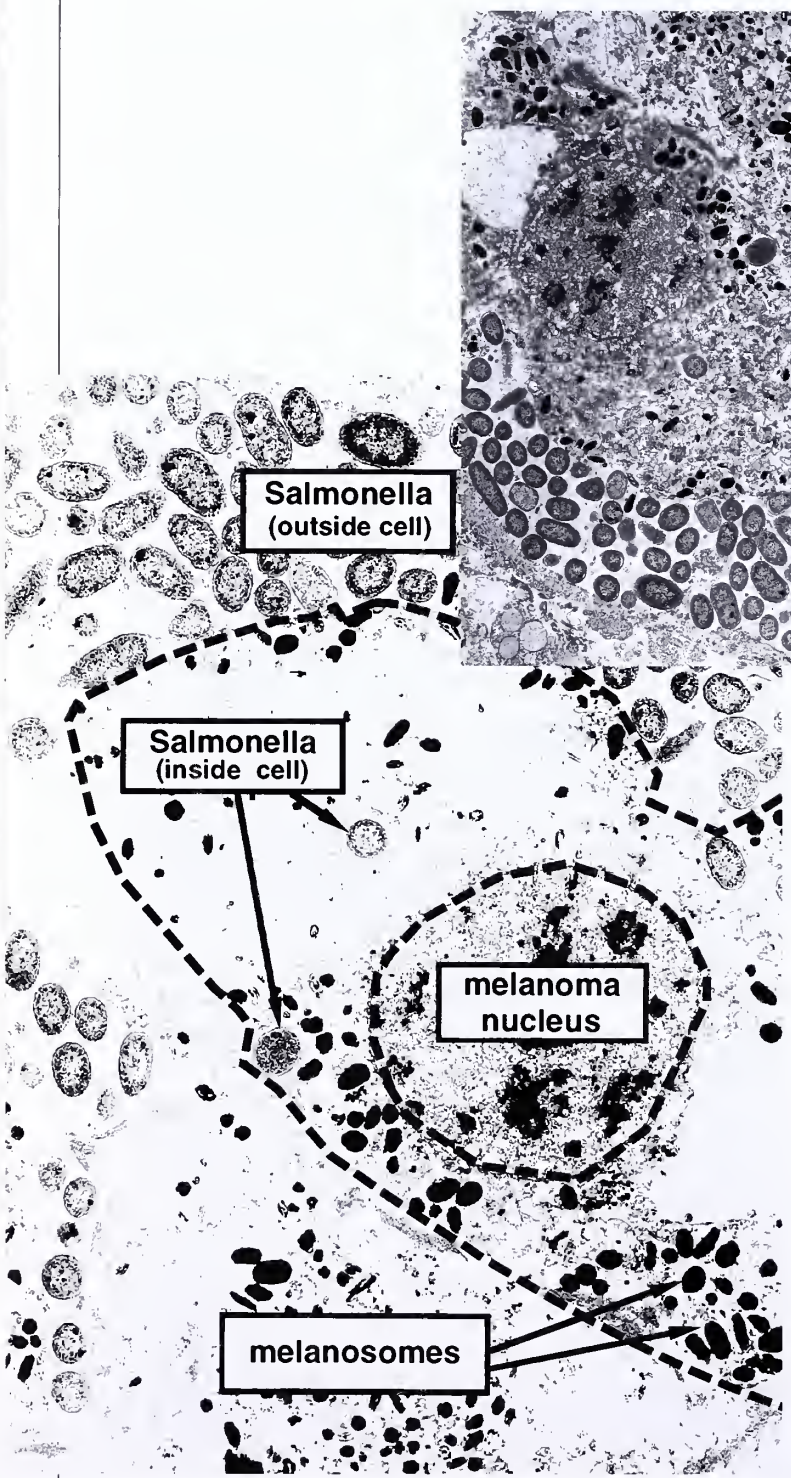
"When you get in the neighborhood of 10 percent, you can say, 'I'm having an impact,' " Dr. Gardiner says. "I think we ought to try to get to 10 percent, then look and see, has this been good for the University?"

With experience, the difference between the mission of industry and the mission of a university will become more clearly defined, Dr. Flavell says. "Drawing a clear line will allow for a more flexible attitude toward technology transfer."

Neurology chair Stephen Waxman agrees. "I'd like to see closer interactions between Yale and industry, but they have to be structured in a way that enhances and respects the academic mandate," he says. "If structured in the right way, the interface can benefit our patients and our trainees, as well as the University." **YM**

From *Salmonella*, a potential cancer treatment

Yale researchers, Vion take a novel approach to gene therapy.



One of the technologies to emerge from Yale recently is a potential gene therapy agent for cancer treatment. School of Medicine researchers John M. Pawelek, Ph.D. and K. Brooks Low, Ph.D. have worked hand-in-hand with David Bermudes, Ph.D., and a team of scientists at New Haven-based Vion Pharmaceuticals Inc. to prepare their invention for possible clinical trials.

The Yale technology, licensed to Vion December 1995 and named TAPET (for tumor amplified protein expression therapy), is one of the first uses of a bacterium, rather than a virus, as the mechanism for delivering genes to cells.

The Yale concept, described in the Oct. 15 issue of the journal *Cancer Research*, involves the use of engineered strains of the common *Salmonella* bacterium, the same bacterium that, in its unaltered or wild-type form, can cause food poisoning and septic shock. The altered *Salmonella*, stripped of its pathogenicity, is nonetheless able to target solid tumors in laboratory animals in a fashion similar to the wild-type parent, according to Dr. Pawelek, senior research scientist in dermatology and a lecturer in pharmacology.

The view inside a melanoma tumor, as seen through the electron microscope. A tumor-bearing mouse was injected with Salmonella. *After 24 hours the bacteria were located within the tumor, where they had multiplied.* Salmonella *were found both inside and outside the melanoma cell. Also seen are melanosomes, pigment-laden granules characteristic of melanoma cells.*

ELECTRON MICROGRAPH ACHIEVED BY [illegible]

JAMES PLATT

The three inventors of the engineered Salmonella *vector, from left: K. Brooks Low, Ph.D.; David Bermudes, Ph.D.; and John M. Pawelek, Ph.D.*

"In fact," he says, "we can now significantly prolong the life of mice with melanoma by injecting them with our attenuated bacteria. Although as few as 10 wild-type *Salmonella* are sufficient to kill a mouse, we can inject 10 million cells of our attenuated strains and the mice show no symptoms of infection. After the *Salmonella* are introduced into the mouse bloodstream, they seek out tumors, multiply selectively there in great numbers, and—by mechanisms yet to be unraveled—dramatically slow the rate of tumor growth and prolong life. Furthermore, because the bacteria multiply within the tumor itself, anti-tumor genes that we introduce genetically into the bacteria also are multiplied."

The use of engineered *Salmonella*, says gene therapist Albert B. Deisseroth, M.D., Ph.D., chief of the section of medical oncology and associate director of the Yale Cancer Center, "could represent a powerful new approach to cancer therapy. They have genetically transformed a pathogenic bacterium into one that is safe in laboratory animals, yet still retains its tumor-targeting properties."

Dr. Pawelek, a cancer biologist who studies melanoma; Dr. Bermudes, a parasitologist; and Dr. Low, a bacterial geneticist and professor of research in therapeutic radiology, began collaborating in late 1992 on this project when a University of Massachusetts colleague introduced Dr. Pawelek to Dr. Bermudes, who was then a Yale associate research scientist working only three floors above him in the Infectious Diseases Section of Internal Medicine. Dr. Bermudes became interested in Dr. Pawelek's views on an old theory on how metastatic cancer cells seem to behave like white blood cells as they spread through the body, and encouraged Dr. Pawelek to pursue the theory experimentally.

After a few weeks Dr. Bermudes returned to Dr. Pawelek with an idea for a new type of therapy: the use of white-blood-cell-specific parasites to seek out cancer cells. They tested several parasites for their ability to infect human melanoma cells in culture, and soon settled on further work with *Salmonella*.

Approached because of his expertise in bacterial genetics, Dr. Low was supportive and also favored testing the potential of *Salmonella* in this way. Within weeks, Dr. Pawelek began a sabbatical in Dr. Low's lab, where the trio pursued the development of safe *Salmonella* as an anti-cancer vector. A few months later they obtained their first laboratory animal data, and Terrence W. Doyle, Ph.D., vice president for research and development at Vion, became interested in the Yale-developed technology. Vion entered into a license agreement with Yale in December 1995, assisted with the patent filing and employed Dr. Bermudes as associate director of biology in September 1995. Vion has also supported this and other research at Yale through grants.

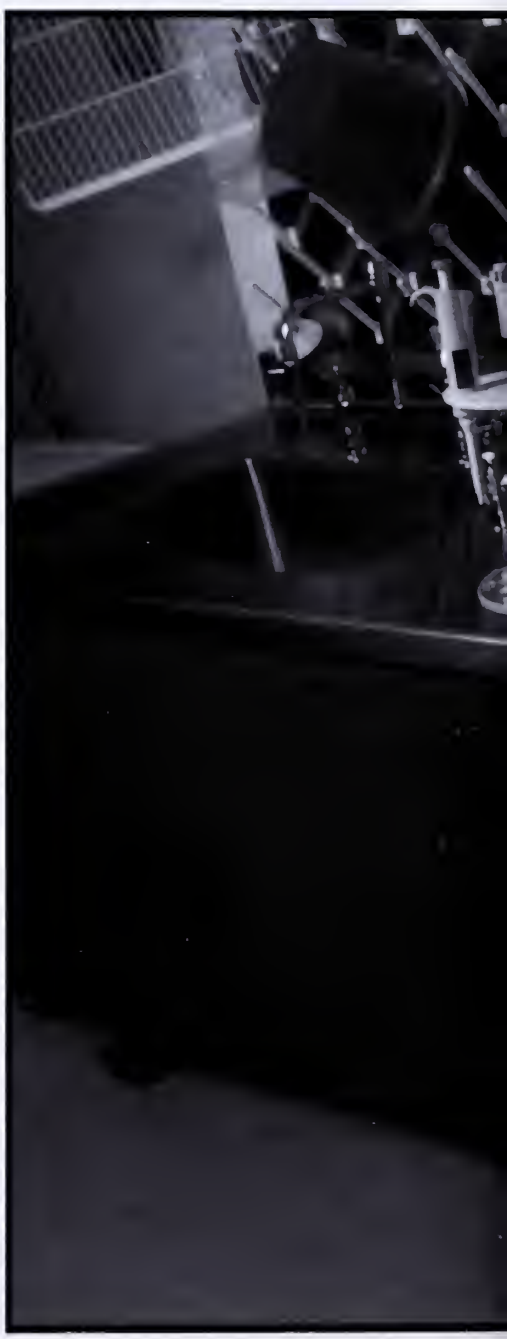
"We are obviously most excited about the potential use of this technology for human cancer therapy," Dr. Pawelek says. "We've made the *Salmonella* both safe and effective for laboratory animals, and now the challenge is to do the same for humans. The safety issue seems under control, and the potential effectiveness seems highly promising."

David W. Barry

Leader of the team that discovered AZT, a former Burroughs Wellcome executive strikes out on his own in pursuit of new anti-viral treatments.

By Terrance Noland

Photographs by Corey Lowenstein



Early in his career as a physician-scientist, David W. Barry, M.D. '69, H.S. '69-72, survived two close calls with tropical viruses. In the first, he was exposed to the African arbovirus Germiston, a strain of bunyamwera, and briefly lapsed into a coma. A week later, he returned to work. In the second, two of his colleagues were infected by the virus that causes deadly Lassa fever. One colleague died, but doctors saved the other with serum from the blood of a nurse who had survived the disease in Africa.

For Dr. Barry, his co-worker's recovery was a revelation. "It was," he says today, "a very tangible demonstration that viral infections could be treated. Back in those days, people looked at serious virus infections a lot like we look at metastatic cancer now. They just sort of gave up."

That attitude has changed with advances in research and drug development over the past three decades. In fact, Dr. Barry, 54, has made a career—and now a business—of developing treatments for viruses once thought untreatable. Consider his track record. At Burroughs Wellcome, where he eventually headed worldwide research and development for British parent Wellcome PLC, he developed the herpes drug acyclovir, the first blockbuster anti-viral. He also led the team that discovered AZT, the first treatment for HIV. Now chairman and CEO of Triangle Pharmaceuticals Inc., a Durham, N.C.-based company he started two years ago, he is developing a stable of promising anti-cancer and anti-viral drugs, including five for HIV.

"Even as a young resident it was clear he had the potential to make a contribution to society. And he has done that," says Yale professor of

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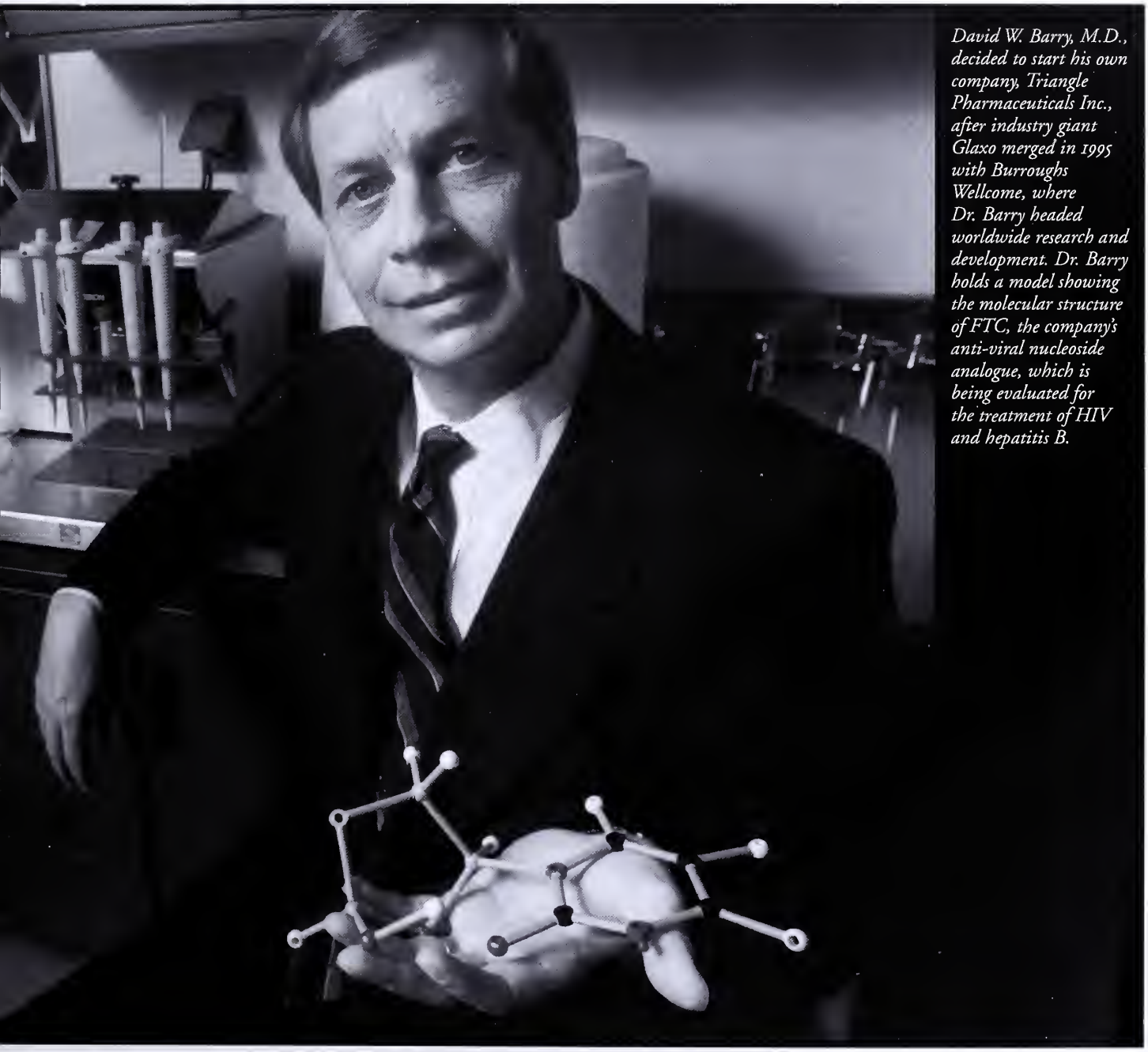
Terrance Noland is managing editor of Business North Carolina *magazine in Charlotte.*

medicine Vincent A. Andriole, M.D. '57, Dr. Barry's attending physician during his internship and residency at Yale-New Haven Hospital. Dr. Barry graduated from the School of Medicine in 1969 and from Yale College in 1965.

Perhaps better than anyone, Dr. Barry has mastered the blending of benevolence with business in the field of drug development. From the start of his career, he was attracted to what he calls the "tough nuts to crack" in illnesses. "I just wasn't interested in drugs that treat trivial diseases, even though that's where the biggest markets were at the time." Dr. Barry helped prove more consequential drugs could be lucrative, too. Acyclovir's sales reached as high as $1.3 billion a year, and AZT's profits spurred many other drug companies to develop their own HIV treatments. "Now it's very clear that in those areas where there is the biggest human need, there's likely to be the biggest return on investment. If you can find a treatment for cancer, you will make money. It's only fairly recently that it has coincided."

His new company is a perfect example. Though Triangle is still in its infancy and won't have a product on the market for at least two years, Dr. Barry has managed to raise $98 million in public and private



David W. Barry, M.D., decided to start his own company, Triangle Pharmaceuticals Inc., after industry giant Glaxo merged in 1995 with Burroughs Wellcome, where Dr. Barry headed worldwide research and development. Dr. Barry holds a model showing the molecular structure of FTC, the company's anti-viral nucleoside analogue, which is being evaluated for the treatment of HIV and hepatitis B.

capital. One reason? The products in its pipeline. They have shown potential against such serious diseases as HIV, herpes, hepatitis B, and lung and brain cancer—all lucrative markets for drug development.

There's another reason investors have been keen on Triangle. Dr. Barry has assembled a remarkable team. His 43-person staff includes several key players who helped him build Wellcome into an anti-viral powerhouse. Among them: Phil Furman, Ph.D., one of Dr. Barry's four AZT co-inventors; Nick Ellis, Ph.D., former AZT global brand director; and Franck Rousseau, M.D., former director of infectious diseases and HIV clinical research at Wellcome France.

At Wellcome, Dr. Barry had a reputation as an innovative and strong-willed leader who wasn't afraid to butt heads with other executives. He got away with it because of the results he delivered. His group's anti-viral work helped turn the company into a drug powerhouse—something he's not shy about pointing out. Today, no one in the pharmaceutical industry can claim a longer track record in AIDS drug development. "Hands down," says David Molowa, a biotech analyst with Bear, Stearns & Co. in New York, "he's Mr. HIV."

With much of the same team in place at Triangle, Dr. Barry is ready to repeat history. "David is the kind of guy who simply succeeds," says fellow Yale alumnus Joseph S. Pagano, M.D. '57, a friend and the director of the University of North Carolina's cancer center in nearby Chapel Hill. "He is a very canny man."

As CEO, Dr. Barry assembled a team of top researchers from his group at Burroughs Wellcome, among them Phil Furman, Ph.D., one of the four co-inventors of AZT. He also recruited Chris A. Rallis, in background, to be Triangle's vice president for business development and its general counsel and secretary.

"QUADRUPLE A"

Initially, Dr. Barry's interest in medicine was sparked by his frequent bouts of illness as child. Growing up in the mill town of Nashua in southern New Hampshire, he developed rheumatic fever at age 6. That was followed by a case of scarlet fever.

As an undergraduate, he attended Yale College. He majored in French literature but took several science classes, including organic chemistry and advanced biology. "They seemed interesting and I did well in them" he recalls. After graduating magna cum laude, he chose medicine over literature for graduate studies. "I thought I'd be a better doctor than a writer" he quips.

Dr. Barry credits the School of Medicine's thesis requirement with "getting me set off in my career in science and virology." His topic? How quickly certain viral vaccines protect experimental animals from infection.

When he graduated from medical school in 1969, he took his internship and residency at Yale-New Haven Hospital, specializing in internal medicine. There he continued his virology research, working with renowned Yale scientist Gueh-Djen Edith Hsiung, Ph.D., now professor emeritus of laboratory medicine. They were testing the drug IdUrd, a herpes eye-infection treatment developed by Yale professor emeritus William Prusoff, Ph.D., to see if it worked against brain infections.

"It subsequently turned out not to work," Dr. Barry says. "But it was a tremendous learning experience to be at the forefront of a new therapeutic area. Until that time, most people thought viruses were untreatable. And Yale was the place that thought, 'No, they probably are treatable.' And that was a tremendous help to me. By the time I left residency, I had been exposed to the best of virology in America and probably the world."

At Yale, Barry also got interested in clinical work through his exposure

to two top infectious-disease clinicians, Dr. Andriole and Elisha Atkins, M.D., professor emeritus of medicine. Dr. Andriole recalls Barry as an "outstanding resident. He was very bright and worked very hard." He also remembers his intensity: "Quadruple A personality. He always was that way." Dr. Andriole used to get him to lighten up some by cracking jokes. "There were times when I could get him to laugh, and his laugh was a small smile on his face. One side of his mouth would go up a little higher than the other. When I saw that, I knew I had gotten him to relax a little bit."

David W. Barry, M.D.

Chairman and chief executive officer, Triangle Pharmaceuticals, Durham, N.C.

Yale College, Class of 1965

Yale School of Medicine, Class of 1969

Intern and resident, Yale-New Haven Hospital, 1969-72

Married to Gracia Chin Barry (Mount Holyoke '66); father of two adult children

Avid fly fisherman and quail hunter, owns two English pointers

Member Yale School of Medicine Dean's Advisory Council since 1988

FROM THE FDA TO WELLCOME

Dr. Barry considered doing postdoctoral work in Dr. Andriole's lab, but when he finished his residency in 1972, the Vietnam War was still raging. "My brother had just come back from Vietnam and said it really wasn't a great place to be," he says. "So I was looking for alternatives." He found one. He joined the Food and Drug Administration's Bureau of Biologics. That fulfilled his draft requirement. The bureau was in need of an expert on yellow fever, and Dr. Barry had studied the disease for his thesis. The next year, he became deputy director of the bureau's virology division.

But Dr. Barry's career there faltered in 1976, after leading the FDA's role in a swine-flu immunization program conducted by the Centers for Disease Control and Prevention. When the vaccine caused neurological damage in some people, Dr. Barry saw the handwriting on the wall. "They didn't throw me out, but it was clear my chances for promotion were limited."

In 1977 he joined Burroughs Wellcome, based in Research Triangle Park, N.C. A year later he was made head of clinical investigation. At the time, the company had a herpes drug in early pre-clinical stages. One of his first tasks was to develop it. That drug was acyclovir, the hugely successful anti-viral agent.

In 1983, after becoming head of the virology department, he led Burroughs Wellcome's push into finding an AIDS treatment. At the time, few other drug companies were interested in pursuing the market. "Nobody thought anybody would make any money on it whatsoever," Dr. Barry says. "When we started, it was a relatively rare disease affecting a disenfranchised population."

Dr. Barry organized a team that began working with a similar retrovirus that grew in mice. They began testing compounds against it. The breakthrough came in November 1984. A Burroughs Wellcome scientist came to Dr. Barry's office with news: The compound she was testing had eliminated the virus in her petri dishes. It was AZT, a compound made from herring sperm that Burroughs Wellcome had first tried against bacterial infections. At first the researcher couldn't believe her eyes. "She said, 'Maybe I forgot to put the virus in it,' " Dr. Barry recalls. But they repeated the experiment and found the compound worked in even smaller amounts.

Dr. Barry and his staff uncorked a bottle of white wine to celebrate. There was little time to revel. Working closely with the FDA, they raced the drug through the clinical and review stages in only 22 months. They presented their data to the FDA in September 1986 and got approval for AZT's commercial use in March 1987. The team's efforts became a model for fast-track approval of breakthrough treatments for life-threatening diseases.

HUNG IN EFFIGY

Rather than being celebrated, Dr. Barry and his group ran into a storm of controversy at first. At $10,000 a year, the initial price of the drug angered AIDS activists. Dr. Barry, promoted to vice president of research in 1986, was a visible target. When the group Act Up stormed the floor of the New York Stock Exchange in protest in 1989, they hung him in effigy. As AZT's price came down, the controversy faded some. Dr. Barry and the man who led the stock-exchange demonstration, Peter Staley, are now friends and have participated together in case studies of the issue at Harvard Business School.

With the success of acyclovir and AZT, Wellcome's sales swelled. In 1994, Dr. Barry was named director of worldwide research, development and medical affairs. He oversaw 3,200 researchers. Some thought he was on track to become the next CEO.

Dr. Barry sees his new venture as an opportunity "to do the impossible" in the field of drug development. Rather than focus on therapies for common but relatively minor ailments, he says, "I still [want to] cure the incurable diseases."

That all changed in March 1995. That's when British rival Glaxo bought Wellcome, creating Glaxo Wellcome. Glaxo had its own research czar, and Dr. Barry was offered a secondary position. He turned it down, taking a sizeable retirement package instead. "Wellcome had a way of thinking that I liked," he told *Business North Carolina* magazine last year. "It was always trying to do the impossible, to handle the most difficult diseases in the world. Glaxo was different. They were focused on certain areas that were less life-threatening, where they produced incremental medical improvements and significant financial returns. I still wanted to go and cure the incurable diseases."

Using venture capital and money from his separation package, Dr. Barry started Triangle in July 1995. With a steady stream of employees leaving Glaxo Wellcome after the merger, he had a deep talent pool to choose from in staffing his company. His first 12 employees were all former Wellcome people. Last November, he took the company public. Since then, the stock price has doubled from $10 to $20 per share in late September. (Dr. Barry's share of the company, 6.5 percent, is worth about $20 million.)

Dr. Barry is aiming to run Triangle as a full-fledged pharmaceutical company, offering a diversified slate of products that it will develop and market itself. That's unlike many biotech startups, often built around one promising compound. It's an ambitious goal for such a small company, but Dr. Barry is counting on finding ways to streamline operations, such as contracting out manufacturing and some clinical work.

The company will also save time and money by bypassing the inventing stage. Instead, it will acquire compounds. This summer, for instance, Triangle beefed up its stable of products by buying Avid Corp., a small Philadelphia drug-research company. The main draw was rights to a protease-inhibitor HIV drug Avid has had in early-stage clinical trials.

That gives Triangle eight products. Its furthest one along is the HIV drug MKC-442, a nonnucleoside reverse transcriptase inhibitor. "It inhibits the key enzyme of the virus, but chemically is different from things like AZT and 3TC." Two other HIV drugs, CS-92, similar to AZT, and FTC, also a nucleoside analogue, are scheduled to begin clinical trials this year.

MANY LINES OF ATTACK

The reason Dr. Barry has so many HIV treatments in development is that he doubts any one drug will ever conquer the disease. At Burroughs Wellcome in the early 1990s, he was one of the early proponents of combination therapy, in which two or three drugs are given at a time and new ones are rotated in as soon as patients develop resistance. That is now generally considered the best way to treat HIV.

Even with 11 HIV drugs on the market, there will be a need for many more, Dr. Barry says. "Because they're used in combination and because each one of the drugs has some disadvantage—either toxicity, intolerance, efficacy, drug resistance, drug-drug interactions—there's plenty of room for improvement."

For example, he is hoping his MKC-442 won't cause the kind of rashes common with similar treatments. Early tests in patients have been promising, both in terms of effectiveness and low rates of rashes. "We know that the dose we tested so far, when used alone, will make the virus fall immediately 90 percent or more in about 80 percent of the patients," Dr. Barry says. Starting later this year, Triangle plans to test the compound to see how well it works with other drugs. If that goes well, Dr. Barry expects to get approval by late 1999, at the earliest.

Also scheduled for clinical trials this year is Triangle's alanosine, a brain- and lung-cancer drug. The VA Connecticut Healthcare System's West Haven campus is slated to take part in that trial. Dr. Barry says he'd like to find more anti-cancer agents to develop but is interested only in those that are selective—that will harm the tumor but not the body. "Anti-cancer therapy is just starting to get into that area," he says. "I see that we are starting to have enough science, a lot of it generated at Yale, to show that it is possible to take advantage of subtle differences in the way tumors metabolize things and normal cells do. Metastatic cancer in the future is going to be less and less a certain and rapid death sentence."

Many of Triangle's compounds were discovered by scientists at Emory University and the University of California at San Diego, which now have royalty agreements with the company. Dr. Barry thinks such links are critical. "We provide—that is, industry and academia—two different and needed aspects. You need the research, which universities provide, to really be able to under-stand the basic mechanisms of what's wrong. And once you've got a tentative idea of how to fix it, you really need the industrial partner to bring the scientific concept to a reality."

Their relationship, he says, "should be as close as possible." He sees great value in private companies sponsoring university research. And though he has heard the arguments about potential conflicts of interest, he doubts such cooperation makes studies any less objective. "Academic people are very, very conscious of their need to be precise."

He has also heard the criticism in recent years that drug companies, particularly those with HIV treatments, are price-gouging patients. The cost is indeed high. Most HIV combination regimens run about $13,000 to $15,000 a year. But Dr. Barry defends the high cost. For one thing, the drugs are expensive to make. For another, their effectiveness has brought down hospitalization costs considerably.

Besides, he argues, profits are what push companies to develop new treatments. "Profit motive is clearly the reason there are now 11 drugs on the market and why combination therapy is making such a great improvement in people's lives. You're changing the whole face of the disease from being rapidly fatal to one where we're talking realistically about decades of health. And all of that is based on companies getting involved and making profits. That's a pretty straightforward equation."

"You need the research, which universities provide, to really be able to understand the basic mechanisms of what's wrong. And once you've got a tentative idea of how to fix it, you really need the industrial partner to bring the scientific concept to a reality."

Companies are also attracted to the HIV market by its growth. In 1995 the market was about $250 million worldwide. Last year it quadrupled to just over $1 billion. This year it could hit $2 billion. The main reason: Increased effectiveness and reduced side-effects have caused more people to seek treatment. Little more than a year ago, 20 percent of those infected were getting treated. Now it's 30 percent to 40 percent, Dr. Barry says.

So what can we expect to see next in the war on AIDS? "The biggest issue now is thinking about the long-term management of AIDS. We've got short-term, year-level management under our belts pretty well, but now, more and more, there will be new strategies to approach decades-long management. It may be using drugs that counteract the resistance of other drugs. It may be treating more aggressively or slightly less aggressively early on. It's hard to say. But that will be the talk in AIDS over the next couple of years."

And it's safe to say, David Barry will be doing much of the talking. **YM**

Notes from a Navajo winter

In the sparsely populated canyon country of northeastern Arizona, a medical student makes discoveries about life on a different scale (and finds a little piece of New Haven).

By Gregory Raskin

It's not that you can't get there from here. You can, but it's not easy.

It is entirely possible to take a commercial flight to the edges of the Navajo Nation—a Native American reservation approximately the size of West Virginia that encompasses parts of Utah, Arizona and New Mexico. This positions you more than 100 miles from Chinle, Ariz., your final destination, which falls smack dab in the center of the reservation. From there, you can take a bus (one trip daily, approximate time to Chinle: four hours) or rent a car.

If you take the bus, which doesn't run on weekends, you're pretty much stranded when you arrive, because Chinle [pronounced CHIN-lee] lies in the absolute middle of nowhere. In fact, it's farther than that; go to the middle of nowhere, take a right, and drive for another hour—now you're in Chinle. Of course, when you're 24 years old renting a car is not an option, so if you're my age and want to get there from here you have to pack up your own car, get some good music and hit the road. This was my plan exactly as I set out last New Year's Day to begin a month-long elective in primary care at the Indian Health Service (IHS) hospital in Chinle.

After spending six straight years in New Haven (I was an undergraduate just down the road at Yale College), I knew by the middle of the second year of medical school that I would be aching for a break come winter of 1997. I thought I would go somewhere warm after a brutal winter last year. Also, I calculated that by placing myself in Arizona in March I would be poised to see some Grapefruit League spring training games. Baseball and sun in wintertime, plus a great experience in rural medicine—it seemed perfect. Alas, all the spots in March were filled when I inquired the previous year, so I settled for a baseball-free January slot in Chinle, a small town at nearly 6,000 feet in elevation. No spring training, no warm weather, but definitely a whole different ballgame.

By the time I finally left for this out-of-New-Haven experience in the middle of my third year, I was raring to go. I was in search of many answers. What was the reservation like, and how was it different from what I had known? Could I retain my (admittedly tenuous) sanity so far from the frenzied confines of the Northeast? What would it be like to drive thousands of miles alone, across plains, deserts and the mighty Mississippi? How long could I go without a bagel? With these questions in mind, along with the distant exhortations of Horace Greeley ringing in my ear, this young man went west.

Left: The snow-dusted Canyon de Chelly is only a few miles from the center of Chinle, Ariz., where the author found a new perspective on medicine.

The journey started with questions about culture, and one imponderable: How long could I go without a bagel?

PETER CASOLINO

Gregory Raskin is a fourth-year medical student at Yale.

The Navajo Nation reservation is entirely open range: cows and horses and sheep graze anywhere they please. What this means for Navajo ranchers is that they must brand their livestock, herd them communally, and then sort them from time to time when animals are to be sold, shorn or slaughtered. What this means to the intrepid traveler is that one must be careful while driving on the reservation because it is extremely common to see animals walking on the road. Who wins in a battle between my little red Honda Civic, barreling 70 miles an hour up Arizona Route 191, and a half-ton cow chewing its cud on the double yellow line? No one.

And the open range does not spare the towns on the reservation, which means that finding a parking space at The Silver Coin launderette involves avoiding the horses strolling casually across the parking lot. Coupled with the innumerable stray dogs that roam the town in search of food or perhaps something to do, Chinle can seem like one part zoo, one part obstacle course. I'm convinced that—assuming this nickname has not been taken already by another city or town—Chinle could be known as The Stray Dog Capital of the World. From any random vantage point in the parking lot of the local supermarket it was usually possible to spot at least a couple of ownerless mutts; my personal record was six. Of course, these are country dogs—they couldn't sniff in New Haven.

Aside from the launderette, Chinle contains a supermarket, a post office, three fast-food restaurants, a few gas stations, several other stores and the Chinle Comprehensive Healthcare Facility, where I worked. A road sign at the city limits displays a transliterated Navajo greeting: *Yá'át'ééh*. The back of the sign says *Hágoonee'*, Navajo for goodbye.

During my time in Chinle I lived in a small house adjacent to the hospital with a physical therapy student from Virginia. The house and the hospital sit on a plateau above the main road. Out the back window of the house lies a plain on which horses and cows graze, and beyond looms a mesa—snow-covered during my month-long stay. Though the street directly in front of our house was paved, it quickly turned to ice and mud a few hundred feet away. Driving home always presented the intriguing possibility of getting stuck.

The hospital itself is a relatively modern facility in the process of being outfitted with a new computer system. I spent mornings in the outpatient clinic, seeing both children and adults for urgent visits and follow-up appointments. Sore throats and back pain are as common out there as at Yale-New Haven. Dozens of

The commercial strip running through the center of Chinle is *the center of Chinle. A few fast-food restaurants, a supermarket and a general store make up the business district, which serves a population spread out over many hundreds of square miles.*

patients are seen each morning and afternoon, some of whom have traveled for more than an hour to come to the clinic.

The other half of my day was usually spent in the emergency room, sewing up lacerations and learning how to cast broken bones. Between patients, I got to know the ER staff fairly well, an interesting mix of Navajo and non-Indian health care workers. The emergency medical technicians are Navajo and provide ambulance transport from the field (for example, from motor vehicle collisions), translation for the non-Navajo-speaking staff (all the physicians in the hospital), and patient screening in the ER. The nurses in the ER are either non-Navajo employees of the National Health Service or Navajo women trained locally. There is an attending physician in the ER at all times—the one with whom I spent most of my time was a former trauma surgeon from Los Angeles who claimed to have "seen everything." Patients who have medical problems too difficult to be handled by the Chinle hospital are sent by helicopter or small plane to larger hospitals in Albuquerque, Phoenix or Denver.

The language barrier was the first of several challenges to medical care that I did not foresee. As mentioned above, English is not the Navajos' first language. The younger generations learn English in school and speak it; the older people do not and require a translator. But the translator has to turn English medical terms into a language with literally thousands upon thousands of verb conjugations, a language that even declines nouns. During World War II, Navajo men drafted into the Army were employed to transmit radio messages in the Pacific Theater. The language is so complex that it served as a code the Japanese were never able to crack. In New Haven many of my patients speak Spanish, a language in which I have at least mediocre proficiency; I can usually be sure to get my point across. On the reservation I had to have faith in my translators.

Coupled with the language gap was a different view of physiology held by the Navajo people I met. On more than one occasion, I provided the second opinion after a patient had already visited a traditional medicine man. (Bizarrely, I treated a medicine man in the ER once, the entire time managing to stifle my urge to utter the line "Medicine Man, heal thyself.") As a former molecular biophysics and biochemistry major in college and a man who lists magnetic resonance angiography and spiral computed tomography as two of his favorite things in the world, traditional Navajo beliefs about the workings of the human body hinging on a sense of balance and beauty in the universe seemed as foreign to me as their language. Consequently, I often was uncertain how my patients understood my questions, explanations and advice.

Patient compliance is clearly a challenge for the IHS, not only for cultural and linguistic reasons, but also for physical ones. While some Navajos live in the town near the hospital, many more have homes far from the town, miles even from a paved road. Addresses are listed in the medical records with descriptions like "Six miles NW of Antelope House Overlook, left side of road"or, my favorite, "29 miles NW of Piñon Trading Post, blue hogan with dirt roof, right side of road." It's not as though I could call my patients to see if they were OK or were taking their medicine—most don't have telephones.

In bad weather, 29 miles of dirt road equals insurmountable mud and ice. Despite a patient's best intentions, he or she will not be able to make his hypertension follow-up appointment, perhaps for a week.

GREGORY RASKIN

GREGORY RASKIN

The IHS hospital in Chinle, better known as the Chinle Comprehensive Health Care Facility. A place to learn about lacerations, broken bones and the Navajo approach to life and health.

In inclement weather the clinic can be nearly empty. When the roads finally clear up, the waiting room packs wall to wall. During one particularly bad snowstorm while I was there, the National Guard was called in to help people get out of their homes.

Learning the ways of the whites has had an impact on the Navajos' health in detrimental as well as positive ways. While access to medical care and technology undoubtedly has been beneficial, the Navajos seem to have fallen prey to some seductive yet decadent parts of our society. These days, because of their diet and lifestyle, the Navajo have one of the country's highest incidences of diabetes, a disease all but absent from the reservation 60 years ago. In Chinle all three restaurants serve fast food, and there is probably more canned meat in aisle six of the Chinle supermarket than in the entire state of Connecticut. Canned meat doesn't need refrigeration, impossible for Navajos without electricity. Although it is illegal to buy, sell or consume alcohol on the reservation, alcoholism is another scourge. The problem is severe enough that the supermarket stocks hairspray, vanilla extract and mouthwash (items containing alcohol) behind a special counter. Purchase of these items requires the blessing of a highly wary store clerk.

Furthermore, the reservation is one of the poorest areas in the country. Unemployment compounds the problems of alcoholism and poor diet of the younger generations and can often lead to depression and despair. But the difference that I found between the poverty on the reservation and the poverty that cripples much of urban America is that the family structures remain intact. In U.S. cities, people who are poor and troubled by alcoholism, drug addiction or psychiatric problems often find themselves out on the street. In the Navajo Nation, large families take care of their own. If a family member ends up battling alcoholism, someone will inevitably come down to the supermarket parking lot, transport the sleeping relative home and tuck him into bed. Somehow it seems to make the poverty—while certainly still a desperate situation—slightly more tolerable, knowing that your family will be there to catch you should you fall.

Another distinctive facet of the Navajo culture is that it is a term of respect to call older people "grandmother" and "grandfather" when you address them. It was proper, then, to "give 500 mg of Tylenol to the grandma in Bed Four." I'm pretty sure that if you addressed my own grandmother in this manner, she would kick you

in the teeth and then instruct you to take your own damn Tylenol.

It is well known that medical charts are littered with acronyms and condensed wording for common problems. In Chinle, while sore throats are quite prevalent, they have a few problems that I had never before encountered; these problems might just merit their own abbreviations. In one week, I tended to two patients who arrived in the emergency room, one FOH or "Fell Off Horse." I also saw a 75-year-old grandmother who came in BKWTS, which you might think rather unlikely, given her advanced age, provided you knew that BKWTS stood for "Broke Knee While Tending Sheep."Apparently she slipped on the ice, fell on a rock, and fractured her patella, an injury that I could not see happening to my aforementioned, Reebok-wearing, contract-bridge-playing grandma in Livingston, N.J.

Before I left for the trip, I was under the impression that the landscape out west would be beautiful. Driving through Arizona along Interstate 40, I was not so sure. The scenery is indisputably impressive. Snow-covered red mesas jut abruptly into the skyline along the infinite horizon, and bizarre rock formations—Rough Rock and Round Rock are two towns north of Chinle, while Window Rock is the Navajo Nation capital—have been tortured from the earth by time, rivers and wind. The clean air and blue sky invariably produce a sense of majesty in anyone who has lived in a city penned in by soot, tenements and highway interchanges. But I found that the landscape was too vast, too intimidating to be beautiful. Driving on endless roads (Chinle is over an hour's drive north of I-40) in my compact car, I felt alienated, as though I were merely an afterthought to nature.

I think this gave me a little sense of the way the Navajo language and culture have developed, which also points to the problems of providing medical care for this population. My life—with its landscape of skyscrapers, indoor parking lots and domed sports arenas, its sounds of sirens and jackhammers, its smells of gasoline and Dunkin' Donuts—seems as different from a Navajo's life as English does from the Navajo language.

In the Navajo language, nature reigns supreme. It does not make sense to say in Navajo that "the boy drank the water,"or even "the water was drunk by the boy." Instead, the closest English translation to the act of drinking water is "the water let the boy drink it." In my tiny car, with my little car radio blaring out tunes that could seem deafening in the driver's seat but wouldn't have carried for 100 yards into the vast plains, I felt like the road (not a natural phenomenon, to be sure, but representative) let me drive on it.

By the end of the trip, I developed an appreciation for the complexities of the Navajo Nation and the difficulty of providing health care across long distances and varied cultures. To be sure, understanding the problem is but the first step to creating a solution. I ruminated on this during the long drive home, and can claim not to have been bored in the least despite the thousands of miles.

Of the many questions I had set out to answer, there was one I couldn't. Isolated as it is, the Chinle supermarket's frozen-food section is copiously stocked with Lender's bagels (one of New Haven's many contributions to the world). My bagel-deprivation study thus will have to wait until I make my way to a more remote corner of the globe.

I wonder, could I drive to Nepal? **YM**

PETER CASOLINO

Paul Muni starred as the medical-scientist-hero in the Academy Award-winning The Story of Louis Pasteur.

Medicine at the movies

Hollywood's fascination with the healing profession is fertile ground for a series of history of medicine seminars.

By Marc Wortman

With horrific images of a mental institution, The Snake Pit *represents one of the first attacks on the public image of the medical community.*

MUSEUM OF MODERN ART/20TH CENTURY-FOX

In the climactic scenes of the 1931 film *Arrowsmith*, the driven medical researcher-hero, played by Ronald Coleman, is testing his new and promising plague vaccine in a disease-ridden tropical village. Hewing to a Hollywood version of the scientific method, he injects half the villagers with the vaccine while the other half go without. He faces a moral dilemma upon realizing that the vaccine may indeed work. If it does, those who went without could have been saved, but will instead surely die. Torn between his quasi-religious calling of advancing scientific knowledge and his moral imperative as a doctor to save lives, he abandons his experiment and gives the vaccine to all the villagers. Doing so, however, likely ruins his research findings and perhaps his career.

That basic clash of medical cultures—between medicine as rigorous, authoritative and sometimes inhumane science and as personal devotion to saving lives—marks hundreds of films Hollywood has made exploring the role of medicine in American society. *Arrowsmith* is remarkable because it is one of the earliest feature films to portray that conflict so unambiguously. Through the 1950s, whether in the laboratory or the

MUSEUM OF MODERN ART/UNITED ARTISTS

clinic, medicine as shown on the silver screen was almost always a saintly calling. Physicians and scientists were carrying on a heroic battle against disease on behalf of people from all walks of life. Then a gradual but profound shift took place. Along with the scientific power of medicine and the social authority of its practitioners, Hollywood showed there also came potential for great corruption and a chilling loss of humanity among physicians. "Now," says John Harley Warner, Ph.D., professor of the history of medicine, "you walk into any video store and you'll find scores of villain doctors. There's the doctor-experimenter—in a nonconsensual way—the doctor-slasher, the doctor-patient-abuser."

That historical transformation of the image of the physician is just one aspect of the representation of medicine in film covered by Dr. Warner and Charles Andrew Morgan III, M.D., associate professor of psychiatry, in a seminar they taught together this year to some two dozen medical students, residents and fellows, on *Medicine at the Movies: Historical Perspectives on Film and the Culture of American Medicine.* (They expect to repeat the course soon.)

It wasn't just a chance for participants to kick back and watch movies, but an opportunity to explore their own place in the wider culture. "Popular perceptions of the profession as a whole are profoundly influenced by Hollywood," says Dr. Warner. In watching films ranging from Thomas Edison's pioneering public health films on tuberculosis, such as *Hope* (1912), to medical-scientist-as-hero films like *The Story of Louis Pasteur* (1936), to more recent versions of the potential abuses of medical care, including *One Flew Over the Cuckoo's Nest* (1975), the Yale students had a chance to reflect on how their chosen field is viewed in the popular eye. "Accuracy isn't the issue," says Dr. Warner. "You might want to say, 'That's not what we're like,' but the depictions are very powerful."

Viewing the representation of medicine in film gave the students an opportunity to reflect on how the public perceives their powers and how much those powers grow out of real capabilities. "Where does the physician's authority come from?" Dr. Warner wanted students to ask. "It's too easy to fall back solely on the belief in the power to heal. As these films show, it's as much a function of changes in culture. It's not only in medicine. It's out there in American culture." **YM**

Thomas Edison's Motion Picture Studio released several dramatic films aimed at improving public health. Here, the director instructs the actors in Hope, *released in 1912, one of the first films to present an image of the physician.*

In Arrowsmith, *Ronald Coleman plays the researcher-physician who faces the conflict between the need for scientific rigor in his experiments and the desire to provide medical caregiving.*

MUST-SEE MOVIES FOR PHYSICIANS

Arrowsmith (1931)
Men in White (1934)
The Story of Louis Pasteur (1936)
Dr. Ehrlich's Magic Bullet (1940)
Madame Curie (1943)
Sister Kenny (1946)
The Snake Pit (1948)
The Magnificent Obsession (1954)
The Hospital (1971)
Coma (1978)

THE B LIST

Doctor X (1932)
The Body Snatcher (1945)
Suddenly Last Summer (1959)
Freud (1962)
M*A*S*H (1970)
The Elephant Man (1980)
Zelig (1983)
The Doctor and the Devils (1985)
Flatliners (1990)
Lorenzo's Oil (1992)

Source: John Harley Warner, Ph.D.

Dr. Kessler comes to New Haven

Trading Washington for the Ivy League, the medical school's 15th dean gets his bearings and begins to fix his gaze "squarely ahead."

MICHAEL MARSLAND

Above: Dean David A. Kessler, M.D., unpacks books in his office in Sterling Hall of Medicine in early July.

MICHAEL MARSLAND

Right: The dean meets with college students visiting Yale for a program organized by the medical school's Office of Multicultual Affairs.

The first day was a whirlwind tour of sorts, down the hallways of Sterling Hall of Medicine and beyond, across Cedar Street and into laboratories and departmental offices, even the coffee nook off the rotunda at the School of Medicine's main entrance.

David A. Kessler, M.D., Yale's 15th dean of medicine, took office July 1 and spent his first days introducing himself to students, faculty and staff. "It's been two weeks of getting to know everybody," he said in mid-July, unpacking boxes in the stark white surroundings of his freshly painted office on the second floor of Sterling's C-Wing. The shelves held one book (*Principles and Practice of Oncology*, 5th edition), the desk empty except for a computer equipped with headset and microphone. "You can tell by looking around," he said smiling, "that I've spent very little time in this office."

Accompanying Dr. Kessler on his impromptu rounds were two newly appointed senior administrators: Irwin M. Birnbaum, who served for 15 years as chief financial officer at Montefiore Medical Center in New York and became the medical school's first chief operating officer on July 1; and Ruth J. Katz, a public health expert and attorney with extensive federal government experience, who was named assistant dean for administration. (See Faculty News, **Page 37**).

"We're enormously fortunate to have both of them with us," said Dr. Kessler, who stepped down as Food and Drug Administration commissioner in February after six years in office. He has remained in the public eye as co-chairman of a congressional panel that evaluated the proposed $368.5 billion tobacco settlement announced in June.

"By joining forces with the existing team here," he said, "especially deputy deans Carolyn Slayman and Joseph Warshaw, we're beginning to understand the breadth and scope of this institution and the challenges, and to fix our gaze squarely ahead."

Dr. Kessler said he planned to discuss his outlook on the school and priorities for his deanship in an interview later this fall. He briefly described the challenges ahead as falling in the categories "fiscal, facilities and scientific—building on the extremely strong basic science tradition and translating those discoveries into the clinic."

Regarding finances, "There are significant infrastructure issues that absolutely have to be addressed," he added. The school also is sorting out a shortfall in clinical revenues related to the introduction of a new computer billing system in 1996 and to diminished reimbursement under managed care.

In the first weeks of his five-year term, however, Dr. Kessler was focused on students and faculty, attending a lunch one day with a group of minority medical and public health students, and meeting the next with department chairs and faculty. The last week in July, on a trip organized by Ms. Katz, a group of 10 students accompanied him to Washington as he testified before Congress on the proposed tobacco settlement. "It was incredible," third-year medical student Gregory Raskin said of the experience. (See Student News, **Page 42**) (Coincidentally, Dr. Kessler's co-chair on the tobacco panel, former Surgeon General C. Everett Koop, M.D., began a one-year term as a visiting professor in Yale's Department of Epidemiology and Public Health, also on July 1.)

Continued on Page 30

Lyme researchers roll out new tool against ticks

Ticks beware: That gentle, doe-eyed creature you planned to feast upon may be hosting your last meal.

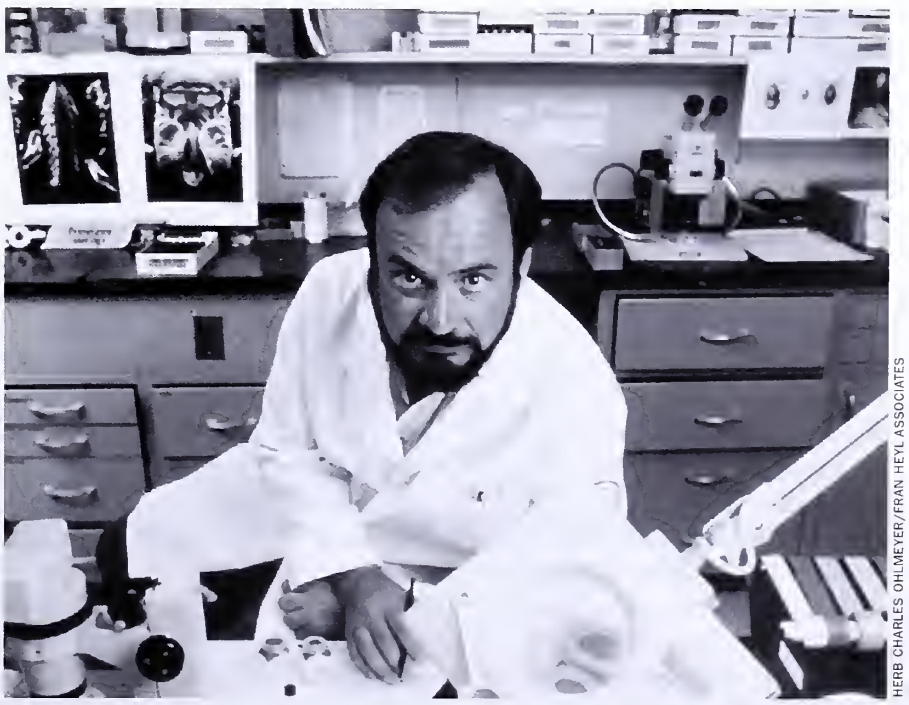
Lyme disease researchers in five states will use deer as a magnet for ticks as part of a $2 million experiment that has the potential to dramatically reduce or even eliminate new cases of Lyme disease. Last year, physicians across the United States reported more than 18,000 new cases of the debilitating affliction, which causes joint pain and can damage the heart and nervous system. Most cases of Lyme disease are treated successfully with antibiotics.

The five-year program, sponsored by the U.S. Department of Agriculture, targets deer as a critical link in the tick life cycle and subsequent bacterial infection that occurs when the tick takes its blood meal from humans. At specially designed feeding stations in Rhode Island, Connecticut, New York, New Jersey and Maryland, the deer will brush up against paint rollers coated with pesticide, which in turn will kill the ticks that feed on deer.

The results of the program will not be clear until 1999 or 2000, because the deer tick has a two-year life cycle, says Durland Fish, Ph.D., the project coordinator and a research scientist in epidemiology and public health. But, he says, based on a similar program in Texas targeting tick-borne illness among cattle, the potential is enormous. In the Texas study, the tick population dropped by 90 percent.

A Lyme disease vaccine created by Yale medical faculty and developed by SmithKline Beecham Inc. was shown effective in clinical trials earlier this year, as was a separately developed vaccine also tested at Yale. SmithKline submitted its application to the FDA in September.

Michael Fitzsousa



HERB CHARLES OHLMEYER/FRAN HEYL ASSOCIATES

EPH scientist Durland Fish, Ph.D., above, and colleagues in five states are using deer to target Lyme disease-causing ticks.

MICHAEL MARSLAND

During a meeting with administrators this summer, Dr. Kessler talks with Bruce I. McClennan, M.D., professor and chair of diagnostic radiology.

Continued from Page 29

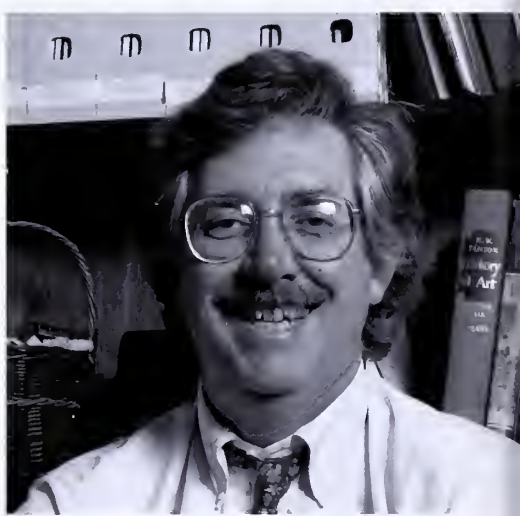
Dr. Kessler said his role as an anti-tobacco advocate is clearly secondary to his responsibilities as dean. (As FDA chief, he succeeded in banning the sale of tobacco to minors and in classifying nicotine as an addictive substance subject to FDA regulation, a policy upheld in federal court in April.) "Issues don't go away overnight," he said, "especially important issues on which one has worked for years, but it is not where I am focused now. My primary focus is being dean here at Yale."

While he vowed to make "no speeches, no pronouncements" during his first month as dean, Dr. Kessler did have occasion to address public health and medical alumni/ae several weeks before arriving, as a speaker at the dedication of new EPH facilities in early June. (See Alumni News, **Page 54**.) There, he spoke of retaining the resolution of youthful idealism and quoted the educator Horace Mann, "who said that you should be ashamed to die until you have won some victory for humanity. He could have been talking about the road that you have chosen."

"I am thrilled," he added, "to be coming to Yale to be part of training of the next generation, who will be able to try and make a difference in people's lives, who know that there are no miracles in the promotion of the public welfare, only hard work and compassion."

Michael Fitzsousa

Yale scientists exploring neurobiology of autism



ROBERT LISAK

Fred R. Volkmar, M.D.

The National Institute of Child Health and Human Development (NICHD) has selected Yale as one of three universities to initiate a major research project on the neurobiology of autism, the most severe developmental disorder of childhood. To conduct this research, the NICHD has awarded $5.3 million to the School of Medicine over the next five years.

Autism, which arises as a result of neurobiological factors, affects the development and behavior of one in 1,000 children. Although the disorder results from some insult to the developing brain, its cause or causes remain unknown. Less information is known about other pervasive developmental disorders, such as Asperger's syndrome, which shares several features with autism.

"We hope that this research will provide greater understanding of autism and also enable us to develop improved treatment," says Fred R. Volkmar, M.D., the Harris Associate Professor of Child Psychiatry, Pediatrics and Psychology, who will direct the research program.

In most cases, infants who are born with this disorder lack the usual disposition to form social relationships. Profound deficits in social interaction and communication are associated with unusual behaviors such as repetitive movements, difficulties in dealing with change, and abnormal responses to the non-social environment.

The new grant builds upon five decades of autism research and treatment within the Yale Child Study Center, according to center Director Donald J. Cohen, M.D. '66, the Irving B. Harris Professor of Child Psychiatry. He says that the project, "the largest research commitment in the history of the field, is truly welcomed by parents and advocates, who appreciate that only through such study can the prognosis of autism really be improved."

Faculty at the Child Study Center will join colleagues at the University of Chicago and University of California at Los Angeles (UCLA) to conduct studies on the molecular and family genetics of autism and its related conditions

and of brain imaging projects. The scientists also will study developmental changes when individuals with autism receive treatment.

"Even though early intervention and detection have improved the outcome, the human and financial costs of autism and related conditions remain very high," says Dr. Volkmar, who will collaborate with Catherine Lord, Ph.D., at the University of Chicago, and Susan Smalley, Ph.D., at UCLA. "Since our research focuses on addressing the neurobiological factors which cause autism and related disorders, we will conduct work that ranges from the level of the gene to the brain and the expression of these conditions behaviorally in individuals."

Researchers will concentrate on four interrelated areas:

Role of genetic factors in autism. Genetic factors play a role in at least some cases of autism. As part of this project, Edwin Cooke, M.D., of the University of Chicago; David L. Pauls, Ph.D., associate professor in the Yale Child Study Center; and Dr. Smalley of UCLA will attempt to identify the gene or genes involved in some cases of autism by studying families in which more than one child has autism or closely related conditions.

Data will be pooled with an international genetic study of autism directed by Professor Michael Rutter of the University of London. Collaborating with him will be several Yale medical professionals, including Domenic V. Cicchetti, Ph.D., senior research scientist in psychiatry and in the Child Study Center; Ami Klin, Ph.D., assistant professor in the Child Study Center; Robert Schultz, Ph.D., assistant professor in the Child Study Center, and Drs. Cohen and Pauls.

Related genetic and psychiatric conditions in family members of persons with autism and Asperger's syndrome, a condition similar to autism. Drs. Pauls and Smalley will assess the relationship of other conditions, such as Tourette's syndrome, obsessive-compulsive disorder and depression, to autism and Asperger's syndrome in patients and family members. Previous research has suggested that family members may be at increased risk for some of these conditions.

Asperger's syndrome, however, seems to be associated with a different developmental profile, including more preserved language skills. Related problems also appear more frequently in family members.

Neuroimaging of brain areas that may be involved in autism. Jennifer Levitt, M.D., (UCLA) and Dr. Schultz hope to identify ways in which the brain processes information differently in individuals with autism and other conditions. They plan to use both structural and functional brain imaging methods to examine anatomical brain differences.

Ways in which the development of individuals with autism develop and change as they are treated. Drs. Lord, Klin, and Volkmar will assess the range of outcomes and patterns of these individuals' developmental course as they relate to intensity of intervention, age at diagnosis and other clinical factors.

Longer steroid treatment helps some spinal patients

A Yale-led, national study of spinal cord injuries has concluded that extending the standard steroid treatment an extra day improves the odds for patients who do not receive medication right away.

Michael B. Bracken, Ph.D., professor of epidemiology and of obstetrics and gynecology, led the scientists and physicians from 16 centers in the National Acute Spinal Cord Injury Study (NASCIS III). They reported that giving the steroid methylprednisolone for 48 hours results in improved function in patients with spinal cord injury—if treatment begins within three to eight hours after injury. Standard treatment is 24 hours.

The study, funded primarily by the National Institute of Neurological Disorders and Stroke (NINDS), and in part by Pharmacia and Upjohn Inc., was published in the May 28 issue of the *Journal of the American Medical Association.*

The study compared three treatments: methylprednisolone given over a 48-hour period; an antioxidant drug, tirilazad mesylate, administered over a 48-hour period; and, as a control, 24-hour treatment with methylprednisolone. Nearly 500 patients were evaluated in emergency rooms in New Haven and throughout the United States

Michael B. Bracken, Ph.D.

and again six weeks and six months later as part of the randomized, controlled trial.

Patients who began treatment three to eight hours after injury showed significantly better long-term recovery if they received methylprednisolone for 48 hours than if they received it for 24 hours, or if they received tirilazad. Patients who were treated within the first three hours after injury, however, showed about the same degree of recovery regardless of which drug they received or how long they received it. Researchers found that patients who received tirilazad three to eight hours after injury developed slightly fewer complications than patients in either methylprednisolone group, but they did not regain as much of their physical ability.

"Based on these results, we recommend that patients receive 24 hours of methylprednisolone if treatment is begun within three hours after injury," says Dr. Bracken, the report's lead author. "If patients cannot be treated within the first three hours, however, they should receive methylprednisolone for 48 hours."

The researchers measured improvements in patients' ability to move, perceive sensation, and take care of themselves without assistance. Approximately 60 percent of patients treated with 48-hour methylprednisolone starting at three to eight hours recovered a substantial degree of independence, compared with nearly 40 percent of those given the standard treatment or tirilazad. Ultimately, recovery also depended upon the extent of the initial injury.

Scientists believe both medications work by interfering with a kind of secondary damage, called lipid peroxidation, that eats away at highly vulnerable cell membranes. They think this secondary damage becomes more difficult to interpret the longer initial treatment is delayed, which may explain why extending methylprednisolone treatment is useful in patients treated three hours or more after injury. While tirilazad and methylprednisolone are both powerful inhibitors of lipid peroxidation, methylprednisolone may inhibit other kinds of secondary damage, such as the release of chemicals that cause inflammation, the researchers say. "Researchers still need to discover if tirilazad given in different doses, and perhaps for a longer period, could be more effective," says Dr. Bracken.

Scientists probe links between PCP, schizophrenia and dopamine

Scientists at the School of Medicine have taken a major step toward understanding cognitive deficits in sufferers of schizophrenia. Their findings were reported in the Aug. 15 issue of the journal *Science*.

Robert H. Roth, Ph.D., professor of psychiatry and pharmacology, led a neuroscience research team that studied the behavior of African green monkeys that were given repeated doses of phencyclidine (PCP), a drug that is often abused by humans. They found that PCP induces similar cognitive dysfunction as that found in patients diagnosed with schizophrenia. The team found the schizophrenia medication clozapine successful in partially reversing the cognitive dysfunction in primates treated with PCP.

"The results of this study open up countless possibilities for future treatment strategies," says Dr. Roth. "It could lead to better drugs for cognitive brain dysfunction and poor response inhibition, which are common symptoms of schizophrenia."

Team members include J. David Jentsch, a graduate student in neurobiology; D. Eugene Redmond Jr., M.D., professor of psychiatry and neurosurgery; John D. Elsworth, Ph.D., research scientist in psychiatry; Kenneth D. Youngren, a graduate student in neuroscience; and Dr. Roth.

"Until now, researchers have used only acute doses of PCP in their studies of behavioral effects brought on by PCP injections into laboratory animals," says Mr. Jentsch, the report's first author. "We used chronic or repeated doses of PCP to more closely parallel the same symptoms of schizophrenia that a PCP abuser develops."

The scientists showed that cognitive deficits are associated with an alteration of the neurotransmitter dopamine, already linked to schizophrenia.

The team found that primates treated with PCP were significantly less successful at retrieving bananas from a transparent box than saline-treated primates, indicating poor response inhibition. The scientists looked for chemical changes in PCP-treated primates by measuring the amounts of dopamine in their brains. "We saw a reduction of dopamine in the dorsolateral prefrontal cortex, the brain area responsible for working memory,

and the prelimbic cortex, a brain section thought to control behavioral inhibition," says Mr. Jentsch. "There is a strong link between the degree of inhibition of dopamine and in the degree of cognitive dysfunction."

When the primates treated with PCP were given the drug clozapine, they showed a marked improvement in the object retrieval task. The results are similar to the effects of clozapine that have been observed in schizophrenic individuals.

Karen Peart

Access to Internet 2 will speed 'Visible Human' collaboration

The Yale Center for Advanced Instructional Media (C/AIM) at the School of Medicine will be among the first programs to benefit from Yale's participation in Internet 2, a nationwide consortium of 100 research universities involved in the development of a new computer network more than 100 times faster than the Internet.

Yale will receive $350,000 from the National Science Foundation over the next two years to connect to the very high speed Backbone Network Service (vBNS), which now links 64 research institutions across the United States. The University will spend an equal amount upgrading the campus network.

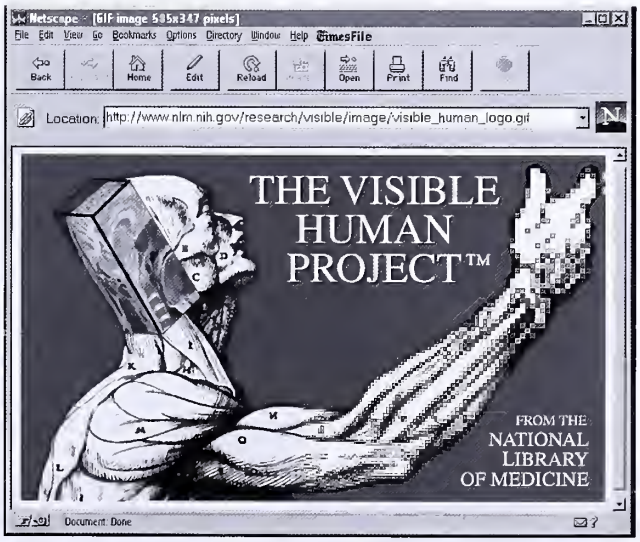
The faster connection to vBNS—the basis for the Internet 2 consortium, of which Yale is a charter member—will enable collaboration among institutions in such bandwidth-hungry fields as genetic mapping and sequencing, modeling of weather systems, and high-resolution imaging for medicine, scientific research and the arts.

The collaboration between C/AIM, established in 1987 to develop new media for medical education, and the National Library of Medicine (NLM) was one of three programs cited in Yale's grant application. Staff at C/AIM have been limited by connection speed in their work with NLM colleagues conducting detailed image analysis for the Visible Human Project, according to C/AIM academic director C. Carl Jaffe, M.D. The Visible Human Project is a 40-gigabyte collection of three-dimensional digital images of male and female human bodies compiled from microscopic studies of cadavers.

Two other Yale projects will make early use of the vBNS connection. One, *Computational Neuroscience and Optical Imaging of Visual Cortex*, is a collaboration between Steven W. Zucker, professor of computer science and electrical engineering, and colleagues at the University of California at San Francisco. The second will bring together physicists engaged in particle research at Yale and sites in Illinois, New York, California and Switzerland. Other prospective vBNS applications at Yale include a project in which neuroscience and neurobiology professor Gordon M. Shepherd, M.D., D.Phil., professor of neuroscience and neurobiology, will share maps of neural activity patterns with his colleagues at other institutions, showing how neurons

FRANK POOLE

E. Carl Jaffe, M.D.



School of Medicine faculty are collaborators on the Visible Human Project, a massive online database of anatomical images.

in olfactory bulbs react to specific odors. His group also is participating in the multi-agency Human Brain Project, under which researchers are creating databases for the sharing and archiving of a wide range of neuroscience data.

Many other projects are expected to receive vBNS access once installation is complete and its availability becomes more widely known. The service will increase network speed from the current average 1.5 million bits per second (bps) to as much as 622 million bps, with an eventual capacity of 2.4 billion bps. By comparison, the typical computer modem runs at only 28,800 bps.

Michael Fitzsousa

City children learn the basics of bicycle safety, helmet use

Linda Degutis, Dr. P.H.

A School of Medicine initiative launched during the summer may save lives by teaching young bicyclists safety skills and promoting helmet use among children in New Haven.

The Community Foundation for Greater New Haven awarded $10,000 to the New Haven Regional Injury Prevention Program (NHRIPP), part of the Department of Surgery's section of emergency medicine, to implement the FreeWheels project developed by NHRIPP co-director Linda Degutis, Dr. P.H.

Bicycle-related injury is a major cause of death throughout the United States, especially among children ages 5 to 19. These injuries account for over 900 deaths, 20,000 hospital admissions and 580,000 emergency department visits nationwide each year.

Despite a 1993 Connecticut law requiring children under age 12 to wear helmets when bicycling, many continue to ride without helmets, putting themselves at risk for serious head injury. "This grant provides a great opportunity to devise new and creative ways to prevent head injuries in children," says Dr. Degutis, assistant professor of surgery.

Dr. Degutis explored different ways to reach city children with the bicycle safety message and came up with the FreeWheels project. During the first phase, which took place this past summer, 135 children attending New Haven summer day camps were provided with bicycle helmets and given a four-hour class on helmet usage, basic rules of the road, signaling and other cycling skills. A pre-test measured their knowledge of bicycle safety and a post-test measured what they had learned by participating in the program.

The course, based on two national bicycle skills and safety programs, was taught by a certified bicycle safety instructor with the assistance of four local teen-agers, whose participation was key. "It was important for the younger children participating in the program to get instruction from teens because they're looked up to as role models," says Laura L. Fawcett, NHRIPP program coordinator. "If they see older children wearing helmets, they'll begin to view helmets as a natural part of riding bicycles."

Karen Peart

Yale-New Haven announces alliance in Greenwich

YALE NEW HAVEN HEALTH

Greenwich Health Care System, the parent corporation for Greenwich Hospital, and Yale New Haven Health System, the state's largest integrated health care delivery and financing system, have announced an agreement to form a strategic alliance.

Under the proposed affiliation agreement, Greenwich Hospital will preserve its local direction while gaining improved access to high-quality clinical support for its key programs. The affiliation also strengthens its long-established collaborative arrangements with Yale-New Haven Hospital and the Yale University School of Medicine. The most recent example of this is Greenwich Hospital's association earlier this year with the Yale Cancer Center's Oncology Network, in which cancer patients gain access to advanced cancer treatments under the direction of their own local Greenwich physicians.

The alliance with Greenwich is similar to the one between Bridgeport Hospital and the Yale New Haven Health System, which was completed in July 1996. The boards of directors and medical staffs will remain separate.

Tom Urtz

At Children's Hospital, bring in the clowns

A troupe of professional clowns has moved into Yale-New Haven Children's Hospital and added new meaning to the phrase *alternative medicine.*

The Big Apple Circus Clown Care Unit, which took up residence in July, has introduced such unorthodox treatments as red nose transplants, kitty cat scans and chocolate milk transfusions. The program, unique to Connecticut, is based upon similar Big Apple Circus units in Boston, Washington and New York.

Professionally trained clowns visit the hospital three days a week, cheering children with juggling, mime, magic and music. Their special medical treatments include an eye exam using two rubber chickens (one large, one small), a cardiac accelerator (a hairy spider) and plate-spinning platelet tests.

"Sick children need to laugh. That's what brought us into the hospital. Once we got in there, we realized that parents of sick children need to laugh and that staff who are taking care of sick children need to laugh as well," says Michael Christensen, co-founder of the Big Apple Circus and originator of the hospital program.

Funding for the Clown Care Unit was provided through the Greenwich-based Garrett B. Smith Foundation, established by Scott and Heidi Smith in memory of their son Garrett, who was treated for cancer at Yale-New Haven Children's Hospital.

Ken Best

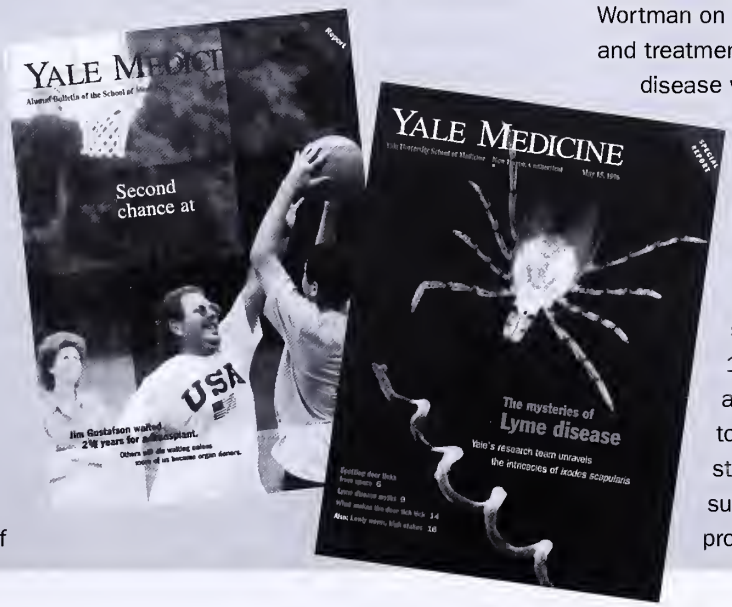
YNHH PUBLIC RELATIONS

Yale Medicine wins four awards

Fall brought good news to *Yale Medicine* in the form of four national awards for coverage during 1996.

On Nov. 1, Mary Kathleen Figaro, M.D. '96, received an Award of Distinction from the Association of American Medical Colleges' Group on Institutional Advancement (AAMC/GIA) for her Summer 1996 article *The Beginning, Again.* Her first-person story was the final installment in a four-year series chronicling a student's journey though medical school. Dr. Figaro is a second-year resident in internal medicine at The New York Hospital-Cornell Medical Center.

Editor Michael Fitzsousa received the AAMC/GIA Award of Excellence in the Robert G. Fenley Writing Awards-Medical Science Writing competition for his Spring 1996 article *Lowly Worm, High Stakes.* It described the impact of hookworm disease, which can be especially devastating to children, in developing countries around the globe. The article explained how research by Yale scientist Peter Hotez, M.D., Ph.D., and colleagues might interrupt the cycle of infection.



Yale Medicine also won two Merit Awards in the National Health Information Awards Competition for the magazine's Special Reports series. The judges recognized the Spring 1996 Special Report by writer Marc Wortman on Lyme disease research and treatment at Yale (where the disease was first identified in 1975) and the Summer 1996 Special Report by Mr. Fitzsousa on transplantation and organ donation.

The Special Report series was launched in 1995 to bring medicine and health news from Yale to a wider audience and to stimulate interest in and support for medical school programs and initiatives.

Eating disorders expert proposes fat tax on foods

Burgers, fries and other high-fat foods consumed literally by the ton are making Americans sick and should be slapped with a high-fat supertax, says Kelly D. Brownell, Ph.D., director of the Yale University Center for Eating and Weight Disorders.

"A whopping 7 percent of Americans eat at McDonald's on any given day and the average child sees 10,000 food commercials a year on television, 95 percent of them for candy, fast food, soft drinks and sugared cereals," says Dr. Brownell, professor of psychology and of epidemiology and public health. He notes that obese children have more than six times the risk of becoming overweight adults. "Is it any wonder that the prevalence of obesity in America has increased 25 percent in the last 15 years alone to an unprecedented level of 35 percent of women and 31 percent of men?"

In a recent issue of the journal *Addictive Behavior*, Dr. Brownell and graduate student E. Katherine Battle underscore the public health significance of obesity and recommend policies that would subsidize healthy foods, tax unhealthy foods, and funnel the proceeds into nutrition education and public exercise programs.

"The next new frontier to be explored in the eating disorders and obesity field is that of prevention rather than treatment. The policy arena is an area of enormous potential," Dr. Brownell says. "Legislation and regulations aimed at the price structure of foods, opportunities and incentives for increased physical activity, and control of exposure to messages leading to unhealthy eating could have a considerable public health impact—at very little cost."

Obesity exacts a public health toll of approximately $40 billion a year due to higher rates of heart disease, cancer, diabetes, hypertension and stroke. Instead of blaming the victims, society should recognize that Americans are being seduced by "our toxic food environment," which offers up "a diet that is high in fat, high in calories, delicious, widely available and low in cost," according to Dr. Brownell.

Therefore, food should be regarded as a potential disease-causing agent, just like tobacco or alcohol, the researchers conclude. "Junk-food advertisements should be regulated and excise taxes imposed on high-fat foods, just as they are on tobacco and alcohol," Dr. Brownell says. "Taxing cigarettes has a clear and predictable impact on sales and per capita consumption, so it would seem logical that a high-fat tax, combined with increased physical activity, might have a positive effect on eating disorders and obesity."

The Yale researchers advocate that revenues from a high-fat tax be used to provide more opportunities and incentives for physical activity in the community, such as bicycle paths, recreation centers and exercise programs. A food tax also could help fund nutrition education programs in public schools.

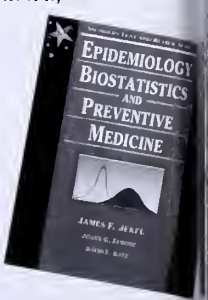
Cynthia Atwood

NEW BOOKS

The Best Interests of the Child by Albert J. Solnit, M.D.; Sterling Professor Emeritus and senior research scientist in the Child Study Center; Free Press (New York) 1996.

Biochemistry and Disease: Bridging Basic Science and Clinical Practice by Robert M. Cohn, M.D. '65, and Karl S. Roth, M.D.; Williams & Wilkins (Baltimore) 1996.

Epidemiology, Biostatistics and Preventive Medicine by James F. Jekel, M.D., M.P.H., the C.-E.A. Winslow Professor of Public Health; Joann G. Elmore, M.D., M.P.H., assistant professor of medicine; and David L. Katz, M.D., M.P.H., lecturer in epidemiology and public health; W.B. Saunders Company (Philadelphia) 1996.



The Ethical Way: Challenges and Solutions for Managed Behavioral Healthcare by H. Steven Moffic, M.D. '71; Jossey-Bass (San Francisco) 1997.

Handbook of Autism and Pervasive Developmental Disorders edited by Donald J. Cohen, M.D. '66, Director of the Yale Child Study Center and Irving B. Harris Professor of Child Psychiatry, and Fred R. Volkmar, M.D., the Harris Associate Professor of Child Psychiatry in the Child Study Center; Wiley Publishers (New York) Second edition 1997.

Spiritual Passages: Embracing Life's Sacred Journey by Drew Leder, M.D. '86; Putnam/Jeremy P. Tarcher (New York) 1997.

The Therapist Is the Therapy by Louis B. Fierman, M.D., HS '53; Jason Aronson Inc. (Northvale, N.J.) 1997.

Dean makes 2 senior appointments

Dean David A. Kessler, M.D., announced the appointment of two senior administrators in July.

Irwin M. Birnbaum, who served for 15 years as chief financial officer at Montefiore Medical Center and since 1986 as a health care attorney and partner in the New York City offices of Proskauer Rose LLP, became the school's new chief operating officer. Mr. Birnbaum is responsible for all of the school's financial, business and operating aspects, ranging from the budget to the Yale Faculty Practice. He also will be a key interface with the Yale New Haven Health Care System, in going forward with the health care system to meet the enormous challenges of the changes taking place in health care delivery and health care education.

Ruth J. Katz, a public health expert who was counsel to the Subcommittee on Health and the Environment, Committee on Energy and Commerce in the U.S. House of Representatives, was named assistant dean for administration, with responsibility for day-to-day administrative programs of the dean's office. Ms. Katz, who has lectured on public health policy, and health care policy and politics at several universities, including Harvard and Johns Hopkins, also anticipates teaching in the department of epidemiology and public health at Yale.

MICHAEL MARSLAND

Ruth J. Katz

MICHAEL MARSLAND

Irwin M. Birnbaum

Mr. Birnbaum, who was awarded a B.S. degree in 1956 from Brooklyn College and a J.D. degree in 1961 from New York University School of Law, started his career in hospital administration as a budget officer at Montefiore in 1962. By 1970, he had been named chief financial officer, a position he held until he left in 1986. As a senior member of Proskauer Rose's health law group, he has represented hospitals, hospital medical staff, physician practice groups, and a range of health care organizations across the country. Among his publications is the four-volume *Treatise on Health Care Law*, which he co-edited.

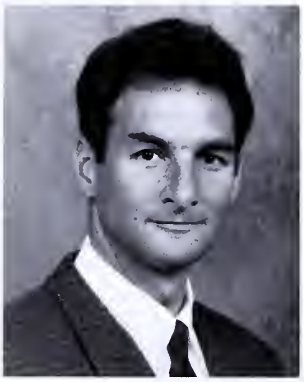
Ms. Katz served as counsel to the Health Subcommittee between November 1982 and January 1995, analyzing policy, developing and drafting legislation, and managing the subcommittee's considerations of such issues as the National Institutes of Health, Medicaid, maternal and child health, reproductive health and long-term care. During a four-month leave, starting in November 1992, she served as a member of the Clinton-Gore Transition Team for Health Care Policy. She has worked as a legislative aide for health affairs in the Office of U.S. Rep. James H. Scheuer (D-N.Y.), and a policy analyst and staff attorney for the U.S. Department of Health and Human Services' Select Panel for the Promotion of Child Health. She also has served as director of public health programs at the Henry J. Kaiser Family Foundation.

An Atlantic City, N.J., native, Ms. Katz received a B.A. degree, magna cum laude, in 1973 from the University of Pennsylvania, a J.D. degree in 1977 from Emory University, and an M.P.H. degree in 1980 from Harvard University.

Yale scientists chosen as HHMI investigators

The Howard Hughes Medical Institute (HHMI) has announced that two Yale medical school scientists are among the 70 researchers selected in a national competition to become HHMI investigators. The appointments bring the number of HHMI investigators at Yale to 21.

The Yale researchers are **Gerald I. Shulman**, M.D., associate professor of medicine (endocrine) and of cellular and molecular physiology; and **Tian Xu**, Ph.D, assistant professor of genetics. HHMI also selected two Yale faculty based on Science Hill, **Jennifer Anne Doudna**, Ph.D., assistant professor of molecular biophysics and biochemistry, and **G. Shirleen Roeder**, Ph.D., professor of biology. HHMI is the largest philanthropic organization in the United States. "Their selection was the result of an intensely competitive process and is a tribute to their ability and promise as research scientists."



Gerald I. Shulman

Tian Xu

HHMI investigators conduct biomedical research in five areas: cell biology, genetics, immunology, neuroscience and structural biology. In recent years they have made significant discoveries related to obesity, AIDS, cancer, diabetes, hypertension, cardiac arrhythmias, cystic fibrosis, muscular dystrophy and many other medical problems. HHMI, which was founded in 1953 and is headquartered in Chevy Chase, Md., enters into long-term research agreements with universities and other academic research organizations where its investigators hold faculty appointments. HHMI investigators conduct their scientific research in institute laboratories located on the various campuses.

Book fund honors professor

The Harvey Cushing/John Hay Whitney Medical library has received a gift to establish a book fund honoring **Leonard R. Farber**, M.D., clinical professor of medicine. The donor, who wished to remain anonymous, is the husband of one of Dr. Farber's patients and made this gift in appreciation for the care given his wife during her final illness.

Books purchased will contain bookplates crediting the Leonard R. Farber, M.D., Book Fund. Such funds enable the library to acquire books and periodicals that could not be purchased from the library's operating budget.

Biochemists join National Academy of Sciences

Three medical school biochemists were elected recently to the National Academy of Sciences, bringing the total number of Yale University researchers who are academy members to 62. The three new members are: **Donald M. Engelman**, Ph.D., and **Dieter G. Söll**, Ph.D., both of whom are professors of molecular biophysics and biochemistry (MB&B); and **Peter B. Moore**, Ph.D., professor of chemistry and of molecular biophysics and biochemistry. A fourth Yale scientist, chemist and physicist **John C. Tully**, Ph.D., also was elected to the academy's membership.

The three MB&B researchers use molecular imaging to reveal how key proteins transcribe genetic information, how genetic code is deciphered, and how that deciphered code is translated into the proteins of human cells. Dr. Engelman is working with cell membrane proteins to understand how the one-dimensional information found in gene sequences is converted through protein folding into three-dimensional molecules. Dr. Moore studies the structure and function of RNA molecules and ribonucleoproteins. Dr. Söll's research focuses on genetic, molecular biological and biochemical studies of the function of transfer RNAs in various organisms.

The academy, a private organization of scientists and engineers dedicated to the furtherance of science for the general welfare, has advised the federal government since its establishment in 1863.

Dr. Burrow assumes new roles as advisor, professor, historian

Gerard N. Burrow, M.D. '58, who has completed his term as 14th dean of the School of Medicine, was named the David Paige Smith Professor of Medicine by vote of the Yale Corporation. Yale President Richard C. Levin announced the appointment in June at the annual meeting of the Association of Yale Alumni in Medicine.

Dr. Burrow, who will serve the University as special advisor on health affairs to President Levin, is working on a history of the School of Medicine, one of a series of six books commissioned for Yale's 300th anniversary in 2001. In addition, he was appointed a senior advisor to the World Health Organisation's Programme on Maternal and Newborn Health/ Safe Motherhood.

The Smith professorship, established by an anonymous bequest in 1912, focuses on the theory and practice of medicine. Mr. Smith, who died in 1880, received a B.A. degee in 1851 from Yale College.

A graduate of the Yale School of Medicine and a member of its faculty for 15 years, Dr. Burrow returned to Yale in 1992 from the University of California at San Diego, where he served as vice chancellor for health sciences and dean of the School of Medicine for four-and-a-half years. In addition to his leadership in American academic medicine, Dr. Burrow possesses extensive experience in the Canadian healthcare system. He spent 12 years in Toronto as physician-in-chief and director of the division of endocrinology and metabolism at Toronto General Hospital, and the Sir John and Lady Eaton Professor and chair of the department of medicine at the University of Toronto.

PETER CASOLINO

Alumni/ae attending the AYAM reunion in June rise to give Dr. Burrow a standing ovation.

As an endocrinologist, Dr. Burrow has centered his research interests on the thyroid, emphasizing how the growth of the gland is controlled. His clinical interests have centered on thyroid disease in pregnant women, particularly the treatment of hyperthyroidism.

Hematologist awarded endowed chair

The Yale Corporation has named **Nancy Berliner**, M.D. '79, the first Arthur H. and Isabel Bunker Associate Professor of Medicine (Hematology). The new chair was created in memory of businessman Arthur H. Bunker, a 1916 graduate of Yale's Sheffield Scientific School, and his wife, journalist Isabel Leighton Bunker. Mr. Bunker, a partner with Lehman Brothers and chairman of American Metal Climax Corp., died of leukemia in 1964. The new chair in hematology was established through a bequest from the estate of Isabel Bunker, a magazine and science writer who passed away earlier this year.

Dr. Berliner has been examining the molecular basis of granulocyte differentiation in bone-marrow cells to gain insights into the factors leading to the development of acute leukemia. She and her laboratory colleagues also are focusing on the genetic mechanisms governing enzymes in the blood that are believed to contribute to tissue remodeling in inflammatory injury and repair, and to tumor metastases.

A 1975 summa cum laude graduate of Yale College, Dr. Berliner earned her medical degree at Yale in 1979, winning prizes for best thesis and best qualifications for a successful practitioner. She took her residency training at the Peter Bent Brigham Hospital and Brigham and Women's Hospital in Boston, and served as an instructor at Harvard Medical School for a year before joining the Yale faculty as an assistant professor in 1986. In addition to her professorship in hematology, Dr. Berliner also holds an appointment in the Department of Genetics. She has been honored by the National Cancer Institute, the American Cancer Society and the Leukemia Society of America. She was vice president of the American Society for Clinical Investigation in 1995.

FACULTY NOTES

Michael B. Bracken, Ph.D., head of the chronic disease epidemiology division of the Department of Epidemiology and Public Health and professor of obstetrics and gynecology, spoke before the Royal College of Surgeons of Canada in May. His topic was the pharmacologic treatment of acute spinal cord injury and the results of the recently completed third National Acute Spinal Cord Injury Trial, which he directed.

J.G. Collins, Ph.D., and **Steven Marans**, Ph.D., were recipients of 1997 Ivy Awards presented in May at the annual Elm-Ivy Awards Luncheon hosted by the City of New Haven and Yale University.

Dr. Collins is associate professor of anesthesiology. As past-chairman of Connecticut United for Research Excellence Inc., he has helped focus the state's interests in the field of biotechnology and has spurred the development of educational programs for elementary and secondary school students. He also helped craft a partnership among the Yale Schools of Medicine and Nursing and New Haven's Career High School.

Dr. Marans is primary leader for the Child Development-Community Policing Program, which integrates the resources of the Yale Child Study Center and the New Haven Department of Police Service. The program's goals are to improve the skills of law enforcement personnel in responding to situations where children are exposed to violence and to develop research that will strengthen public policy and clinical care. The U.S. Justice Department has provided funds to replicate the program in four other cities across the United States.

A Yale surgical team visited the Nasser Institute in Cairo, where team members performed 16 major cardiac operations in six operating sessions in March. Future visits are planned as part of a program to transfer Yale expertise to the region. The multidisciplinary team was led by **John A. Elefteriades**, M.D., professor and chief of cardiothoracic surgery, and included anesthesiologist **Jane Fitch**, M.D., and cardiothoracic surgeon **Robert Gottner**, M.D. Dr. Elefteriades was honorary lecturer at the 5th Alpe-Adria Cardiology Symposium at the University of Grax in Austria in May and served as visiting professor at the University Hospital of Wales in July. Also in July, Dr. Elefteriades and **Graeme L. Hammond**, M.D., professor of surgery (cardiothoracic), lectured at the First International Congress on Thorax in Athens.

Myron Genel, M.D., associate dean for government and community affairs, has been elected to the board of directors of Research!America. The national organization was founded eight years ago to build support for medical research. Dr. Genel's three-year term began in March.

Peter Igarashi, M.D., associate professor of medicine, will serve as a member of the General Medicine B Study Section, Division of Research Grants for the National Institutes of Health (NIH) Department of Health and Human Services for a three-and-a-half-year term that began in January. Study sections review grant applications submitted to the NIH.

Charles S. Kleinman, M.D., professor of pediatrics, diagnostic radiology, and obstetrics and gynecology, was awarded a citation for distinguished academic achievement by the Alumni Association of the New York Medical College in May for his dedication to the health and life of children and their families.

Marc I. Lorber, M.D., professor of surgery (transplantation) and chief of the section of organ transplantation and immunology, was elected treasurer of the American Society of Transplant Surgeons at its 23rd annual scientific meeting held in Chicago in May.

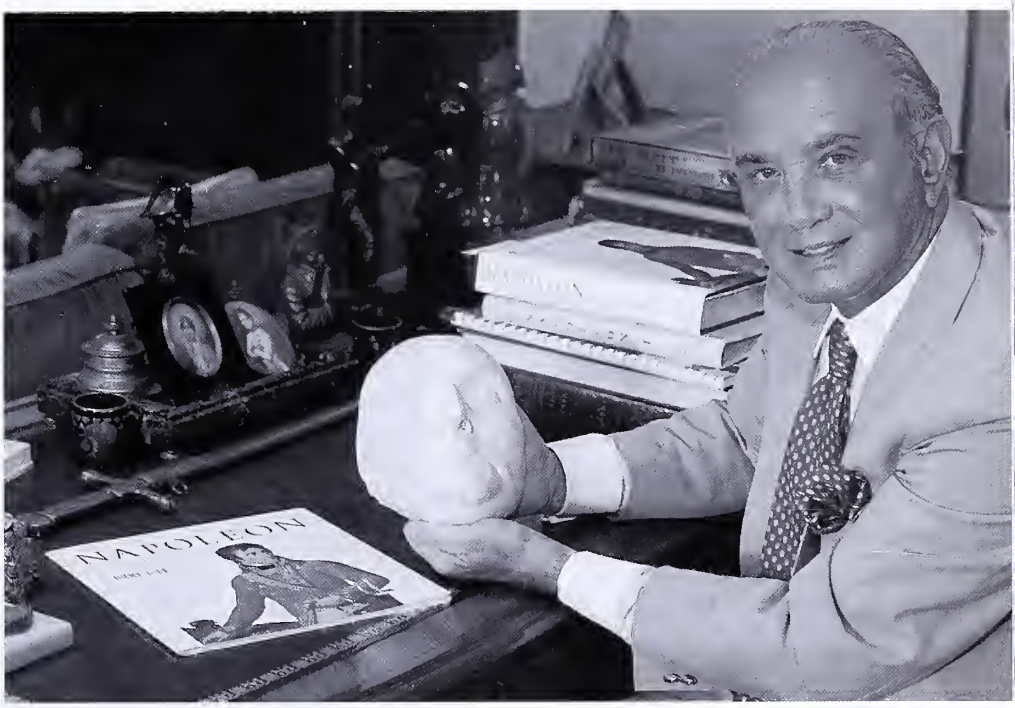
James C. Rosser Jr., M.D., assistant professor of surgery, was nominated for a Computerworld Smithsonian Award for his *Operation Outreach.* The project is a combination of CD-ROM multimedia tutorials, objective-based skill training and remote guidance, which Dr. Rosser created to promote the teaching and practice of minimally invasive surgery. The project became part of the Smithsonian Institution's Permanent Research Collection of Information Technology Innovation at the National Museum of American History in June.

Maria J. Trumpler, Ph.D., assistant professor of the History of Medicine, was the primary consultant for *The Body and Its Image: Art, Technology, and Medical Knowledge*, an exhibition at Dartmouth College's Hood Museum of Art. The exhibit explores how representations of human anatomy and disease have changed and developed since the 16th century and how they have affected the practice of medicine. Dr. Trumpler also presented a slide lecture at the museum entitled *Gender and the Body in Anatomy and Pathology Textbooks, 1500-1990.*

Emperor's new clues?

A medical sleuth searches for the secret of Napoleon's death and finds there isn't one.

By Rachel Engers



MATT SUESS

Philip F. Corso, M.D., a Yale College graduate who serves on the medical school's clinical faculty, holds a 19th-century death mask from his collection of Napoleona.

The death mask of Napoleon Bonaparte that belongs to Philip F. Corso, M.D., captures in haunting detail the face of the emperor, with its hooked nose and asymmetrical mouth, but gives no hint of the cause of his demise.

Alive, Napoleon was the subject of intense medical scrutiny. From 1815, the time of his exile to a rocky, barren isle in the southeast Atlantic, until his death in 1821, Napoleon was chronically ill, attended by no fewer than four physicians.

In death, the emperor, his body still sealed in a series of four coffins, has become a topic of medical debate and mystery. Dr. Corso, a 1948 graduate of Yale College and assistant clinical professor of surgery (plastic) at the School of Medicine, has turned the question of how he died into a life's avocation.

One theory holds that Napoleon was the victim of arsenic poisoning, murdered by Count Charles de Montholon, the French general and aide-de-camp who accompanied him in exile to the island of St. Helena. Among the alleged motives: Montholon was a major beneficiary of Napoleon's estate and may have harbored bitterness over the emperor's rumored affair with Montholon's wife. While investigating this thesis, Dr. Corso consulted with the Federal Bureau of Investigation as well as one of the world's leading authorities on arsenic poisoning, Dr. Thomas Hindmarsh of the biochemistry laboratory at Ottowa General Hospital.

After researching the medical accounts and autopsy reports recorded by Napoleon's doctors, as well as the results of atomic absorption testing that determined the level of arsenic in strands of Napoleon's hair, Dr. Corso came to the same conclusion as Napoleon's physicians: The emperor was not murdered, but died of stomach cancer complicated by a perforating ulcer.

Dr. Corso, now emeritus chief of plastic surgery at Norwalk and Bridgeport hospitals and St. Vincent's Medical Center in Bridgeport and the emeritus president of the Connecticut Society of Plastic and Reconstructive Surgeons, has devoted much of the past 25 years to the study of the French emperor. His home in Fairfield County, Conn., is flush with Napoleona, including letters in Napoleon's own hand, Napoleonic coins, and sketches, paintings and statues of the emperor. He is writing a book, tentatively titled *The Death of Napoleon: A Medical Inquest*, with the aim of settling the controversy definitively by proving that Napoleon died from natural causes.

"The whole idea of conspiracy lives on forever," he admits resignedly. But to those scholars who insist Napoleon was done in, he responds, "It's much easier to write a book when everyone is dead and no one is there to question you strongly." For Dr. Corso, the first solution to this Napoleonic mystery was the correct one.

Rachel Engers is a writer based in Hartford.

A window on health policy

(Through which our student correspondent leaps head-first for a behind-the-scenes look at the tobacco settlement debate.)

By Gregory Raskin

Being an active medical student, and in the business of being in close contact with the Office of Student Affairs—even though I am admittedly treated with skepticism and something just short of revulsion when I go to bother them—I saw nothing unusual when I was paged by those fine folks from Harkness early one Monday morning in July. Returning the page, I was extremely surprised to find out that Dean David Kessler and Assistant Dean Ruth Katz were taking 10 students to Washington that very evening for a crash course on the making of federal health policy. If I sprang into action, I would get to be one of those students. (Later, on the flight home, as we students were sitting around wondering how we had been lucky enough to have been chosen, I offered that the Student Affairs Office was probably ecstatic over the possibility of a 24-hour window in which they could be assured I would not come and harangue them.)

After a dash to J. Press for a tie worthy of Our Nation's Capital and an emergency meeting with a cobbler (my size-12 penny loafers, which I have had since the eighth grade, had developed an unsightly and cavernous hole on the left sole), I raced to school to meet the group. Dean Kessler, Ms. Katz, seven fellow medical students and two public health students got to know each other on the small turboprop shuttle, which was ferrying only two other people to National Airport, giving it the feeling of a private charter. The students checked into a hotel on Capitol Hill and went out for a late dinner of Ethiopian food.

Early the next morning, the students met over breakfast to discuss the briefing material that had greeted us at check-in the night before. We perused the recommendations of the Koop/Kessler report on the proposed tobacco settlement, which was the unifying theme for our daylong experience. Next we walked to the Hart Senate Building on Capitol Hill for a wonderful session led by Ms. Katz titled *Seminar on Federal Legislative Process.* The meeting was held in the Senate Judiciary

Gregory Raskin is a fourth-year medical student at Yale. Notes From a Navajo Winter*, his account of a month-long elective in primary care at the Indian Health Service hospital in Arizona, appears on* **Page 20.**

Committee's conference room. As portraits of past chairmen (all the way from Martin Van Buren to Orrin Hatch) gazed down on us, Ms. Katz took us through the entire ordeal: from the smallest inkling of a bill in a senator's or representative's mind, through the various subcommittees, to the floor of Congress, to the president's desk and back again, if necessary.

Emboldened with our new knowledge of government, we attended the Commerce Committee oversight hearings regarding the tobacco settlement. Staunchly on the side of public health, we smiled at the compelling arguments of Drs. Kessler and Koop, whose testimony spoke to the faults of the settlement. We jeered silently when selected senators came out on the side of Big Tobacco.

Most senators started off by saying something obvious, benign and noncontroversial, like that they were morally outraged and despondent to find out that children in America were smoking cigarettes. I was surprised to see several senators far more interested in their constituents (tobacco farmers, they claimed, but I suspected Big Tobacco campaign donors) than in the public health of our nation. Also, it appeared that, despite having large staffs of countless legislative aides, many of the senators seemed misinformed regarding the particulars of both the tobacco settlement and the public health risks of smoking. We left the hearing after the testimony of Michael Moore, the Mississippi attorney general spearheading the settlement.

After a quick interview with the *New Haven Register* (I was even quoted in the following day's paper), we students and Ms. Katz headed over to the editorial offices of the *Washington Post* for a lunch meeting. John Schwartz, the *Post*'s main writer on the tobacco issue, discussed his take on the morning session in the Senate. We talked about the role of the media in helping to shape public health policy. With a deadline looming large, we were sent scurrying from the *Post* building and over to the White House.

I had been to the White House once before, for a tour with my family. This time, though, it would be for a meeting in the Old Executive Office Building, where the vice president has his office and many presidential staffers work. We walked through the interior of the building—whose 20-foot ceilings, pink pillars and huge spiral staircases could have been designed by Lewis Carroll—to a dark conference room. Waiting for us in the appropriately *not* smoke-filled back room were Dean Kessler, Dr. Koop and an adviser to the president. The meeting seemed to have two purposes: the adviser explained the president's role in the tobacco issue, and then the 14 of us had a discussion about what message the students thought President Clinton should bring to the people. Of course, we were appropriately unanimous in the preeminence of public health to steer our government. Even if we hadn't agreed, it's probably not that easy to argue with C. Everett Koop.

By the end of the day, as we walked out into the humid D.C. sunshine, we were all pretty worn out. We had learned about the tobacco issue as a model for federal health policy and viewed it from many angles: that of the public health community, the legislature, the media and even the executive branch. When I popped into the Office of Student Affairs the next day to tell them how the trip went, I could tell by the looks on their faces they were already hard at work, trying to think of another excuse to send me away from New Haven.

STUDENT NOTES

Alison Days was awarded the Novastis Award (previously known at the Ciba-Geigy Award) at the Student/Faculty Tea in May for laudable extracurricular activity within the community. She received a complete set of the *Netter Atlas.*

Pezhman Eliaszadeh, a graduate student in public health, was one of 10 outstanding college students throughout the U.S. to receive a $1,000 Public Service Scholarship. These awards are donated by the Federal Physicians Association (FPA) in honor of Dr. Gerold Van der Vlugt, past president of the FPA, and are designated for students planning a health-related government career.

David Gershfield was presented the Marguerite Rush Lerner Award at the Student/Faculty Tea in May for his poem entitled *Retrospection.*

Jason R. Klenoff was awarded the Alpha Omega Alpha Honor Medical Society Student Research Fellowship Award in the amount of $3,000 for his research entitled *Developmental Morphometrics of Olfactory Receptor Axonal Arbors.* Supporting faculty mentor Charles A. Greer, Ph.D., associate professor of surgery (neurosurgery) and neurobiology, was recognized as well.

Rachel Villanueva was one of 50 outstanding young medical professionals presented the American Medical Association (AMA)/Glaxo Wellcome Achievement Award by the AMA at its annual national leadership conference in March. Dr. Villanueva was recognized for

her work as president of the Student National Medical Association.

For the 11th year, Yale has received a generous gift from the Howard Hughes Medical Institute to support graduate medical education in the biological sciences. This year's gift amounts to $330,000. A portion of the funds has been used to create graduate fellowships, held in 1996-97 by **Jin Xie** (molecular biophysics and biochemistry), **Karl Hagland** (microbiology), and **Qiu-Xing Jiang** and **Leon Isales-Suarez** (cellular and molecular physiology). The remainder is contributing to the stipends of 200 students throughout the biological sciences at Yale.

At the 1997 national convention of the American Medical Student Association (AMSA) in Orlando, Yale medical students were among those presenting award-winning research abstracts. **Daniel Coghlin** presented his work, *Discussing Advance Directives in the Outpatient Setting: Who Wants to Talk About It Anyway?* at the presentation of Medical Student Projects & Research session sponsored by the National Health Service Corps. The following students' work was presented at the Basic and Clinical Science poster session, which is sponsored by AMSA, the National Institutes of Health and the Association of American Medical Colleges: **Alan Cheng**, *Novel Strategies in Retroviral-Mediated Gene Correction of SCID;* **Jessica Haberer**, *Epitope Mapping of the* L.pifanoi *Amastigote Antigen P-4 Involved in T-cell Responsiveness to Human Cutaneous Leishmaniasis*; **Abike James**, *A Critical Analysis of Interpregnancy Intervals as an Explanation for the Persistent Disparities in Small for Gestational Age Births Between Black and White Women;* and **Mark Skirgaudas**, *Expression of Angiogenesis Factors and Selected Vascular Wall Matrix Proteins in Intracranial Saccular Aneurysms.*

Volunteers and performers are needed for the 1998 Peter A.T. Grannum Scholarship Jamboree, a variety show consisting of poetry, singing and ethnic dances. The 1997 jamboree, sponsored by the Student National Medical Association, raised $10,000 for scholarships to be given to New Haven high school sophomores or juniors. Students interested in the 1998 jamboree may contact third-year M.D./Ph.D. student Helena Hansen at 772-2239.

The letter, please

Match Day, an annual exercise in anxiety, ends with smiles all around.

Cheers and toasts filled the Ebbert Lounge on Match Day last March as the members of the Class of 1997 opened long-anticipated letters from the National Resident Matching Program. Inside was the answer to the question that hovers over most of fourth year: Where will I train?

The Match uses a weighted formula to pair graduating students with residency programs around the country. After applications, visits and interviews, students and residency programs each submit ranked choices, with a computer sorting out the matches. Some 20,209 first-year residency positions were offered in the 1997 Match, with more than 13,550 U.S. medical school seniors and 3,430 international medical school graduates securing positions. As has been the case for the third consecutive year, more than half the nation's graduating seniors will pursue training in one of the generalist specialties for at least the first year of residency, reflecting an increasing trend toward primary care training. Among the Yale graduates, more than half are entering subspecialty training programs this year.

Marc Wortman

PETER CASOLINO

1997 residency placements for Yale medical students

The Office of Student Affairs has provided the following list, which outlines the results of the National Resident Matching Program for Yale's medical school graduates.

ARIZONA

Good Samaritan Hospital, Phoenix
Frank Moya, *transitional*

CALIFORNIA

California Pacific Medical Center, San Francisco
Mark Skirgaudas, *medicine*
Children's Hospital, Oakland
K. Leslie Avery, *pediatrics*
Kaiser Foundation Hospital, San Francisco
Jeffrey Tseng, *medicine*
Los Angeles County-University of Southern California Medical Center
Mark Spicer, *neurosurgery*
Stanford Health Services
Melissa Berhow, *general surgery*
Kristina Crothers, *internal medicine*
Matthew Klein, *plastic surgery*
Adetokunbo Oyelese, *neurosurgery*
Daniel Saal, *psychiatry*
Susan Wolf, *dermatology*
University of California—Irvine Medical Center
Monique Lawrence, *emergency medicine*
University of California—Los Angeles Medical Center
Daniel Lee, *diagnostic radiology*
Joseph Wu, *internal medicine*
University of California—San Diego Medical Center
Susannah Ehret, *medicine/pediatrics*
Anil Panackal, *internal medicine*
Alexander Rivkin, *otolaryngology, surgery*
University of California—San Francisco
Andrew Haskell, *orthopaedics*
Mark Skirgaudas, *diagnostic radiology*

Urjeet Patel, left, and Chang Soo Kim toast the good news. Dr. Patel matched in otolaryngology and surgery at Washington University and Barnes-Jewish Hospital in St. Louis. Dr. Kim was selected for his plastic surgery residency at Yale-New Haven Hospital.

CONNECTICUT

Hospital of Saint Raphael
Laertes Manuelidis, *medicine*
Kent Ta, *transitional*
Susan Wolf, *medicine*
Middlesex Hospital, Middletown
David Walker, *family practice*
Yale-New Haven Hospital
Maryam Asgari, *dermatology (research)*
John Beiner, *orthopaedics*
Sumeet Bhanot, *otolaryngology, surgery*
Robert Camp, *pathology*
Malabika De, *internal medicine*
Nina Fisher, *dermatology*
Janette Gaw, *general surgery*
Jason Gold, *general surgery*
Jonathan Grauer, *orthopaedics*
Anu Gupta, *internal medicine*
Basem Jassin, *otolaryngology, surgery*
Stephen Kavic, *general surgery*
Chang Soo Kim, *plastic surgery*
Kathryn Leinhardt, *internal medicine*
Dana Loo, *internal medicine*
Raburn Mallory, *internal medicine*
Laertes Manuelidis, *dermatology*
Frank Moya, *ophthalmology*
Helena Nolasco, *internal medicine*
Mark Rubinstein, *medicine*
Lisa Sanders, *internal medicine/primary*

FLORIDA

Jackson Memorial Hospital, Miami
Richard Pigeon, *orthopaedics*

GEORGIA

Emory University School of Medicine, Atlanta
Peter Ferren, *psychiatry*
Christiana Muntzel, *pediatrics*

LOUISIANA

Earl K. Long Medical Center, Baton Rouge
Carlos Caceres, *medicine*
Tulane University School of Medicine, New Orleans
Shawn Nakamura, *orthopaedics*

MARYLAND

Johns Hopkins Hospital
Tamara Dildy, *emergency medicine*
University of Maryland, Baltimore
Katherine Day, *otolaryngology, surgery*

MASSACHUSETTS

Beth Israel Deaconess Medical Center, Boston
Carlos Caceres, *diagnostic radiology*
Daniella Courban, *obstetrics and gynecology*
Eric Fan, *internal medicine*
Nina Fisher, *medicine*
Jeffrey Meyerhardt, *internal medicine*
Boston Combined Residency Program in Pediatrics (Children's Hospital)
Kelly Cant, *pediatrics*
Boston Medical Center
Winifred Agard, *emergency medicine*
Wendy Kuohung, *obstetrics and gynecology*
Brigham & Women's Hospital, Boston
Anthony Aizer, *internal medicine*
Michael Fischer, *internal medicine/primary*
Joshua Fogelman, *medicine*
Pieter Pil, *general surgery*
Deaconess Hospital, Boston
Winifred Agard, *medicine*
Willis Chou, *internal medicine*
Jeremiah O'Regan, *medicine*
Harvard Combined Medicine/Pediatrics Program (Massachusetts General Hospital), Boston
Carole Smarth, *medicine/pediatrics*
Harvard Longwood Psychiatry, Boston
Michele Baker, *psychiatry*
Massachusetts General Hospital, Boston
Jill Fischer, *pediatrics*
Peter Siekmeier, *psychiatry*

MISSOURI

Barnes-Jewish Hospital, St. Louis
Urjeet Patel, *surgery*

Monique Lawrence, now in the University of California-Irvine Medical Center's emergency medicine program, shares a hug with a friend upon hearing the news. Behind them is Kevin Daly of the Class of 1998, who has Match Day to look forward to as a fourth-year student next March.

Nirit Weiss, left, of the Class of 1998 joins a delighted Susannah Ehret, who learned of her placement at the University of California-San Diego Medical Center for a residency in medicine and pediatrics.

Washington University, St. Louis
Urjeet Patel, *otolaryngology*

NEW JERSEY

St. Barnabas Medical Center, Livingston
Lisa Park, *transitional*

NEW MEXICO

University of New Mexico School of Medicine, Albuquerque
Basia Holub, *emergency medicine*

NEW YORK

Beth Israel Medical Center
Janel Hackney, *medicine*
Einstein/Jacobi Medical Center, Bronx
Noah Scheinfeld, *dermatology*
Einstein/Montefiore Medical Center, Bronx
Rani Spudich, *plastic surgery*
Lenox Hill Hospital
Amos Dare, *surgery*
Daniel Lee, *medicine*
Manhattan Eye, Ear & Throat
Lisa Park, *ophthalmology*
The Mount Sinai Hospital
Bradley Ekstrand, *internal medicine*
The New York Hospital
Celia Golden, *internal medicine*
Rachel Rothschild, *pediatrics*
Rachel Villanueva, *obstetrics and gynecology*
New York University Medical Center
Joshua Fogelman, *dermatology*
David Meyer, *general surgery*
Presbyterian Hospital, New York
Brigitte Kerpsack, *pediatrics*
St. Vincent's Hospital, New York
Noah Scheinfeld, *medicine*
SUNY—Buffalo Affiliated Hospitals
Amos Dare, *neurosurgery*
SUNY—Buffalo/Graduate Medical Center
Julian Anthony, *surgery, urology*

PENNSYLVANIA

Abington Memorial Hospital
Elizabeth Benstock, *medicine*
Children's Hospital, Philadelphia
Jennifer Femiano, *pediatrics*
Eric Frehm, *pediatrics*
Hospital of the University of Pennsylvania, Philadelphia
Phillip Cheng, *internal medicine*
Stanford Peng, *internal medicine*
Rachel Rapaport, *general surgery*
Amal Sawires, *internal medicine*
Thomas Jefferson University Hospital, Philadelphia
Jerome Zink, *surgery, urology*
Elizabeth Benstock, *dermatology*
University Health Center of Pittsburgh
Abike James, *obstetrics and gynecology*

RHODE ISLAND

Memorial Hospital, Pawtucket
Christopher Bositis, *family practice*
Rhode Island Hospital/Brown University, Providence
Jane Kim, *plastic surgery*

TEXAS

University of Texas Health Science Center, San Antonio
W. Randy King, *general surgery*

VIRGINIA

University of Virginia, Charlottesville
Santosh Krishnan, *general surgery*
Julia MacRae, *plastic surgery*

WASHINGTON

Tacoma Family Medicine
Karen Kiang, *family practice*
University of Washington Affiliated Hospitals, Seattle
Andrea Edwards, *internal medicine*
Shelagh Houghton, *internal medicine*
Dana Meinke, *internal medicine*
Jeremiah O'Regan, *diagnostic radiology*
Jeffrey Tseng, *diagnostic radiology*

Some names appear twice because the graduate is entering a one-year program before beginning a specialty residency.

The transitional designation is a one-year program with three-month rotations in different specialties.

Questions that open new fields

Scientific authority is often not the last word, aspriring scientists learn on Student Research Day.

When Judah Folkman, M.D., first proposed his novel theories of tumor growth, many leading investigators of the day scorned his work. Eventually they were forced to acknowledge the validity of his findings on the crucial role blood vessels play in tumor growth, which proved to be the basis of an entirely new area of biology. Learning about his experiences was just the sort of inspiration the many aspiring researchers among Yale's medical students needed for their own required student research projects. They had the chance to examine the work of graduating students and to hear Dr. Folkman first-hand when he delivered the Lee E. Farr Lecture to close out the annual Student Research Day in May.

Student Research Day also gave Dr. Folkman, the Julia Dyckman Andrus Professor of Pediatric Surgery at Children's Hospital in Boston, a chance to learn what some of tomorrow's challengers of scientific authority have been doing. The findings from original research pursued by some 45 medical and public health students were displayed on posters or presented orally. Student Research Day celebrates the conclusion of the students' original research and thesis projects. Required research projects have been a continuous part of the *Yale System* since 1839, making it the longest-standing requirement of its kind among the nation's medical schools. Past projects have frequently pointed students in what prove to be lifelong career directions.

PETER CASOLINO

For many, Student Research Day marks the formal entry of medical students into the research community.

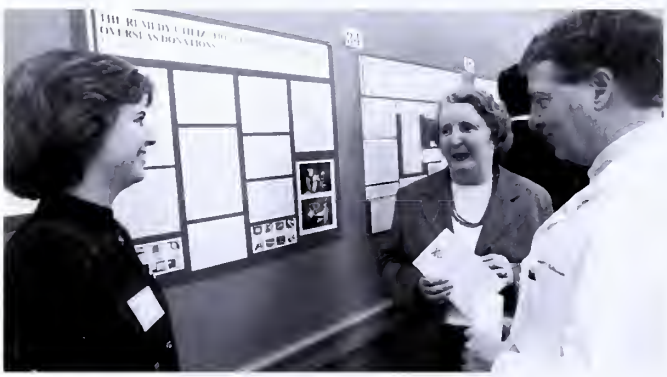
Prior to delivering his talk on *Strategies for the Discovery of Endogenous Inhibitors of Angiogenesis*, Dr. Folkman listened to presentations by five students selected by the Thesis Awards Committee for special honors. They were:

- Anthony Aizer, *Genetic Variants of the Angiotensinogen Gene and Their Effects on Blood Pressure Regulation Among People of African Descent*
- K. Leslie Avery, *Containing the Backlash against Managed Care Limits: A Rational Approach Towards Legislating Mandated Health Benefits Coverage*
- Kelly Cant, *Genetic and Biochemical Characterization of* Drosophila Singed, *a Homolog of the Actin Bundling Protein Fascin*
- Michael A. Fischer, *Excess Sample Size and the 'Delta Wobble' in Randomized Controlled Trials*
- Dana Meinke, *Tat-dependent Regulation of 3'-End Processing Efficiency in HIV-1*

Marc Wortman

PETER CASOLINO

Only beginning his research, Robert Kadoko, Class of 2000, learns from Wendy Kuohung what she found in her biochemical work in obstetrics and gynecology.



PETER CASOLINO

Carolyn W. Slayman, Ph.D., deputy dean for academic and scientific affairs, and Bruce I. McClennan, M.D., chair of the Department of Diagnostic Radiology, listen as Julia MacRae, left, explains her study of REMEDY, an international program founded at Yale to redistribute medical supplies to developing nations.

PETER CASOLINO

Pictured with John N. Forrest Jr., M.D.; Farr lecturer Judah Folkman, M.D.; and associate dean of medical education and student affairs Robert Gifford, M.D., are five students honored for their outstanding theses. From left, they are: Anthony Aizer, Dana Meinke, K. Leslie Avery, Kelly Cant and Michael Fischer.

In memoriam

PETER CASOLINO

Lee E. Farr, M.D., a pioneer in the field of nuclear medicine and a 1933 graduate of the School of Medicine, died on July 16. Dr. Farr established the annual lectureship that has brought Nobel laureates and other distinguished physicians and scientists to campus on Student Research Day each year since 1988. Dr. Farr and his wife, Miriam, pictured above on Student Research Day 1996, often traveled to New Haven from their home in Walnut Creek, Calif., to attend the lecture, but they were unable to do so this May due to his failing health. These pages are dedicated to his memory.

Dr. Farr's obituary appears on **Page 70.**

PETER CASOLINO

Farr lecturer Judah Folkman, M.D., left, and John N. Forrest, M.D., director of the Office of Student Research, pause among the posters.

A time for enlightened leadership

The members of the Class of 1997 face unprecedented challenges as they graduate. But there has never been a more exciting time in biomedical science.

Commencement is a time to both celebrate accomplishment and take a big step toward the future. For the members of the Class of 1997, that step is filled with exceptional uncertainty. In his Commencement address May 26, Robert H. Gifford, M.D., HS '65-66, associate dean for medical education and student affairs, warned of the potential for "deadly ethical and financial conflict with the current limits being placed on spending by managed care." It was in the spirit of overcoming conflict that he called upon the Class of 1997 to be creative in their approach to this problem as they embarked upon their careers. "It is going to be a time for enlightened leadership," he said, "and I hope you will be up to it."

Whatever thorny issues may lie ahead, there was no conflict, only smiles, apparent as 97 medical students were awarded diplomas under a tent in Edward S. Harkness Hall Courtyard. The class was the last to receive its diplomas from Dean Gerard N. Burrow, M.D. '58, who has returned to the faculty (See Faculty News, **Page 37**). As is custom, many students and professors were honored for their achievements. At the University Commencement exercises on Old Campus, Alfred G. Gilman, a 1962 graduate of Yale College and 1994 Nobel laureate in medicine, was awarded an honorary doctor of medical sciences degree.

Marc Wortman

MELANIE STENGEL

Dana Loo, right, shares her delight at finishing her medical degree with 1996 YSM graduate Julie Rothstein.

MELANIE STENGEL

Class co-president Heather Lynch presents Robert H. Gifford, M.D., HS '67, with the class yearbook dedicated to him. The much-loved Dr. Gifford had planned to leave his post as dean of medical education and student affairs at the end of the academic year, but he was asked by Dean David A. Kessler, M.D., to stay on for an additional year.

MELANIE STENGEL

The color and pageantry of Commencement include a bouquet and smiles for family and friends as Tamara R. Dildy parades into the Harkness Hall Courtyard.

Tamara R. Dildy, Society for Academic Emergency Medicine Award
Stephen M. Kavic, Connecticut Society of Board Surgeons Prize
Adetokunbo A. Oyelese and Rachel Villanueva, Peter A.T. Grannum Award
Rachel R. Rothschild, Lauren Weinstein Award
David E. Walker, Connecticut Academy of Family Physicians Award
Danica Barron and Michelle Pinto, Milton C. Winternitz Prize in Pathology
Urjeet Patel, Endocrine Society Medical Student Achievement Award

MICHAEL MARSLAND

From left, Commencement marshals Lawrence S. Cohen, M.D. '70, HS '65, Robert H. Gifford, M.D., HS '67, James Jekel, M.D., and Gary Friedlander, M.D., sing out during the University Commencement ceremony on Old Campus.

Student honors and prizes

Santosh N. Krishnan, Parker Prize
Benjamin R. Doolittle, Miriam Kathleen Dasey Award
Joshua P. Fogelman, Norma Bailey Berniker Prize
Anthony Aizer, Jeffrey A. Meyerhardt and Rachel Villanueva, Dean's Prize for Community Service
David B. Meyer, Campbell Prize
Phillip M. Cheng, Perkins Prize
Stephen M. Kavic and Rachel Rapaport, Merck Book Awards
John M. Beiner, Lange Book Award
Kelly Cant and Adetokunbo A. Oyelese, M.D./Ph.D. Award
Rachel Villanueva, Connecticut Society of American Board of Obstetricians and Gynecologists Prize
Brigitte F. Kerpsack, New England Pediatric Society Prize

Thesis prizes

Malabika De and Jeffrey A. Meyerhardt, American Cancer Society Prize
Shelagh A. Houghton, Peter F. Curran Prize
Phillip M. Cheng, Ferris Prize
Dana S. Meinke, William U. Gardner Thesis Prize
Abike T. James, Nicholas J. Giarman Prize
Maryam M. Asgari, International Health Prize
David E. Walker, Keese Prize
K. Leslie Avery, Dr. Harold H. Lamport Biomedical Research Prize
Kelly Cant, M.D./Ph.D. Thesis Prize
Jeffrey R. Tseng, Dr. Louis H. Nahum Prize
Michael A. Fischer, John P. Peters Prize
Peter J. Siekmeier, Lidz Prize in Psychiatry
Anthony Aizer, Louis G. Welt Prize

Faculty Honors

Each year, faculty are honored for particular contributions to the education and lives of the graduating class. The recipients of the Class of 1997 prizes were:

- Bohmfalk Prize: James Jekel, M.D., the C.-E.A. Winslow Professor of Public Health, and **Vincent Quagliarello, M.D.**, associate professor of medicine, were honored for outstanding contributions to the teaching program, Dr. Jekel for his clinical teaching, Dr. Quagliarello for his efforts in the basic sciences.

- The Francis Gilman Blake Award: Thomas Duffy, M.D., professor of medicine and in the Cancer Center, was recognized as the most outstanding teacher in the medical sciences.
- The Betsy Winters House Staff Award: This honor, which went to Pauline Chen, M.D., honors the member of the house staff of Yale-New Haven Hospital who has made the most significant contribution to the education of the students, as designated by the graduating class.
- The Leah M. Lowenstein Award: Women's health expert **Janet B. Henrich, M.D.**, associate professor of medicine and obstetrics and gynecology, received the prize for being the full-time faculty member whose work represents the highest degree of excellence in nonsexist education. Dr. Henrich also directs the Women's Health Program at Yale and serves as a master of Trumbull College.

- American Medical Women's Association Gender Equity Award: Presented to medical faculty around the country, this prize honors faculty who have promoted gender-fair environment for education and training. Shanta Kapadia, M.D., lecturer in surgery (gross anatomy), and **Laura Ment, M.D.**, professor of pediatric neurology, shared the 1997 prize.

- Dean's Medical Education Farr Prize: Faculty who have made special efforts to organize, coordinate and implement successful courses and clerkships receive this honor. This year's recipients: Walter N. Kernan Jr., M.D., assistant professor of medicine, and **Frederick Haeseler, M.D.**, associate clinical professor of medicine.

Jeffrey Meyerhardt feels the warmth of completing his Yale medical studies.

Following presentation of degrees, graduates, from left, Daniella Courban, Kristina Crothers, Amos Dare, Katherine Day and Malabika De, recite the Yale Physician's Oath authored by Alan C. Mermann, M.D., the school chaplain and clinical professor of pediatrics.

A time-honored celebration

Photographs by Melanie Stengel

With its roots in medieval pageantry and its graduates moving toward a new millenium, commencement 1997 for the graduates of Epidemiology and Public Health (EPH) was a festival of ancient pomp and circumstance and a time for more sober thoughts about the challenges they face after leaving Yale. Dean for Public Health Michael H. Merson, M.D., conferred master's of public health degrees upon 93 students. Ten graduates received doctor of philosophy degrees. **James F. Jekel, M.D.**, who has retired as the C.-E.A. Winslow Professor of Public Health and is a 1965 EPH alumnus, gave the faculty address during the ceremony held on the lawn outside the Laboratory of Epidemiology and Public Health.

Asifa Nurani delivered the student address to an audience of several hundred parents, friends and students.

James F. Jekel

Faculty share the joy of students. Here, Peter Hotez, M.D., Ph.D., associate professor of epidemiology, shows his pride in the achievement of Neda Shargi, whose student research focused on Dr. Hotez's hookworm vaccine project.

Elena Lingas, recipient of the E. Richard Weinerman Fellowship for her involvement in social and political justice efforts, was the EPH banner-bearer.

From left: Yu-Ting Lin, Ya-Pei Liu, Jennifer Meltzer, Garth Rausher and Winfield Ellis Rehmus listen during the ceremony under the tent.

Spring brought Keqin Qi a Ph.D. degree and a bundle in the form of her infant son, Raymond.

Faculty and student awards

The recipient of this year's Award for Excellence in Teaching at EPH had a slight problem getting to the stage on Commencement Day to pick it up. She was across town, receiving her own doctoral degree from the Graduate School of Arts and Sciences. Nonetheless, Elizabeth Bradley, Ph.D., M.B.A, admired by students for her teaching style as an assistant professor of epidemology and public health in the division of Health, Policy and Administration, might have been able to hear the applause that rose from the tent at EPH.

Student awards announced at Commencement this year were:

- The Wilbur G. Downs International Travel Fellowships: Kathryne Baisley, Nora Labiano-Abello, Pia MacDonald, Asifa Nurani, Veronica Pinell-Salles and Lara Vu received support to undertake research on public health problems in developing countries.
- Kathleen Hara Howe Scholarship: Garth Rauscher received this award, given to an incoming student who enrolls mid-career or several years after receiving a baccalaureate degree.
- Merit Scholarships: April Bell, Stella Chang and Meike Hensmann were recognized for their outstanding work.
- Richard H. Schlesinger Fellowships: Marcus Heifetz, Alice Ruby and Teri Schreiner were chosen on the basis of their academic achievements and interest in community-based public health.
- John Devereaux Thompson Scholarships: Hyun-Ju Lee, Jennifer Meltzer and Romericus Stewart were selected based upon their interest in health policy or management.
- E. Richard Weinerman Fellowships: April Bell, Romeo Caringal, Kiran Cherla, Elena Lingas, Veronica Pinell-Salles and Alice Ruby were chosen for their commitment to social justice, awareness of community needs and involvement in social and political action.

'40s

Richard W. Breck, M.D. '45 March, forwards the following news from classmate **Fred O'Connell**, M.D. "Sandy and I had a wonderful time at the reunion with a mixture of joy and sadness that we left—joy at being able to be and it was with you again, if only so briefly, and sadness at having to part. One of my seven daughters, the youngest, said when her older sisters were always leaving for school 'the trouble with this world is that there are too many goodbyes and not enough hellos.' Too true! Well, it was a wonderful reunion/renewal and we will long remember all of you as you were at Howie in the Hills—remarkable you all still looked young and vital, just like those days when the earth was green and we were young and callow fellows. We had a great trip, driving all over Germany, Austria, Bavaria, Switzerland, Italy, with a day in Brussels. Came back exhausted from jet lag but full of memories of fabulous places and nice people."

Joseph R. Stanton, M.D. '45, has donated his vast library on life issues to the Sisters for Life in New York City, a new religious order of women established to assist pregnant women. A library has been built in a former bomb shelter at the convent and was dedicated The Dr. Joseph R. Stanton Human Life Issues and Resource Center. Dr. Stanton also co-authored a restatement of the Hippocratic Oath entitled *A Modern Hippocratic Oath.*

William G. Anlyan, M.D. '49, B.S. '45, chancellor emeritus of Duke University and a trustee of the Duke Endowment, was presented the Lifetime Achievement Award by Research!America at its first Research Advocacy Awards dinner in March in Washington, D.C. Dr. Anlyan was honored for his career accomplishments and his lifetime commitment to improving health and well-being.

'50s

James C. Garlington, M.D. '55, traveled to Africa in February with the Association of Yale Alumni Educational Programs on the East Africa safari. "A must for animal lovers and adventurers," says Dr. Garlington.

Harold J. Fallon Jr., B.A. '53, M.D. '57, associate dean for graduate medical education and professor of medicine at the University of Alabama School of Medicine in Birmingham, has assumed his responsibilities as chair of the Board of Regents of the American College of Physicians (ACP). His one-year term began during the ACP's 78th annual session in March in Philadelphia. An ACP Regent since 1991, Dr. Fallon was awarded mastership in ACP in 1989, an honor reserved for highly distinguished internists.

Joyce D. Gryboski, M.D. '57, HS '57-60, professor emeritus of pediatrics at Yale, was presented the 1966 Schwachman Award of the North American Society for Pediatric Gastroenterology and Nutrition for her accomplishments in the field of pediatric gastroenterology.

Gene W. Spector, M.D. '59, a radiologist in private practice in St. Louis, is opening his third imaging center with its own magnet.

'60s

Augustus A. White III M.D., Dr.Med.Sci., HS '63-66, professor of orthopaedic surgery at Harvard Medical School and the Harvard/MIT Division of Health Sciences and Technology, and orthopaedic surgeon-in-chief, emeritus, at Beth Israel-Deaconess Medical Center, was awarded an honorary Doctor of Medical Science degree from Brown University on the 40th anniversary of his college graduation.

Julian Katz, M.D., a post-doctoral fellow in internal medicine at Yale from 1965 to 1967, was installed as the 136th president of the Philadelphia County Medical Society in June at the Union League of Philadelphia.

Julian Katz

William G. Baxt, M.D. '67, chair of emergency medicine at the University of Pennsylvania Medical Center and associate editor of *Annals of Emergency Medicine*, has been appointed to the Board of Trustees of the Children's Seashore House, Philadelphia Center for Health Care Sciences.

David P. Millett, M.D. '68, FAA Southern Regional Flight Surgeon, a fellow of the Aerospace Medical Association and a trustee of the Civil Aviation Medical Association, made two presentations at the 68th annual scientific meeting of the Aerospace Medical Association in Chicago in May. His topics were *The Stresses of Commercial Flight and Medical In-Flight Emergencies* and *Oxygen Systems and Their Use in Commercial Aviation*. Dr. Millett is retired from both the Air Force and from Eastern Airlines, where he was director of flight medicine.

'70s

Frederick L. Greene, M.D., HS '70-76, director of surgical oncology at the University of South Carolina since 1980 and tenured professor of surgery since 1987, has been named chairman of the Department of General Surgery at the Carolinas Medical Center in Charlotte, N.C.

Elizabeth Morgan, M.D. '71, HS '71-77, writes from Washington: "Have now returned from seven years' exile in New Zealand and a decade of career disruption as a result of family court disruption of my life. I am now able to resume my career, I hope, and with good fortune to be able to combine my interests in surgery and severe physical trauma with those in psychology and severe psychological trauma." Dr. Morgan, who was profiled in the Summer 1990 issue of *Yale Medicine*, spent 25 months in prison for refusing to reveal the whereabouts of her daughter, who she alleged was abused by the girl's father. Dr. Morgan left the United States from 1989 to 1997.

Siang Yong Tan, M.D., J.D., HS '71, professor of medicine at the University of Hawaii John A. Burns School of Medicine in Honolulu, and director of both medical education and the ethics center for the St. Francis Medical Center, was appointed governor of the Hawaii chapter of the American College of Physicians (ACP) during the society's 78th annual session in March in Philadelphia. Dr. Tan was elected for a four-year term and also represents ACP members on the National ACP Board of Governors.

Charles E. Putman, M.D., senior vice president for research administration and policy at Duke University, was elected to the Oak Ridge Associated Universities (ORAU) Board of Directors at the 52nd meeting of the ORAU Council of Sponsoring Institutions. Dr. Putman was an assistant and associate professor of radiology and internal medicine at Yale from 1973 to 1977.

Morris A. Flaum, M.D., M.B.A., HS '74-77, chairman of internal medicine at St. Joseph Mercy Hospital in Ann Arbor, Mich., has been named senior vice president of medical and academic affairs for Mercy Health Partners in Toledo, Ohio.

O'dell M. Owens, M.D. '76, M.P.H. '76, director of reproductive endocrinology at Cincinnati's Christ Hospital, delivered the main address during June commencement exercises at the University of Cincinnati. During the ceremony, he was awarded an honorary Doctor of Humane Letters degree.

O'dell M. Owens, M.D. '76

Neurosurgeon elected to Yale Corporation


JOHNS HOPKINS

Nationally renowned neurosurgeon Dr. **Benjamin S. Carson** was elected in May as alumni trustee of the Yale Corporation in a worldwide balloting of University alumni/ae.

Dr. Carson, who graduated from Yale College in 1973, has achieved recognition both for his skill as a surgeon and as an inspiring role model for disadvantaged young people. He heads the department of pediatric neurosurgery at the Johns Hopkins Medical Institutions and is associate professor of neurosurgery, oncology, plastic surgery and pediatrics at the Johns Hopkins School of Medicine.

Two years ago, Dr. Carson and his wife, Lacena, a 1975 Yale graduate, founded the USA Scholars Fund, a national program that makes annual awards to students in grades 1 to 12 who both have the highest marks in their schools and who participate in community activities or demonstrate humane concern.

Dr. Carson has been recognized by the Alpha Omega Medical Honor Society, the Academy of Achievement, and by the Horatio Alger Society of Distinguished Americans. In 1996 he received an honorary Doctor of Medical Sciences degree from Yale University.

Patrick F. Carone, M.D., M.P.H. '77, director of psychiatry at Long Island's Mercy Medical Center, was appointed in April to chair the New York State Board for Professional Medical Conduct. Dr. Carone, first appointed to the board in 1993, has served on numerous hearing panels and is a member of the Physician Retraining Subcommittee and the Advisory Committee.

K. Randall Young Jr., M.D., HS '78-85, writes to say: "After three years at the National Institute of Allergy and Infectious Diseases, I joined the faculty here at the University of Alabama at Birmingham, where I direct the Division of Pulmonary and Critical Care Medicine and hold the Ben Vaughan Branscomb Chair in Medicine in Respiratory Diseases." He has been in touch with house staff colleagues Shawn Skerrett, Bob Silverman and Randi Leavitt. "If anyone gets down to the heart of Dixie (as it says on Alabama's license plates), we'll show them the best of Southern hospitality."

'80s

Aziz L. Laurent, M.D. '81, staff physician in the student health center at the University of Texas at Austin, is a principal investigator for Phase I drug studies at Pharmaco International. Dr. Laurent also is house physician for the Four Seasons hotel in Austin and a member of the ethics committee of the Travis County Medical Society.

Jed B. Gorlin, M.D. '82, was named associate medical director of Memorial Blood Centers of Minnesota in July.

Amanda Dill, M.D. '86, was elected a fellow of the American College of Physicians last November.

Leo K. Mills, M.D., post-doctoral fellow in internal medicine (cardiology) from 1988 to 1991, is a cardiologist at Green River Heart Institute in Owensboro, Ky.

'90s

Chai Kulsakdinun, M.D. '93, a resident in orthopaedic surgery at Yale-New Haven Hospital, and Julie Wang, B.A. '87, an investment banker, were married on May 30 at the Loeb Boathouse in Central Park in New York.

As world changes, reunion remains a constant

If you attended Alumni Reunion Weekend this past June, you may have noticed that the event followed a pattern that has become comfortably familiar: handshakes, hugs, strawberry shortcake, nostalgia, photos of children and grandchildren, applause for reunion gift chairmen and class volunteers—and a standing ovation for Helen Langner, M.D. '22, at age 105 our most senior alumna! As you will read in detail in the following reports, it was a truly memorable and special weekend for everyone.

All of us here hope that if your class is celebrating a five-year reunion next June—and even if it isn't—that you will join us for this special weekend. Here is a rundown of what happened this year:

More than 250 alumni/ae and guests attended. The weekend started with seminars where classmates discussed the paths of their careers and their thoughts and opinions on the future of medicine, remembering fondly the *Yale System* of medical education. The formal welcome and introduction were presented by Lycurgus M. Davey, M.D. '43 March, president of the Association of Yale Alumni in Medicine (AYAM). Outgoing Dean Gerard N. Burrow, M.D. '58, welcomed the group and introduced Albert B. Deisseroth, M.D., Ph.D., chief of the section of medical oncology and associate director of the Yale Cancer Center, who discussed *The Revolution in Genetics and Health Care*. After the dean's reception in the Historical Library, the group was off to the Harkness Hall courtyard, where the patio had been transformed for a New England-style clambake that featured lobster and shrimp. Entertainment was provided by The Cellmates, a rock band composed of Yale scientists and researchers.

Saturday morning's program began with a faculty seminar on *New Directions in Treatment of Cancer*. Participants included Dr. Deisseroth; Edward Chu, M.D., Ph.D.; Frank Hsu, M.D., Ph.D.; and Barbara Burtness, M.D. Following the seminar, the annual meeting of the Association of Yale Alumni in Medicine was held. The group was honored to have greetings and remarks from Yale President Richard C. Levin. Dr. Burrow gave his final State of the School address and reviewed his years as dean. The meeting concluded with the presentation of the Distinguished Alumni Service Awards to Dr. Davey and John W. Foster, M.D. '71. Both Dr. Davey and Dr. Foster have devoted much of their time and energy to the Alumni Association and the Alumni Fund.

Saturday evening found the reunion classes spread out among various restaurants and private homes for their class dinners. The Friends of the 50th dinner was held at the Graduate Club, honoring the Class of 1947. Also in attendance were graduates senior to their 50th reunion year, members of the five-year-reunion class, and members of the administration. It was a evening of lighthearted conviviality, highlighted by members of the class playing the piano—and one tap dancing for the group during dessert.

Plans for next year's reunion weekend, scheduled for June 5 and 6, are now under way. Alumni/ae who graduated in years ending in a 3 or an 8 will be celebrating their anniversaries. We look forward to seeing you in New Haven.

William K. Jenkins
Managing Director, Office of Alumni Affairs

PETER CASOLINO

The new slate of AYAM officers, from left: President Nicholas M. Passarelli, M.D. '59; Secretary Peter N. Herbert, M.D. '67; Vice President Gilbert F. Hogan, M.D. '57; and Past President Lycurgus M. Davey, M.D. '43 March.

1922

75th reunion

By Helen P. Langner, M.D.

I always attend the Yale Alumni Reunion and this year was my big 75th Reunion, which made it more special for me.

I look forward to and always enjoy meeting and having conversation with the distinguished scientists who have made noteworthy research findings. The scientific seminars that are presented, reporting their more recent developments in research, are one of the highlights of my day.

The company and conversation of my alumni is always pleasant and enlightening. By the day's end I feel up-to-date on all of the Yale activities and what is expected to come. After a long, wonderful day, I return home with all my memories to recuperate. Then it is back to my interests of conservation and natural resources. My main interests always were science and medicine and they remain so.

1937

60th reunion

By Albert D. Spicer, M.D., D.M.D.

The Class of 1937 consists of 18 living members. I enthusiastically hoped to contact enough members for a fair representation of the class at our 60th reunion. I made a few calls, but received no commitments. There always seemed to be one reason or another why they probably wouldn't be able to attend. The outlook was not very encouraging since there were only three of us at the 55th reunion: **Wilbur Johnston**, **Dennie Pratt** and myself. **Wilbur** lives in New Haven and at the present time is not too well. **Dennie Pratt**, who lives in Bass Harbor, Maine, telephoned me to say he would not be able to come.

I personally have been suffering recently from an unsolved neurological disorder that is partially disabling my left hand and arm. It must be that old age is creeping up on the Class of 1937! I sincerely regret that the Class of 1937 was not represented this year.

1942

55th reunion

By Samuel Ritvo, M.D.

The reunion was an enjoyable experience in every respect except for the small turnout of the Class of 1942. The program coordinated by the alumni association provided a gala setting with interesting talks on the cutting edge of medical science, followed by Dean Burrow's reception with an opportunity to greet Dr. David Kessler, the incoming dean. The excellent New England clambake, which followed, was further enlivened by the faculty rock band playing and singing their "molecular biological neuroscientific" creations. At the reunion dinner at the Graduate Club on Saturday, we were the oldest class, represented by **Bill Harrison**, **Leo Kellerman**, **Irv Wolfson**, my wife, Lucille, and me. **Jim Bunce** attended the Friday activities, but could not be there Saturday. **Moe Tulin**, who reported by telephone, keeps up a keen interest in medicine. He particularly enjoys having a

PETER CASOLINO

Helen P. Langner, M.D. '22, receives an ovation and bouquet of flowers during the annual meeting of the Association of Yale Alumni in Medicine in June.

seat designated for him as the senior member of the medical staff when he attends grand rounds at his old hospital. We are grateful to whomever had the idea of seating the three members of the youngest class, 1992, at the same table. It was refreshing to partake of their enthusiasm for what they were doing. All our class members who attended are retired, enjoying their special interests, except for me. I am fortunate to be in a field (psychiatry and psychoanalysis) where I can continue to practice and to teach at the Yale Child Study Center, where I enjoy the stimulation provided by students and colleagues.

1947

50th reunion

By Philip H. Philbin, M.D.

Our class experienced what was easily the most enjoyable of all of our reunions. The good times began at registration, which was painlessly expeditious and where many familiar, albeit somewhat different, faces started to shape up. The name tags were very helpful in lots of cases!

Friday evening we met at Mory's for lifestyle updates, a good deal of reminiscing and a great dinner. There were no speeches, no assigned seats—a very informal affair. **Bob Chase** presented a videotape he'd produced from classmates' photos current and past. It was a delight and served as a springboard for a multitude of comments, some memorable, some best forgotten! Bob had copies for all. This was a very generous task in time and expense on his part, and many thanks were extended. As we were leaving, we encountered the '92 Whiffenpoofs assembled with their Great Mug on high. Happily responsive to requests, they were truly outstanding, an unexpected bonus, a proper conclusion for a notable occasion.

The program at the medical school and the luncheon that followed on Saturday were extremely well received. At that time the class picture, shepherded by a nervous but tolerant (almost weeping) photographer, was completed despite several acerbic remarks on the part of some of the participants.

PETER CASOLINO

From left: Evelyn Gordon, Martin E. Gordon, M.D. '46, and Lucille Ritvo.

Saturday night the good times went on at the Graduate Club. Preceding dinner were cocktails, conversation and exquisite music, the latter thanks to **Vic Machcinski**, the official class pianist. During dinner, between courses, Dean Burrow and Drs. Davey and Spinelli spoke briefly. Drs. **Olive Pitkin Tamm, Jack Cannon, Frank Epstein** and **Bill Collins** then captivated the audience with comments that can only be described as hysterical rather than historical. Moving to the ballroom after the repast, the group was fortunate that classmate **Brock Lynch** had agreed to a dance exhibition accompanied by a sing-along by those present. Dancing is stressful enough; trying to dance during the resultant cacophony would tax anyone's concentration! **Brock** hung in there, did a professional, totally enjoyable performance. The night seemed a happy time for everyone.

On a gorgeous, sunny Sunday morning **Bob** and Martha **Newton** opened their beautiful home to the class for the perfect reunion finale—

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Brock Lynch, M.D. '47, left, catches up with Rocco M. Fasanella, M.D. '43, HS '50, during the Dean's Reception in the Medical Historical Library during reunion weekend.

a tasty, informal brunch under the most attractive of circumstances. It was another grand memory of our 50th, which I'm sure we'll recall many times. The class owes a debt of thanks to **Bob Newton**, **Bob Kerin** and those thoughtful, ever helpful staffers in the alumni office.

Those of the Class of 1947 attending our 50th were **George** and Ellie **Barnes**, **Hank Blansfield** and Lorraine, **Roy** and Margaret **Breg**, **Jack Cannon** and Doris, **Jack Carpenter** and Casey, **Charlie Cavanaugh** and Elizabeth, **Bob** and Ann **Chase**, the **Chernoffs**, **Amos** and Renate; **Bill Collins** and Gwen, the **Darrows**, **Bob** and Sue; **Jean Daugherty**, **Frank** and Sherrie **Epstein**, **Dick Friedlander** and Nancy, **Frank** and Ann **Horton**, **Bob** and Claire **Kerin, Anton Lethin** and Bonnie Ayers. Mary, **Brad Colwell**'s widow, was nice to come. Also present were **Dick Levy** and his wife, Barbara; **Brock Lynch, Vic** and Barb **Machcinski**, **Willie McClelland** and Jean, **Bob** and Martha **Newton**, **Mike Nobil** and Gwen, **Phil** and Jo **Philbin, Irving (Billy) Rudman**, **Ellis Van Slyck** with his wife, Ann; **Olive Pitkin Tamm**, **Hank Williams** and last, but certainly not least, **Root** and Marie **Ziegra**.

Bill Thompson, **Rocco Calandruccio**, **Dick** and **Betty Carlin**, **Archie Dean**, **Arthur Chapman**, **Steve Gehrs** and **Pat Tudbury** tried their best, but just couldn't make it. Hope we see all of them next time.

1952

45th reunion

By Frank Coughlin, M.D.

Forty-five years and one day after our diplomas were presented to us, signed by President Alfred Whitney Griswold, 11 of 27 living classmates, out of our original 66 students, returned to Yale. Over two days we enjoyed a delightful reacquaintance with our school, our fellow students and our shared stories, enthusiasms and experiences. Actually our happy band of reunion celebrants consisted of 17 persons: **Maurice L. Bogdonoff**, **Frank R.** and Barbara **Coughlin Jr.**, **Richard D.** and Mary Botts **Floyd**, **Arthur P.** and Catherine **Hustead**, **Joseph A.** and Sarah **Montimurro**, **Robert L.** and Janiece Nolan, **Robert F.** and Edith Trugly **Owen**, **Robert G. Petersdorf**, **John M. Roberts** and Louise Regan, and **John L. Wolff.**

In preparation for the reunion, **John Wagner**, class secretary, assembled and distributed a folio of Class of 1952 profiles contributed by 24 of our classmates. Most of our class have retired from active medical teaching and practice after busy careers with active community and family lives. The folio memorialized seven others who had died since 1992: **Siggie Centerwall**, **Bill Minturn**, **Bill Klatchko**, **Bob Zeppa**, **Bill Stephenson**, **Don Schultz** and **Ray Duff. Dick** and Ruth **de Niord Jr.** were unable to attend this year.

With the able support of the Alumni Affairs Office we participated in a program that showed us something new and helped us to appreciate something old: The *Yale System* is alive and well! Students are selected on the basis of intelligence, performance and compassion; students come from diverse backgrounds and share a commitment to excellence and life-long learning. Uniformly, we came to the conclusion that we were fortunate to have the opportunity to commence our life's work at Yale University School of Medicine.

On the first day of class reunion we assembled in the Hope Building. Each of us reviewed something about our careers, our impressions of Yale, and our hopes and concerns for the direction in which the school will move in this era of

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In the steps of Peter Parker

Arthur Ebbert Jr., M.D., received the Peter Parker Medal during reunion for his long and remarkable service to the School of Medicine. Dr. Ebbert, a former deputy dean and founding editor of Yale Medicine *magazine, is professor emeritus of medicine. The medal, awarded periodically by the dean, is named after the Rev. Peter Parker, an 1834 Yale medical graduate and missionary who established the first Western hospital in China.*

managed care, advanced medical technology and electronic communication. In the afternoon we were welcomed by AYAM president Bill Davey. Outgoing Dean Gerard N. Burrow, M.D. '58, then spoke to us optimistically about the state of the school. We enjoyed Professor Albert B. Deisseroth's dramatic presentation on the *Revolution in Genetics and Health Care.*

After the Dean's Reception in the Historical Library, which looks pleasingly familiar, we adjourned to a New England clambake.

On the following day after breakfast, we attended a faculty seminar led by Professor Deisseroth, and then concluded the morning with the annual meeting of the AYAM led by Bill Davey (who was Dr. Bill German's chief neurosurgical resident when we were in our clinical years!). At the meeting, questions were asked and answered concerning school finances, the *Yale System*, student selection and performance, and the school's need for alumni support.

Our final evening together as a class featured a class dinner at Barkie's restaurant. This provided another opportunity to renew old friendships, to share life stories and to talk about Yale.

We came away refreshed and appreciative of the good fortune that brought us to a superb place of education at the early stage of our adult lives and the knowledge that Yale continues to offer others the same opportunity today.

1957

40th reunion

By Jack Levin, M.D.

The Class of 1957 held its 40th reunion activities on Saturday, June 7. We had our traditional class meeting, following luncheon at Harkness Hall, on Saturday afternoon in a pleasant room in the Hope Building. **Hal Fallon** (a dean at the University of Alabama School of Medicine), **Stan Kilty** (public health and HMOs), and **Ron Fishbein** (life as a surgeon in private practice) thoughtfully shared their interesting professional experiences with us. A sad moment was spent remembering the eight members of the class who had passed away.

In contrast to the two previous reunions, the weather was clear and pleasant, adding to the great success of a new event—an excellent clambake in the courtyard of Harkness Hall on Friday evening—and to the enjoyment of the class dinner on Saturday evening, held at the Stony Creek home of a cousin of Carol Hogan.

The following classmates were present: **Vince** and Daria **Andriole**; **Jane Battaglia** and her granddaughter, Jessica Harris; **Jack** and Barbara **Blechner**; **Richard** and Laurel **Breuer**; **Harry** and JoAnn **Briggs**; **Ed Eyerman** and Janet Vitt; **Hal** and Jo Ann **Fallon**; **Bob** and Joan **Fishbein**; **Ron** and Estelle **Fishbein**; **Tony** and Mary **Fons**; **Liz** and Ben **Forsyth**; **Gil** and Carol **Hogan**; **Dick Kahler**; **Stan** and Carol **Kilty**; **Bill** and Priscilla **Kissick**; **Jack Levin**; **Howie** and Gretchen **Minners**; **Bob** and Jill **Modlin**; **Herb** and Ann **Newman**; **Ray Phillips**; **Cliff** and Barbara **Reifler**; **Mel** and Marianne **Roberts**; **Don Stahl**; **Bill** and Barbara **Waskowitz.**

As usual, Carol and **Gil Hogan** provided a lovely evening, in a very attractive setting overlooking the Thimble Islands. The food was good and plentiful, and everyone enjoyed the opportunity for extensive conversations with their classmates. Over one-third of those who attended were retired, emphasizing that 40

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Distinguished by service

Lycurgus M. Davey, M.D., '43 March, left, and John W. Foster Jr., M.D. '71, HS '72-76, above, received the Distinguished Alumni Service Award during reunion in June.

Dr. Davey, who worked for legendary neurosurgeon Harvey Cushing as a Yale undergraduate, was lauded as "a living bridge to a golden era of medicine at Yale." He practiced neurosurgery in New Haven for five decades and was president of the AYAM from 1995 to 1997.

Dr. Foster, chief of radiology at Westerly Hospital in Rhode Island, served the school for many years, most recently as chair of the YSM Alumni Fund, and remains an active member of the AYAM executive committee.

years had actually passed since graduation.

I am planning to prepare an updated class book that will provide current addresses and telephone numbers. With retirement, many members of the class have moved and can no longer be found at their usual locations. In addition, it might be very helpful to know who now lives (or has a vacation home) in places one might be visiting! If anyone has news that they would like to have included in this publication, please write to me at 87 Shore View Avenue, San Francisco, CA 94121.

1962

35th reunion

By Michael Alderman, M.D.

In New Haven for fun, laughs, memories, good food and some serious talk were **Bill** and Anne **Miller**, **John** and Trudy **Harrington** (John is now dean of Tufts Medical School), **Arnold** and Nancy **Eisenfeld**, **John** and Carol **German**, **Steve** and Kate **Fricker**, **Fred** and Jane **Cantor**, **Dave Seil** (Dave had a video he had made from old class pictures of our fourth-year picnic—everyone had more hair), **Jim** and Joyce **Spencer**, **Stan** and Maureen **Matyszewski**, **Dick** and Peggy **Pschirrer** (thanks for being the on-site hosts!), **Bruce Elfenbein**, (**Bruce** came up by train from Philadelphia Saturday just to join us for dinner) and **Alan** and Rhona **Lieberson**. **Mickey Alderman** had expected to join us but the pressure of an early morning departure for Europe kept him away at the last minute.

Several classmates (**Manny Lipson**, **Glenn Kelly** and **Tom Chase**) had family and/or practice commitments that prevented them from traveling to New Haven. **John Godley** had a daughter graduating from medical school in Chicago. **Tom Dann** wrote that his oldest child, Sara, is a second-year resident in child psychiatry at Johns Hopkins and his youngest child is in high school. **Pat Hassakis** sent her best wishes and regrets from Santa Monica. **Dick Collins** was moving from the U.S. Embassy in New Delhi to the U.S. consulate in Hong Kong. The week before reunion, while on vacation, **John Foreman** was thrown from a horse and suffered back injuries; luckily he has returned to the practice of pediatrics with a body brace and gadgets that enable him to get around.

Not many of us got to New Haven this year for our 35th Reunion. Five years seems such a long time until the 40th, so some of us thought that a reunion midway might be in order—in sunnier climes, of course. Perhaps that will

persuade more of you to join us.

We missed the rest of you and trust that you are well and thriving. Let us hear from you!

1967

30th reunion

By James Dowaliby III, M.D.

At our five-year reunion in 1972 we started talking Friday noon and did not slow down until Saturday midnight. It was as if we had never been apart, as if we had just come in from anatomy or pathology and had sat down to have a beer and talk over the day. The ease with which we slipped back into a comfortable and confiding relationship with each other was astonishing—and gratifying.

Twenty-five years after that first reunion I am no longer surprised, but I am still gratified. Now I know that it happens every time. At our 30-year reunion we started talking Friday noon and did not slow down until Saturday midnight. **Tony Lovell** says that we have the *Yale System* to thank. Since we were not set in grim competition with each other, we spent the first two years working together, helping each other and forging bonds of confidence and friendship. I suspect that he is right. In any event, it is clear that those bonds are powerful and indissoluble.

There were 27 present for our 30th: **Dan** and Elissa **Arons, Richard Bockman**, **Mary Williams Clark** and her husband, Jerry Lee King; **Alex Dora**, **Jim** and JoAnne **Dowaliby**, **John Drews**, **Richard** and Lilian **Hart**, **Peter** and Maureen **Herbert**, **Tony** and Kathy **Lovell**, **Bill Perkins, Brian** and Robin **Rigney**, **Stephen** and Carol **Schimpff**, **Helen Smits** and her husband, Roger LeCompte; **Dick Swett** and his daughter, Diana; **Bob Young**, **Ihor Zachary** and **Peter Zeman**.

The mood was a little different this time, a little more earnest, as befits our age. After all, we're all about 55 years old now (except for **Dowaliby**, who against all advice stubbornly persists in remaining 13 years older than the rest). Time's wing has brushed us all. Two of the members are retired on disability. Another is about to have surgery for prostate cancer, and a fourth has just been diagnosed as having significant valvular heart disease. There was a flurry of informal consultations as we sought to confirm our down-home physicians' opinions with classmates—the people we *really* trust.

Above all, the talk, the endless talk. Of children, of work, of the medical climate, of retirement, of travel, of adventure. When our dinner on Saturday night in the private back room at Adriana's was over and the talking had finally wound down, the furniture in the main dining room was stacked up and the restaurant staff were quietly waiting for us to leave so that they could shampoo the carpets. It was a little before midnight. Everyone had to get up and head for home in the morning. We had not run out of things to talk about. I can assure you of that. We never will.

1972

25th reunion

By Harry L. Malech, M.D.

June 1997 marked a quarter-century since our class finished what already is an ancient historical version of the Yale "new" curriculum. The 25th-year reunion of our class was

very well attended. Though not everyone could participate in all the events, I am pleased to report that 30 of our classmates (more than a third of our class) were in attendance at one or more reunion events. **Felix Freshwater**'s generous matching gift challenge to our class provided a special theme and significance to our reunion. I also was impressed with the enthusiasm of a large group of our fellow classmates, particularly the leadership of **Don Kent**, for taking on this challenging opportunity both to help the medical school and at the same time use this occasion to renew old friendships among our classmates.

There were excellent reunion lectures on Friday and Saturday. Among those seen attending the lectures were **Mary Charlson** and **Fred Hyde**. **Jesse Jupiter** gave a lecture to members of the orthopaedics and rehabilitation department during his reunion visit. Following the lectures of Saturday morning, there was a chance to meet over a buffet luncheon at Harkness. It was interesting to note that a number of our classmates have children who are undergraduates at Yale, thus providing extra opportunities to give generously to Yale. These include **Mark Osias**, **Philip Cohen** and **Harry Malech**. **Phil** did note that because he had twins at Yale he had a special deal on paying tuition in that he only needed one stamp to send both tuition checks.

Some others seen at the lunch were **Steven Zeldis**, **Tony Jackson, Michael Charney** and **Fred Henretig**. **Dick Robbins** and Helen were there, and it was so much fun to be able to appreciate his timing and humor again as he joked about his home state of Georgia. Later that afternoon we all migrated to **Bruce Haak**'s home on a beautiful point overlooking Long Island Sound at the end of Twin Coves Road in Madison. We are very grateful to the Haaks for their hospitality, providing a comfortable and informal gathering for at least 20 classmates and some spouses.

Some of those at **Bruce**'s house included **Paul** and Ann **Lucky**, **Charles Scholhamer**, **Larry** and Barbara **Temkin**, **Marc** and Lesley **Osias**, **John Fulkerson**, **Bob** and Louise **Glassman**, **Lenny** and Linda **Cohen**, **Mike** and Sally **Buckley**, **Dave Moyer** and **Bob Goodman**. In the evening, we had an excellent dinner at the Graduate Club. It was so popular that we needed to squeeze in a few extra place settings and chairs. Some of those in attendance at the dinner were **Dorothy Gohdes** and Neil Kaminsky, **Don** and Ellen **Kent**, **Phil** and Susan **Lebowitz**, **Phil** and Barbara **Rothfeld**, **Gary** and Meda **Strauss**, **Bill Druckemiller**, **Dave Moyer** and **Frank Kahr**.

1977

20th reunion

By Attilio V. Granata, M.D.

The special festivities of the Class of 1977's 20th reunion took place at Mory's on Saturday evening, June 7. After drinks in the library, a small but hearty number of classmates and spouses met for dinner in the Captain's Room. Julia Frank brought the album of snapshots from our second-year show, Mefistofollies, in December 1974. (For younger alumni, in our day we had three semesters of basic science and introductory clinical medicine, then began our clerkships in the middle of the second year!)

After posing for our official class photo (plus 20 years), dinner found us all easily renewing the camaraderie of our medical school days. Talk ranged from juggling family issues to managed care to the whereabouts of other classmates.

Present were: **Gerald Brody** (and wife, Pat), **Harriet Comite**, **Sybil Duchin** (and husband, Art), **Julia Frank**, **Attilio Granata** (and wife, Claudia Dinan, YMS '80), **Alan Penziner** (and wife, Pat), and **Gail Sullivan** (and husband, Victor Peplau). Those present heard regrets sent from **Steve Scheinman** (who promises to attend the 25th), **Alice Matoba**, **Margaret McKenna** (in the middle of moving to D.C.), and **Marybeth Ezaki**. Time moves swiftly, but the recollection of old friends and good times adds a unique dimension of meaning. We promise an all-out effort to break all attendance records for the 25th!

1982

15th reunion

By Stephanie Wolf-Rosenblum, M.D.

A small but enthusiasic group from the Yale School of Medicine Class of 1982 met to celebrate their 15th reunion in June. Hats off to **Lynn Tanoue** and **Carrie Redlich** for planning the weekend's events, which began with a clambake Friday night. On Saturday, classmates and their families enjoyed an afternoon of sun and tennis at the Ridgetop Club in Hamden, followed by dinner at Scoozi's in New Haven while the kids had a massive pajama party at **Carrie**'s. The weekend culminated with brunch at **Lynn**'s on Sunday. The weekend's participants included: **Lynn Tanoue** (pulmonary and critical care faculty at Yale), **Daphne Hsu** (pediatric cardiology faculty at Columbia), **Jed Gorlin**

(about to assume the helm at the Blood Centers of Minnesota), **Patty Kellner** (family practice, University Heights in Cleveland), **Jessica Herzstein** (occupational medicine/toxicology consultant, Massachusetts), **Carrie Redlich** (occupational and pulmonary medicine faculty at Yale), **Jeff Tepler** (hemotology/oncology at New York Hospital, women's health), **Stu Gardner** (pediatric practice, Connecticut), and **Stephanie Wolf-Rosenblum** (pulmonary/critical care/sleep and medical director, Lahey Hitchcock, New Hampshire). Prize for longest distance traveled goes to **Bert Ungricht** (ophthalmology, Salt Lake City). There in spirit were **Paula Braverman** (pediatrics in Philadelphia, recovering from surgery), and **Dan Odenheimer** (Israel).

We are looking forward to a record crowd at our 20th in the year 2002! In the meantime, a partial list of e-mail addresses has been tabulated. For information, or to add your name, contact me at: *Stephanie.Wolf-Rosenblum@Hitchcock.org.*

1987

10th reunion

By Barry Weinstock, M.D.

The Class of 1987 met informally during the day on Friday, enjoying the reception in the Medical Historical Library. Many enjoyed the clambake in front of Harkness Hall. On Saturday most re-explored Yale and then convened at Mory's for a dinner of exchanging stories, pictures of children and e-mail addresses. **Andy Bazos** and his wife, Ann, recently finished renovating a 250-year-old home and are now ready to start thinking about kids. **Andy** is an orthopaedist practicing in New York and Connecticut. **Nick Burke** and his wife, Sue, described life with their three children in Minneapolis, where **Nick** is busy as a cardiologist. **Pat Ruwe** and his wife, Stacy, joined the festivities. **Pat** is assistant professor of orthopaedics and rehabilitation at Yale. **Rich Diana** also is an orthopaedist in the New Haven area but could not attend the reunion. **Joe King** and **Amy Justice** attended from Cleveland, where **Amy** is doing HIV research and primary care while **Joe** is a busy neurosurgeon. They have a 10-month-old boy. **Linda** and Jon **Lewin** also arrived from Cleveland to join the class for dinner along with **Mike Solon**, who is practicing primary care in the Baltimore area. **Donna Klimowicz** is a psychiatrist in south Jersey and is busy raising a 3-year-old with her husband, Rick. **Tarik Ramahi** couldn't attend the reunion but is assistant professor of medicine/cardiology at Yale, specializing in heart failure and transplantation. **Steve Gaskin** and his wife, Diane, are busy raising four children in Charlotte, N.C., where **Steve** is an emergency-room physician. **Larry Amsel** is handling in-patient psychiatry at Columbia in New York, where **Leslie Vogel** is taking care of out-patient psychiatry. **Leslie** and her husband, Luciano, attended the reunion with their daughter, Paola. **Lisa Straus** attended and is practicing primary care in New York. **Rebecca Kadish** is an anesthesiologist in New Hampshire. **Eric Jankelovits** is an anesthesiologist in Stamford, Conn. He and his wife, Monica, have two little girls. Although **Eric** could not attend the reunion, I did track him down on I-95 by cellular phone and enjoyed a quick visit with him at a McDonalds! **Seth Rosenthal** won the award for longest trip (from California, where he is practicing radiation oncology). **Mark Widmann** and his wife, Kim,

won the best excuse award for not attending the reunion. Kim gave birth to Sara Hirsh Widmann on May 28, 1997—all 6 lb, 6 oz of her. **Mike Gaziano** and his wife, Ann, attended the reunion from Boston, but unfortunately spent much of the trip caring for their children, who both had colds. **Mike** reports that **Matthew Miller** and **John Keaney** are both alive and well and living in Boston, but were unable to attend the reunion this year. **John** is a cardiologist at Boston University. **Mindy Schuster** is practicing infectious disease at Penn. **Barry Weinstock** is a cardiologist in Florida. He and his wife, Jodi, have two sons. Goals for future reunions are more and better programming and better attendance. We also will be trying to establish a Class of 1987 e-mail directory. If you have an e-mail address, send it to Barry Weinstock at bweinstock@csi.com. I apologize in advance for any omissions or errors!

1992

5th reunion

By Robin A. Perlmutter, M.D.

There were only three 1992'ers at our fifth-year reunion dinner (**Elizabeth A. Mullen**, **Tom Davenport** and **Robin Perlmutter**) because rumor had it the other 97 were on call. **Mike** and **Nancy (Dingott) Girardi** attended the weekend with their little boy, but left before the class dinner. We enjoyed meeting members of the Class of 1942 (our dinner companions) and realized that their experiences at Yale were pretty similar to ours. The *Yale System* may look a little different than it did in 1942, but it's still alive and kicking.

I have some news of the class, which is strictly via the grapevine, so the details are shaky, if not downright fictitious. I apologize in advance for any omissions (or commissions). Since graduation, the following have gotten married: **Mimi Blaurock**, **Jeb Blaugrund**, **Barry Birch**, **Jim Chang** and **Harriet Roeder**, **John Barash**, **Sara Dobbs**, **Stephanie Goodman**, **Suresh Karne**, **Bob Johnson**, **Chai Kulsakdinun** (I saw the announcement in the *New York Times*, so it must be true), **Julie Lund**, **Dan Philbin**, **Sean Roddy** (REALLY!!), and **Fred Welt**. New parents since graduation include: **Ahmed Abou-Zamzam** (daughter Aida), **Rick Alaimo** (son), **Karen Antell** and **Mitch Saltzberg** (son Ethan), **Ken Rosenzweig** and **Stacey Berg Rosenzweig** (daughter Olivia), **Nancy** and **Mike Girardi** (son), **Nahum Goldberg** (daughter Shoshana joins big sister), **Laura Marks** (son Jake), **Julie Lund** (son Will), **Nate Schmiechen** (twins Alexandra and Zoe), **Bill Sharpe** (son), **Claudia Showalter Reynders** (twins really recently), **Annie Towe Egan** (twin sons), and **Teri Wooten Daily** (daughter Emma). Also, congratulations to **Anne Wolf** on her recent engagement.

If anyone has more accurate or additional news of our class and wants to share it, e-mail me (Robin) at *mta.dr.perr@mahhosp.org.*

Buildings matter

At the dedication of renovated facilties for EPH, a commitment to the future.

During reunion festivities in early June, the alumni/ae, faculty and students of Epidemiology and Public Health found added cause for celebration in the dedication of renovated facilities in the Laboratory of Epidemiology and Public Health (LEPH) and at 47 College Place.

The renovation produced comfortable new space for a student center, library, computer rooms and a redesigned C.-E.A. Winslow Auditorium, as well as office renovations on the first three floors of LEPH. Several hundred members of the EPH, medical school and New Haven communities turned out to mark the occasion, highlighted by the cutting of both a ribbon and a cake, the latter taking the distinctive form of the towering LEPH building.

The program began with an invocation by the Rev. Bonita Grubbs, M.P.H. '85, and remarks by EPH Dean Michael H. Merson, M.D.; Yale President Richard C. Levin; then-Dean Gerard N. Burrow, M.D. '58; and incoming Dean David A. Kessler, M.D.

Later in the day, awards were presented by Travis Hedrick, M.P.H. '77, Ph.D., president of the Association of Yale Alumni in Public Health. Longtime alumni/ae leader and retired EPH faculty member Eric Mood, LLD, M.P.H. '43, received the Distinguished Service Award. An emotional and joyful tribute to the late John D. Thompson, M.S. '50, included reminiscences by Jack O'Connor, M.P.H. '57; Joel Kavet, M.P.H. '67, Sc.D.; and Rosemary Hurzeler, M.P.H. '77.

A special retirement observance honored James F. Jekel, M.D., M.P.H. '65, who served as the C.-E.A. Winslow Professor of Public Health. Dr. Jekel spoke at the EPH commencement in May and received the Bohmfalk teaching award at the medical school ceremony.

(Culinary) art imitates life

Every celebration needs a cake, and the dedication of renovated EPH facilities in June was no exception. EPH Dean and Chairman Michael H. Merson, M.D., cut both the cake and the proverbial blue ribbon, the latter with the help of outgoing medical school dean Gerard N. Burrow, M.D. '58, now the David Paige Smith Professor of Medicine and special advisor to President Levin.

Speakers for the day's final program, *Retrospectives: Missions and Milestones During the Last 50 Years at EPH,* included former EPH chairs Robert McCollum, M.D., D.P.H., and Adrian Ostfeld, M.D., and alumni/ae David Pearson, Ph.D., '70; Rosemary Stevens, Ph.D. '68; Jennifer Kelsey, Ph.D. '69; Kathleen Howe, M.P.H. '56; and George Silver, M.D., M.P.H. '69; professor emeritus of public health and a former HEW undersecretary.

Listening to the tribute to John D. Thompson, from left: Darlene Zimmerman, M.P.H. '88; Gerlinde Herman-Kehlenback, M.P.H. '81; Dorothy M. Horstmann, M.D., John Rodman Paul Professor Emeritus of Epidemiology and a senior research scientist in epidemiology; James Niederman, M.D., recently retired clinical professor of epidemiology and public health; and Arthur Ebbert, M.D., former deputy dean of the medical school.

Cardiologist Forrester Lee, M.D., assistant dean for multicultural affairs, and Courtland Seymour Wilson, executive director of the Hill Development Corp.

Medical school Dean David A. Kessler, M.D., spoke with former Connecticut health commissioner Susan Addiss, M.P.H. '69.

David Pearson, Ph.D. '70, former associate dean for public health, was among the speakers discussing EPH milestones over the past 50 years. He is now chairman of Health Policy and Management at the University of New Hampshire.

Excerpts from the dedication ceremony

"These newly renovated facilities are not the school of public health. That school exists in the minds, and the hearts, and the spirits of all of you who are participating in this fine institution. On the other hand, it would be naïve to suggest that buildings don't matter. … The new and renovated facilities are symbolic of Yale's recommitment to research and education in the field of epidemiology and public health. …

It has been enormously heartening from the other side of town to watch what Mike [Merson] has been able to do in a very brief period with the school, the energy he has brought to it, the tremendous commitment, the opening up to an international horizon. He has shown extraordinary leadership. I know that you all believe that. I think great times are ahead for the school."

President Richard C. Levin

Travis Hedrick, M.P.H. '77, Ph.D., president of the Association of Yale Alumni in Public Health, presents the Distinguished Service Award to Eric Mood, LLD, M.P.H. '43.

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"By the time a person reaches my age, he is supposed to have lost the urgency of his ideals. Reality is supposed to have dulled the sharp edge of his resolution. But it hasn't worked that way with me and I know it hasn't worked that way with you. I'd like each of you to turn back the clock for a moment; I'd like all of you to think back to the time when you took your first step on the road to public health as a profession. I'd like you to think what motivated you then. … It certainly wasn't social prestige, and it certainly wasn't the money. It was simply a desire to make a difference in people's lives, to do some good in the world.

Horace Mann, the educator, said that you should be ashamed to die until you have won some victory for humanity. He could have been talking about the road that you have chosen. … Accomplishments in the field of public health, as in any humanitarian endeavor, rest in the simple recognition that problems can be solved if we are willing to face our responsibility. It doesn't matter whether your degree is an M.P.H., a doctor of public health, an M.D., or a Ph.D. in nursing. … The lines between medicine and public health should be nonexistent. Prevention knows no boundaries, infectious disease knows no boundaries, the death and disability from tobacco knows no boundaries. …

The public health challenges of today are no less formidable than those of years past. In this country polio, diphtheria and rickets have been replaced by heart disease, cancer and stroke. Our professions cry out for men and women who view public health not as a profession, but as their calling, who are willing to touch what others see as untouchable, who are willing to sign up for nothing less than the Churchillian promise of blood, toil, sweat and tears in return for nothing more than the privilege of promoting the common good."

Dean David A. Kessler, M.D.

Kathleen Howe, M.P.H. '56, presents the Distinguished Alumni Award medallion to Adriana Natale, M.D., in recognition of the contribution of Dr. Natale's late husband, John D. Thompson, M.S. '50.

W. Randal Bell

W. Randal Bell, M.D., formerly of Marblehead, Mass., died April 1 of metastatic prostate cancer at his home in Peterborough, N.H. He was 85.

Born in Brooklyn, N.Y., Dr. Bell graduated from Rensselaer Polytechnic Institute and received his medical degree from Yale in 1941. After a year's internship at New Haven Hospital, he spent four years in the Army medical corps on the West Coast and with the 313th General Hospital in the Philippines, retiring as a major.

For 30 years, Dr. Bell was a pediatrician in Massachusetts. He was chief of staff at North Shore Children's Hospital, where he was an active participant in the building of a new hospital facility. He also was on the staff at Salem Hospital and the former Mary Alley Hospital in Marblehead.

After retiring, Dr. Bell worked with Dr. Robert Grassi, seeing patients at Monadnock Community Hospital in Peterborough, and with the Visiting Nurse Association and Crotched Mountain Rehabilitation Center.

Philip S. Brezina

Philip S. Brezina, M.D., of Bristol, Conn., and East Orleans, Mass., died June 10. He was 82.

Dr. Brezina received a bachelor of arts degree from Trinity College in Hartford in 1936 and his medical degree from Yale in 1940. He completed a six-year surgical residency in New Haven and served as chief surgical resident. In 1946 Dr. Brezina opened a general surgery practice in Bristol and did pioneering work in vascular surgery. He also served as chief of surgery at Bristol Hospital for more than 30 years. In 1965 he volunteered his surgical skills at the Albert Schweitzer Hospital in Haiti.

Dr. Brezina and his wife, Frances, traveled worldwide pursuing their special interest in birds. He was an avid fisherman and a master at fly tying.

Lee E. Farr

Lee E. Farr, M.D., one of the nation's preeminent physicians in nuclear and environmental medicine, died of cancer in Walnut Creek, Calif., on July 16. He was 89.

A native of Albuquerque, N.M., Dr. Farr was a 1929 graduate of Yale College. He received his M.D. degree from the School of Medicine in 1933 and remained as an assistant professor of pediatrics. In 1934 he was appointed an associate in medicine at the Hospital of the Rockefeller Institute for Medical Research in New York City. From 1940 to 1949 he served as director of research and physician-in-chief at the Alfred I. DuPont Institute of the Nemours Foundation in Wilmington, Del., where he researched and developed a treatment for nephrosis in children.

In 1949 Dr. Farr was named medical director, chairman of the medical department and physician-in-chief of the Medical Research Center at Brookhaven National Laboratory in Upton, N.Y. While at Brookhaven, he pioneered the design and construction of the world's first nuclear reactor built and used primarily for medical purposes.

In 1962 the University of Texas in Houston appointed Dr. Farr chief of the section of nuclear medicine at M.D. Anderson Hospital and Tumor Institute, and as professor of nuclear and environmental medicine and chairman of the Department of Environmental Health at the University of Texas School of Public Health.

In 1968, the California State Department of Public Health appointed Dr. Farr chief of emergency health services and head of disaster health services. He worked to establish the California Bureau of Emergency Medical Services and was named its first chief in 1970, a post he held until his retirement in 1973.

During World War II, Dr. Farr served with the Navy as a medical officer aboard the U.S.S. Tryon, an armed hospital transport ship in the Pacific assigned to remove casualties from Guadalcanal. Dr. Farr was a consultant to the Navy and to the Atomic Energy Commission and was a member of the U.S. Delegation to the International Conference on Atomic Energy in Geneva in 1955.

He also was selected in 1955 to be a member of the advisory committee to the Atomic Bomb

Casualty Commission, analyzing medical effects on atomic bomb victims. He served as its chairman from 1955 to 1968.

Dr. Farr was awarded the Gold Cross Order of Phoenix by Queen Frederika of Greece in 1960 for his consulting work in nuclear medicine. West Germany bestowed the Order of Merit upon him in 1963. He authored more than 200 papers and articles on nuclear medicine, nuclear reactors, protein metabolism, emergency medical services, and radioactive and chemical environmental contaminants.

Franklin M. Foote

Franklin M. Foote, M.D., Dr.P.H., formerly of Wethersfield, Conn., died June 29 at Fairview Manor in Pittsfield, Mass. He was 89.

Dr. Foote was a graduate of Yale, where he earned three degrees—bachelor of science in 1930, doctor of medicine in 1933 and doctor of public health in 1935. He was certified in public health by the American Board of Preventive Medicine in 1949. Dr. Foote served in the Army medical corps during World War II and for many years in the Army Reserve before retiring as a colonel.

Dr. Foote was executive director of the National Society for the Prevention of Blindness in New York City before his appointment in 1959 as Connecticut's health commissioner. He served in that position for 15 years under three different governors.

Dr. Foote had been honored by the New England Public Health Association, the Connecticut Public Health Association and the Connecticut Society for the Prevention of Blindness. He was also made a Paul Harris Fellow by the Rotary Club of Hartford.

George L. Hoffman

George L. Hoffman, M.D., of Scottsdale, Ariz., died May 16. He was 71.

Born in Pittsburgh, Dr. Hoffman studied at the Virginia Military Institute and the University of Pittsburgh before graduating from Haverford College. He served as a second lieutenant during World War II, the youngest commissioned officer in the Army, according to his family. In 1953 he graduated from Yale School of Medicine. Dr. Hoffman was an intern in Philadelphia, where he met his wife, Jewel Delores Hunt, a nurse. In 1954 he served a surgical residency at the Cleveland Clinic Hospital.

In 1958 Dr. Hoffman moved to Mesa, Ariz., where he was a well-known and respected surgeon until his retirement several years ago. He was chief of staff at Mesa Lutheran Hospital and a member of the Arizona Board of Medical Examiners. Dr. Hoffman served as president of the Maricopa County Medical Society, the Arizona Chapter of the American College of Surgeons and the Phoenix Surgical Society. His most outstanding honor was election to the Board of Regents of the American College of Surgeons in 1975.

Dr. Hoffman owned a dude ranch in Yavapai County for 15 years and brought his family there to escape city life and experience the West of times past. He retired in 1993 and moved to Scottsdale, where he enjoyed riding his horse and playing tennis daily.

Hans R. Huessy

Hans R. Huessy, M.D., died May 9 from complications of a brain aneurysm at his home in Jericho, Vt. He was 75.

Dr. Huessy was one of the first researchers to recognize that the behavior patterns observed in children with attention deficit disorder continued through life, and that the disorder presented symptoms in males that were very different from those in females. A maverick in his profession, he was also one of its most outspoken critics, opposing the influence of psychoanalysis on American psychiatry.

Born in Frankfurt am Main, Germany, Dr. Huessy came to the United States in 1934 at the age of 13, when his father became an instructor at Harvard University. Dr. Huessy graduated from Dartmouth College in 1942, received his M.D. degree from Yale in 1945 and interned in pediatrics at the Johns Hopkins Hospital. He was a psychiatric resident and staff psychiatrist for the U.S. Public Health Service before receiving a master of science degree from the University of Colorado in 1951.

Dr. Huessy was a lieutenant colonel and senior surgeon, serving Colorado, Utah, Idaho, Wyoming and Montana. He returned to Vermont in 1958 and began a 30-year career with Spring Lake Ranch, a therapeutic community in Cuttingsville.

In 1960 Dr. Huessy began teaching at the University of Vermont Medical School. He became a full professor in 1967 and chaired the Department of Psychiatry from 1967 to 1970. Between 1967 and 1971 he headed the Inter-University Forum for Educators in Community Psychiatry. He was a fellow of the American Public Health Association and of the American Psychiatric Association. Dr. Huessy retired from the medical school in 1985, but continued consulting work with St. Lawrence Psychiatric Center in Ogdensburg,

N.Y., and several halfway houses throughout the state.

Dr. Huessy was an avid skier and became the youngest U.S. amateur certified ski instructor. He was a justice of the peace in Jericho from 1958 to 1967.

Robert H. Jordan

Robert H. Jordan, M.D., formerly of North Haven, Conn., died April 11 at his home in Juno Beach, Fla. He was 88.

Dr. Jordan was a graduate of the University of Richmond and the Medical College of Virginia. He served his internship at Chesapeake and Ohio Hospital in Huntington, W. Va., from 1933 to 1934 and took his residency at Pinecrest Sanitarium in Farmingdale, N.Y., and the former Grace Hospital in New Haven from 1936 to 1937. He served in the Army Medical Corps from 1942 to 1946.

Dr. Jordan was a practicing physician in New Haven from 1938 until his retirement in 1980. He was also a clinical instructor in medicine at the School of Medicine. After retirement from private practice, he served at Connecticut Hospice in Branford from 1980 until 1982, when he moved to Juno Beach. He was a former president of the Connecticut Society of the American Board of Internists, a fellow of the American College of Physicians and the American College of Chest Physicians, and a diplomate of the American Board of Internal Medicine.

Edward P. Kearney

Edward P. Kearney, M.D., died June 21 at his home in Montclair, N.J. He was 95.

Dr. Kearney was a 1924 graduate of the College of the Holy Cross and, in 1928, from Yale School of Medicine. During World War II he served in the 57th Signal Battalion of the Army Medical Corps in Africa, Italy and France. He was awarded the Purple Heart twice.

Dr. Kearney was director of the medical staff at St. Vincent's Hospital in Montclair and maintained a private practice there for 35 years before retiring in 1962. He was honored as a Knight of St. Gregory in 1960 at the Sacred Heart Cathedral in Newark.

Norman J. Kelman

Norman J. Kelman, M.D., formerly of Wallingford and Branford, Conn., died April 20 from leukemia at his home in New York City. He was 82.

Dr. Kelman graduated Phi Beta Kappa from Wesleyan University in Middletown, Conn., and earned a master of arts degree from Columbia University and an M.D. degree from Harvard Medical School. During World War II, he served as a major in the Army and was assigned to Gen. George C. Patton's division when it entered Berlin.

After the war, Dr. Kelman began a private practice in New York and studied under Dr. Karen Horney at the American Institute of Psychoanalysis. He taught at the institute for more than 50 years and served as an assistant dean and board member. He also played a major part in the formation of the New York School of Psychoanalysis in the 1950s.

Dr. Kelman taught at other institutions, including the New School for Social Research, Albert Einstein College of Medicine, the University of Miami Medical School and, from 1958 to 1959, the Yale School of Medicine.

George L.H. Le Bouvier

George L.H. Le Bouvier, M.D., of Portland, Ore., died March 12 following a stroke. He was 75.

Born in Constantinople, Dr. Le Bouvier was educated at Oxford University, St. Bart's in London and the University of Glasgow. At Yale, he was a research associate in epidemiology from 1966 to 1970 and a senior research associate in epidemiology from 1970 to 1977. He also served on the faculty at the University of Glasgow.

Dr. Le Bouvier retired in 1977 to the island of Maui, where he pursued his interest in plants and trees and learned to speak the Hawaiian language. He moved to Portland in 1992 and was an active volunteer at the Hoyt Arboretum and the Rose Test Gardens.

Morgan Sargent

Morgan Sargent, M.D., formerly of Quincy, Mass., died May 30 of pulmonary stenosis at the Harbor House Nursing Home in Hingham, Mass. He was 87.

Born in Quincy, Dr. Sargent graduated in 1932 from Williams College and in 1937 from Yale School of Medicine. He served his internship at Hartford Hospital for two years and at Pondville Hospital in Massachusetts for one year. From 1941 to 1946 he was chief of surgery at the Don CeSar Rehabilitation Hospital in St. Petersburg, Fla., for the Army Air Corps.

Dr. Sargent practiced medicine in Quincy from the 1940s until his retirement in 1986. He was also chief of surgery at Quincy Hospital from 1946 to 1960 and chief of staff at the hospital for many years. Dr. Sargent was a past president and longtime director of the City of Quincy Hospital Corp.,

a director at the former Quincy Savings Bank, a trustee of the Delcevare King Trust and the John Quincy Adams Foundation, and director and past president of the Rice-Eventide Home.

Clyde A. Swift

Clyde A. Swift, M.D., of Guilford, Conn., died April 15 at Connecticut Hospice in Branford. He was 67.

Dr. Swift served in the U.S. Marine Corps, 2nd division, during World War II and in the Massachusetts Air National Guard. He received a bachelor of science degree in 1954 from Bates College and an M.D. degree in 1958 from Tufts University. Dr. Swift served his internship and residence at Dartmouth-Hitchcock Medical Center in Hanover, N.H.

He held positions at Glen Falls (N.Y.) Hospital, and at Memorial Hospital of Martinsville and Henry County, Va., before joining the faculty in anesthesiology at Yale School of Medicine in 1982. While at Yale, he was a member of the Impaired Physician Committee of the Connecticut State Medical Society, the Committee on Physician Health of the New Haven Medical Society and was chairman of the Yale Medical Center Task Force on the Impaired Health Care Provider.

R. Bruce Thayer

Ralph B. Thayer, M.D., died June 11 at his home in Enfield, Conn. He was 75.

Dr. Thayer graduated from Bowdoin College in 1943 and from Yale School of Medicine in 1946. As an Army veteran of World War II he served as a captain in the medical corps.

As a family physician, Dr. Thayer practiced in the Enfield and Somers area from 1949 to 1968. He served in various positions with Blue Cross & Blue Shield of Connecticut from 1968 until his retirement as senior vice president in 1984.

Dr. Thayer was a former trustee of the Connecticut Medical Services and a member of the American Medical Association, the Connecticut State Medical Society and the Tolland County Medical Association. He was a former member and president of the medical staff at Johnson Memorial Hospital in Stafford.

Laura B. Weed

Laura B. Weed, M.D., died on March 29 in Burlington, Vt. She was 75.

Born in Cleveland, Dr. Weed graduated from Vassar College in 1943 and from Yale School of Medicine in 1947. At Peter Bent Brigham Hospital in Boston, she made important contributions to medical research on the metabolic response to surgery. In Bangor, Maine, and in Cleveland she worked on developing medical record systems and on providing clinical care to the underserved and the poor. Dr. Weed was one of the founders and principals of The Given Health Care Center in Burlington in 1970, and was instrumental in building one of Vermont's first rural healthcare facilities, the Grand Isle Health Center.

She was an associate professor of medicine at the University of Vermont College of Medicine.

IN MEMORIAM

W. Randal Bell, M.D. '41
April 1, 1997

Philip S. Brezina, M.D. '40, HS '40-46
June 10, 1997

Gyla E. Brooks, M.P.H. '60
March 1, 1995

Hans R. Huessy, M.D. '45
May 9, 1997

Arthur J. Orloske, M.P.H. '76
January 21, 1997

Morgan Sargent, M.D. '37
May 30, 1997

Eugene Smith, M.D. '44
March 13, 1997

Robert L. Stein, M.D. '54
May 10, 1997

R. Bruce Thayer, M.D. '46
June 11, 1997

Laura B. Weed, M.D. '47
March 29, 1997

Malvin F. White, M.D. '39
April 8, 1996

Peter T. Wotton, M.P.H. '67
November 3, 1996

Non-profit or not?

Managed care, a flurry of mergers, and the growth of for-profit health care has left the public confused about academic medicine. Where does this leave philanthropy?

By David Davison

Yale School of Medicine is renowned as one of the world's great research institutions. The school's deep and extensive commitment to community service and care for the people of New Haven and the surrounding region may be less well known.

Each morning on National Public Radio's *Morning Edition* program, the local announcer acknowledges the support of a few select organizations, including the following:

Yale-New Haven Hospital, caring for Connecticut's citizens for 171 years. Yale-New Haven Hospital is a non-profit organization.

This is not an incidental tag line. People often are not aware that the hospital is a not-for-profit, tax-exempt charitable organization, as is the School of Medicine. Both entities are big, complex and changing with the times, all the while retaining their charitable missions. Both raise funds to help provide health care to the community and to conduct research and training. The hospital recognizes the need to make the point to its local constituency.

Decades ago—before the explosive growth of medical centers, health insurance and government programs—voluntary hospitals operated under fewer regulations. Many clearly served the community by providing what at the time was called charity care to the poor. Last year, Yale-New Haven Hospital provided more than $25 million in free care and uncompensated services. Today, large academic medical centers don't always take credit for the free services they provide. With an estimated 45 million Americans uninsured and falling reimbursement rates from Medicaid, Medicare and managed care, a lot of unreimbursed care is being delivered.

HARVEY CUSHING/JOHN HAY WHITNEY MEDICAL LIBRARY

The New Haven Dispensary, known today as the Jane Ellen Hope Building, was erected in 1901. It provided care for poor children and became the Ambulatory Service of the Department of Pediatrics in 1922. Currently it is used for lectures and meetings.

In health care, everyone knows that the times are rapidly changing. According to the American Hospital Association, nearly 1,200 hospitals have been sold or merged with other institutions in the past two years. Thirty percent of those transactions involved for-profit institutions. Medical schools have even struck deals with for-profit corporations. Tulane School of Medicine has a complex agreement with Columbia/HCA that essentially puts the health care delivery management side of the business in the hands of a for-profit entity, while leaving teaching and research under the continued control of the academic leaders and non-profit board members.

David Davison is director of development for the School of Medicine. Write to him at the Office of Medical Development, 100 Church Street South, Suite 211, New Haven, CT 06519-1714, or via e-mail: david.davison@yale.edu.

These mega-mergers are occurring as patients, physicians and insurance payers are reorienting their relationships with each other.

Where does this leave philanthropy? It is definitely not a good idea for hospitals and medical schools to assume that the traditions of charitable giving will always endure. According to the *Chronicle of Philanthropy*, donors are questioning the philanthropic process at large health care institutions, especially if there is real or imagined potential that it might become a profit-making business. Some donors are reportedly demanding that hospitals return donations that were made years before.

Yale School of Medicine has been around since 1813, the hospital since 1826. Neither is changing its identity or mission, and both institutions rely on donations to accomplish their goals in patient care, research and teaching.

The not-for-profit status of our institutions cannot be taken for granted. It must be made clear to the public, in compelling ways, that we have critically important goals for teaching, research and the delivery of care.

We must broadcast the news about our research programs, and our commitment to improving health care in the community. For example, Yale medical students and faculty volunteer their time to deliver a variety of outreach services such as free vaccines and immunizations for children, substance abuse prevention in New Haven Schools, the AIDS Care Program for children and families, and free care for the homeless.

In other words: good old-fashioned care, provided regardless of the patient's ability to pay.

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Citizens of New Haven awaiting treatment at the New Haven Dispensary (c. 1920). The charity care it provided was made possible in part by grants from the charitable Community Chest and from other donors.

What the public thinks

To obtain some useful data on public perceptions, a comprehensive survey was commissioned by the Association of American Medical Colleges last year.

It turns out that the public does care about teaching and research in general. Survey respondents were asked whether they thought the following statement was true or false:

"New drugs, medical devices, and surgical techniques not only improve the quality of health care, they can also save money for you and your family." Sixty-seven percent said true.

People responded in similar fashion to statements defining medical schools and teaching hospitals as the "backbone of innovation" that play a "critical role … training doctors in cutting-edge knowledge."

Yet the survey showed that most Americans don't understand how these institutions function, or the role of medical faculty and students in providing care and conducting research. It is not clear to the public that revenues for the research and teaching missions are shrinking, as well as the funds that are needed to provide free care.

As for the public's appreciation of our free-care mission: 55 percent of respondents believed that an academic medical center "provides health care services for low income people who otherwise could NOT afford care." Only 39 percent of those respondents living in cities where there are academic medical centers believed that their local institutions were not-for-profit.

A large segment of the public needs to know more about the array of community service programs at the School of Medicine, and the free medical care provided by our dedicated faculty and students.

Divine inspiration

To the editor:

Your issue on managed care and medical education (*Lessons in Managed Care,* Summer 1997) underscores the fact that medical care has been infiltrated by a new group of decision-makers who lack medical training. These events signal a stinging rebuke, inflicted by the marketplace, on the recent practice of medicine.

This has brought an end to what may be termed "the laissez-care era of medicine," a time when a patient's care and welfare were a doctor's sole concern. Sadly, those responsible for this achievement had an ostrich's view of cost-containment. As a result, responsibility for patient care is now shared.

All of this brings to mind the fifth book of *The Iliad,* in which Homer described a wound suffered by Aeneas (apparently an open fracture of the hip and a crush injury to the acetabulum).

Aeneas' management may give us our first glimpse of an early HMO prototype since, from the start, his care was seen to by medical and non-medical personnel. It was initiated by Apollo, the patron deity of medicine, who removed the patient from the battlefield to the sanctuary of his temple. Further care was rendered by Artemis, the twin sister of Apollo, and Leto, their mother, who "healed his wound and restored his strength completely."

All those involved in the care of Aeneas were endowed with divine attributes, a gift that helps in the care of humans. The difference today is that while managed care administrators often are not physicians, neither are they gods. We should leave medical decisions to doctors—mere mortals, to be sure, but highly trained ones—while being certain as physicians to address the cost issues that gave rise to managed care.

Perhaps our dilemma may afford an opportunity for us to become more efficient on the federal level—namely to consolidate existing resources, such as the Veterans Affairs health system, Medicare and Medicaid. The VA system might be expanded to care for all patients funded with federal monies. And if these same facilities were made available to the nation's 45 million uninsured, a large step would be achieved in streamlining medical care.

While divine inspiration prevailed in Homer's day, today we may have to rely upon human adaptation. Laissez-care is gone.

Robert J. Kerin, M.D. '47
Milford, Conn.

Lobsters, indeed!

To the editor:

I was ready to ignore the tick vs. insect slip in your Lyme disease article, because in the popular press, ticks are often lumped with insects in the Aristotelian-derived sense of "entoma"; however, Dr. M.H. Schmidt's letter (*Let Us Be Precise,* Spring 1997) has compounded the problem and forced me to write.

Ticks, mites, scorpions, spiders and their relatives are in the class *Arachnida.* The ending "-oidea" refers only to superfamily designations. Furthermore, although spiders and scorpions do have two body segments, a cephalothorax and abdomen, mites and ticks do not. Mites and ticks, which comprise the subclass *Acari,* have a single body that is not separated into discrete sections. The mouthparts are attached directly to the compact, oval, round, or cylindrical body of the arthropod. The fusion of the various body parts is suggested by the presence of sutures and annulations, but no distinct separations are easily visible.

Finally, to be *more* precise, ticks are more closely related to lobsters than to insects!

William L. Krinsky, M.D. '71, Ph.D.
Division of Entomology
Peabody Museum of Natural History
New Haven, Conn.

How to reach us

Yale Medicine welcomes news and commentary. Please send letters to the editor and news items to *Yale Medicine,* P.O. Box 7612, New Haven, CT 06519-0612, or via electronic mail to ymm@yale.edu, and include a daytime telephone number. Submissions may be edited for length, style and content.

THE PROGRAM FOR HUMANITIES IN MEDICINE

Lectures at 5 PM on Thursday in the BEAUMONT ROOM, Yale University School Medicine,
333 Cedar Street, New Haven. Refreshments at 4:30 PM. The lectures are free and open to the public.
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DECEMBER 4
SIR WILFRED THOMASON GRENFELL,
THE LABRADOR DOCTOR
Charles P. Stetson, BS
Chairman, US Fund for Leadership Training
Southport, Connecticut

DECEMBER 18
CHAOS THEORY & FRACTALS IN MEDICINE,
MUSIC & ART
Ary Goldberger, MD
Associate Professor of Medicine
Harvard Medical School
Boston, Massachusetts

JANUARY 8
HOW TO STAY HUMAN IN MEDICINE:
THE HOUSE OF GOD & *MOUNT MISERY*
Steven J. Bergman (Samuel Shem), MD, PhD
Writer, Comic & Psychiatrist
Harvard Medical School
Boston, Massachusetts

JANUARY 22
"HOW I GOT TO BE WHAT I WANTED TO BE"
Morris Wessel, MD
Clinical Professor Emeritus of Pediatrics
Yale University School of Medicine

FEBRUARY 5
OVER THE RIVER THROUGH THE WOODS:
TAKING THE MEDICAL HIGH ROAD
THE BAYER LECTURE
Richard "Buzz" Goodstein, MD
Vice President for Scientific Relations
Bayer, Pharmaceutical Division
West Haven, Connecticut

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A BOOK OF MEMORIES BY PETER NADAS
Ivan Sanders, PhD, Professor of English
Suffolk Community College & The New School
New York, New York

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HISTORY OF MEDICINE & HEALING IN SOUTH ASIA*
Maneeshal Lal, PhD
Visiting Professor, History of Medicine
University of Wisconsin
Madison, Wisconsin

MARCH 12
THE BEST-KEPT SECRET: WOMEN IN VIETNAM
Linda S. Schwartz, RN, MSN
Doctoral Candidate
Yale University School of Medicine, EPH

MARCH 19
MEDICINE ON TRIAL: COURTROOM STORIES
OF MEDICINE, LAW & MORALITY
Hon. Barry R. Schaller, JD
Judge, Connecticut Appellate Court
Hartford, Connecticut

MARCH 26
"ONE WORD: THE POETRY OF MEDICINE"
THE ROBERT PENN WARREN LECTURE
Mark J. Straus, MD
Professor of Medicine & Poet
New York Medical College
New York, New York

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OLD MAPS: GUIDES TO THE GEOGRAPHY
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Harold L. Osher, MD
Cardiologist, Cartographer
& Director of Osher Map Library
University of Southern Maine
Portland, Maine

APRIL 16
SENSIBILITY, MEDICINE & THE SPECTACLE OF THE
BREAST IN THE 18TH-CENTURY NOVELS
Nina A. Prytula, MPhil
Doctoral Candidate, Department of English
Yale University

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RICHARD SELZER: POET OF THE BODY
Mahala Yates Stripling, PhD
Texas Christian University
Fort Worth, Texas

MAY 7
JAMES JOYCE: MANIC GENIUS & THE FAMILY TRIANGLE
James R. Merikangas, MD
Clinical Professor of Psychiatry & Neurology
Yale University School of Medicine

MAY 14
THE EMERGING OF A PHOTOGRAPHIC EYE
Barbara Young, MD
Assistant Professor Emeritus of Psychiatry
& Photographer
Johns Hopkins University
Baltimore, Maryland

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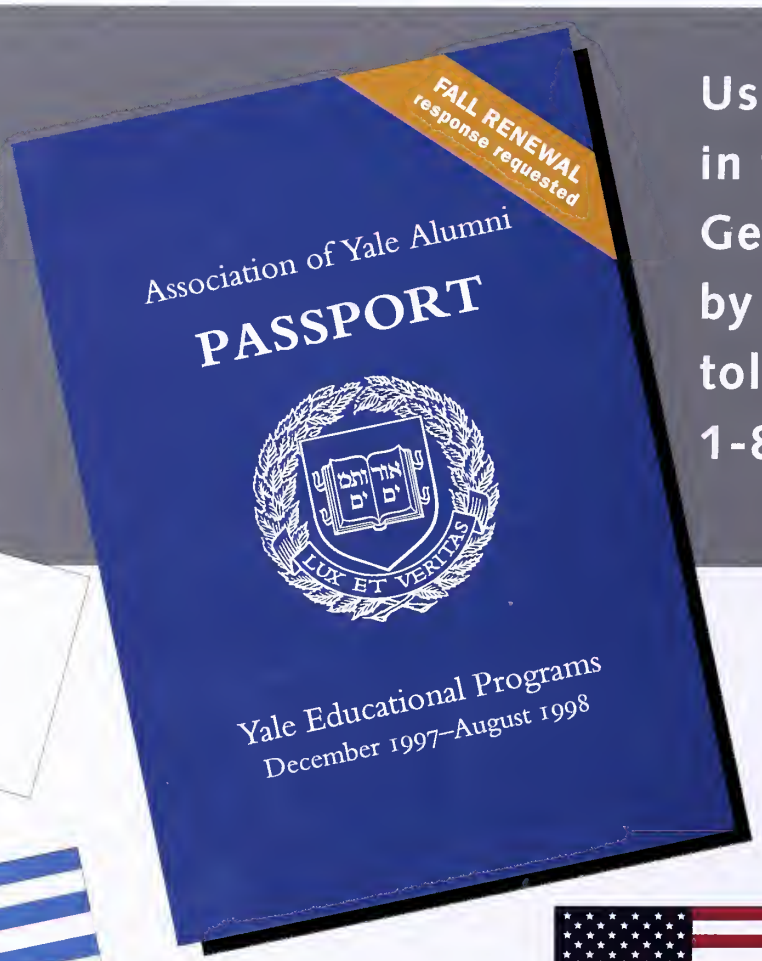

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Yale Medicine

ALUMNI BULLETIN OF THE SCHOOL OF MEDICINE
WINTER/SPRING 1998

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Yale Medicine
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***On the* cover: The skeleton, heart and soft tissue glow in colors ascribed according to image density by artist and photographer Alexander Tsiaras. This rendering of the body, like others by Mr. Tsiaras on pages 26 and 27, was constructed using data derived from thousands of cross-sectional photographs from the National Library of Medicine's Visible Human Project.** *The Anatomical Travelogue/Warner Books*

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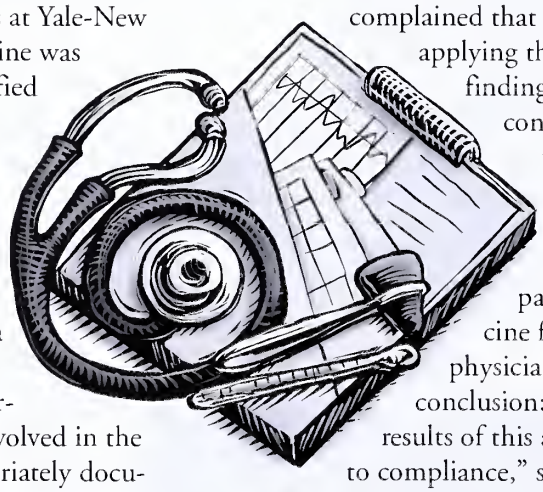
Federal audit shows Yale's Medicare billing practices in good health

The Office of Inspector General of the U.S. Department of Health and Human Services (HHS) has given the School of Medicine a clean bill of health regarding its Medicare billing practices at Yale-New Haven Hospital. The School of Medicine was one of 49 institutions nationwide notified that they would be audited under the HHS Physicians at Teaching Hospitals (PATH) audit program.



Under Medicare rules, teaching physicians are permitted to bill for care they directly provide to patients. In addition, if the care is provided by a resident, the teaching physician supervising the resident can bill for those services only if he or she is sufficiently involved in the care, and if that involvement is appropriately documented. How much involvement was sufficient and what kind of documentation was required were matters of debate and confusion until HHS adopted new regulations in 1996 that attempted to clarify these issues.

The HHS PATH audit program has focused on Medicare payments to teaching physicians in academic medical centers for care provided before the new regulations were issued. Many academic medical centers have complained that the PATH audits are unfairly applying the new rules retroactively, finding innocent errors caused by confusion and unfairly calling them fraud.

The audit at Yale began in August 1996, and auditors reviewed a sample of Medicare payments to Yale School of Medicine for patients seen by Yale faculty physicians in 1994. The HHS auditors' conclusion: Yale is in compliance. "The results of this audit show Yale's commitment to compliance," said Dean David A. Kessler, M.D. "Compliance is difficult at times because the rules and regulations are complex and sometimes unclear. For Yale to have come through this audit so well is a tribute to the doctors and administrators at the School of Medicine."

Urban health program broadens community outreach efforts

The U.S. Department of Health and Human Services' Health Resources and Services Administration (HRSA) has awarded nearly half a million dollars to the Yale Urban Health Program over a three-year period. One of 16 Public Health Special Projects funded by HRSA this year, the Urban Health Program will use the grant to expand collaborations within the Yale medical center, the University and the greater New Haven area.

The grant allows the program's leaders to expand curricula and create new programs, including student internships and a minority fellows program. Funds will also be used to sponsor the second annual Urban Health Lecture Series, which began in late October. Lecture topics include *The Effects of Pesticides on Children, School Health, Prevention of HIV Among Drug Users in New Haven,* and *Prenatal Cocaine Exposure.*

According to Nora E. Groce, Ph.D., assistant professor of public health, the lecture series highlights some critical issues facing the urban community today, including violence prevention, homelessness and abuse.

"The HRSA grant will help us get some of the most talented and motivated public health, medical and nursing students working together to improve the well-being of people in urban communities," says Dr. Groce, principal investigator for the grant and one of three co-directors of the Urban Health Program.

The Urban Health Program, created in 1995 with a planning grant from the Pew Charitable Trusts, fosters interaction between students at Yale, faculty and the community. According to Dr. Groce, the program aims to bring more community practitioners into the University to share their experiences and expertise.

Executive advisors include Michael H. Merson, M.D., dean for public health; Ralph I. Horwitz, M.D., chair of internal medicine; and Margaret Grey, Dr.P.H., associate dean for research and doctoral studies at the School of Nursing. The co-directors include Dr. Groce, Patrick G. O'Connor, M.D., M.P.H., associate professor, general medicine, and Martha Swartz, R.N., M.S., associate professor of nursing. The program's coordinating director is Wanda Anderson Harris, M.Ed., M.P.A.

"We want the program to produce a generation of students who can leave Yale with invaluable experiences on the cutting edge of urban health challenges," says Wanda Harris.

Study documents dumping of psychiatric patients

Two-thirds of psychiatric hospitals providing inpatient mental health care in the United States are reported to dump patients for economic reasons, according to a Yale/Harvard study published in the journal *Health Services Research.*

Patient dumping is the practice by which hospitals transfer unprofitable patients, specifically those without insurance coverage, to public hospitals and community mental health centers (CMHCs), which are required by law to care for these patients after private financial resources have been exhausted. This is the first national analysis of the factors that promote or constrain economically motivated transfers of patients in relation to competitive pressures, hospital ownership and managed care practices.

"This form of patient dumping appears to be substantially exacerbated by increased competition among hospitals and reductions in the capacity of state-run psychiatric hospitals," Mark J. Schlesinger, Ph.D., associate professor of public health at Yale, and colleagues from Harvard University's Kennedy School of Government wrote in the journal's December issue.

In addition to tax exemptions, the primary way hospitals subsidize care for patients without coverage is through profits made by treating insured patients. This practice has become increasingly difficult in recent years with the growth of managed care and other methods implemented to reduce the cost of health care delivery, such as the use of the prospective payment system for Medicare and other insurers, utilization review by insurance companies, and reduced public compensation pools.

The researchers found that 25 percent of the survey respondents (directors of CMHCs) reported a great deal of dumping occurred in their service area, with slightly more than half of those patients transferred on economic grounds. Twenty-two percent of the CMHCs reported substantial adverse effects on their agencies due to dumping. Seventy-five percent reported that transfers based on economic grounds were more likely to occur from for-profit hospitals.

About face

The brain's prefrontal cortex may hold the key to our ability to recognize and remember one another.

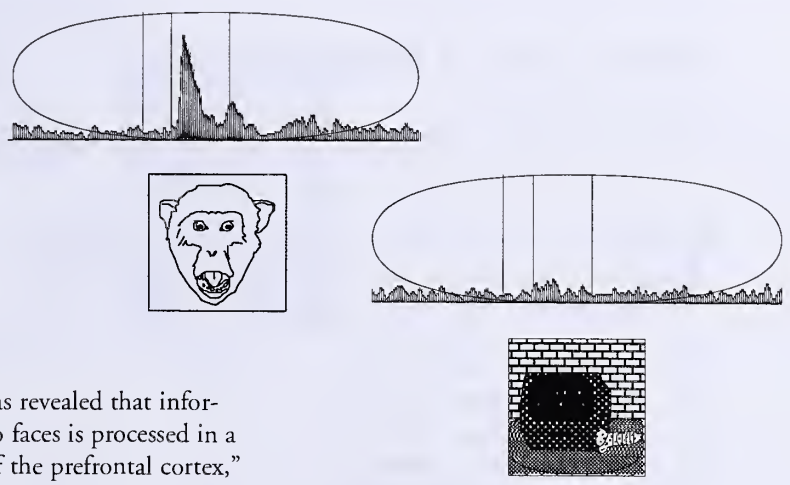
Patricia S. Goldman-Rakic, Ph.D., professor of neurobiology, and her colleagues have pinpointed an area of the brain that retrieves information about faces and facial expressions from memory. Their findings were reported in the Nov. 7 issue of the journal *Science.*

The research team showed macaque monkeys pictures of human faces and objects, and measured the electrical impulses in different areas of the brain. Research results showed that neurons clustered in an area of the inferior prefrontal cortex responded only to pictures of faces and to no other stimuli. The team further found that the prefrontal cortex was able to maintain information about the faces even after the stimuli were removed.

Scientists know that the prefrontal cortex is the most advanced part of the human brain and is responsible for cognitive functions such as memory, reasoning, mental computation and languages, but it has been unclear how the prefrontal cortex processes information.

"This study has revealed that information related to faces is processed in a specific region of the prefrontal cortex," says Dr. Goldman-Rakic, the study's principal investigator. "This shows not only that the prefrontal cortex is modular and specialized by domain, but that each of its neurons has a dedicated function, since individual neurons code individual types of information—for example, different faces."

Past studies of brain function have focused mostly on sensory and motor areas, which have been found to be modular and specialized. Some scientists have theorized that the prefrontal cortex might function in a different way. Seamas P. Ó Scalaidhe, Ph.D., associate research scientist in neurobiology and the study's first author, points out that in this respect, the organization of the prefrontal cortex resembles that of other brain areas.



Researchers measured and compared neural activity as the subject looked at a rendering of a face, above left, and at a non-face image.

"Our study indicates that the prefrontal cortex is modular, like other brain areas that have been more closely examined," says Dr. Ó Scalaidhe. "This research has brought us closer to understanding how the higher centers of the human brain work."

Dr. Goldman-Rakic's team included Dr. Ó Scalaidhe and Fraser A.W. Wilson, Ph.D., now an assistant professor at the University of Arizona. The National Institute of Mental Health and the McDonnell Foundation funded the study.

Yale, SCIREX Corp. open unit for psychiatric drug research

The Department of Psychiatry and SCIREX Corp. have announced a new collaboration to conduct clinical research on potential new drugs for psychiatric disorders. The SCIREX Clinical Research Unit at Yale, which opened Nov. 10 in a 6,000 square-foot facility at 320 Congress Ave., will conduct studies of central nervous system-focused drugs.

"New treatments for psychiatric disorders are desperately needed, and the complexity of drug approval requirements is significant," says Michael Choukas, SCIREX's president and chief executive officer. "By collaborating with full-time Yale faculty psychiatrists, we hope to speed clinical drug development and potentially reduce the time it takes for new therapeutic discoveries to reach the market."

SCIREX, a contract research organization headquartered in Blue Bell, Pa., performs drug development services for pharmaceutical and biotechnology companies. The company will work closely with Yale psychiatry faculty members to plan and conduct central nervous system clinical studies. Faculty expertise centers on basic neuroscience, molecular neurobiology and genetics, neuropsychopharmacology and clinical biological psychiatry. Current research projects concentrate on depression, anxiety disorders including post-traumatic stress disorder, obsessive compulsive disorders, schizophrenia and substance abuse.

"University medical schools have traditionally been the proving ground for some of the most revolutionary new advances in medical science. Yet over the past decade, health care management and dwindling government dollars have eroded the financial base needed to support this critical work," says Benjamin S. Bunney, M.D., chairman of the Department of Psychiatry and the Charles B.G. Murphy Professor of Psychiatry and Pharmacology.

"By working together, we gain not only the freedom to search for new discoveries, but also earlier access to novel therapeutic compounds which could lead to increased understanding of both normal and diseased brain function," he said. "Ultimately, our patients will benefit because our combined efforts may result in decreasing the time it takes for new therapeutic discoveries to reach the market."

This is only a test

Patients have questions, Yale physicians have answers.

When faced with medical tests, patients and their families generally have questions galore. Yale faculty have teamed up to provide answers in a new book, *The Yale University School of Medicine Patient's Guide to Medical Tests*, published in December by Houghton Mifflin Co.

The book's 620 pages are packed with information on common and not-so-common diagnostic procedures. Each of its 29 chapters is written by a Yale School of Medicine full-time faculty physician who specializes in the field being covered.

"The book helps patients through the diagnostic process; it lets them and their families know what the process is, what to expect, how to prepare," says Barry L. Zaret, M.D., the book's senior editor. "We want to demystify the process and help patients to be a greater part of that process."

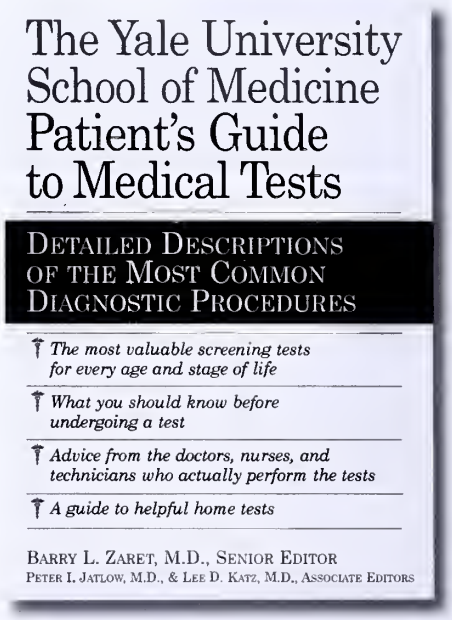
The associate editors are Peter I. Jatlow, M.D., HS '65, professor and chairman of laboratory medicine, and Lee D. Katz, M.D., HS '86, associate professor of radiology and director of diagnostic imaging. Dr. Zaret, the Robert W. Berliner Professor of Medicine and chief of cardiovascular medicine, also was an editor of *The Yale University School of Medicine Heart Book*, published five years ago.

The book's first section covers topics important to all readers. It discusses patients' rights and informed consent, examines the role of screening, and provides overviews of current diagnostic imaging techniques (like CT scans) and laboratory tests, from finger-stick blood tests to bone marrow biopsies. The second section deals with testing as it relates to specific organs, organ systems or diseases, or to groups of people, such as children or women.

The authors explain how particular systems work, what happens when they don't work right, what doctors look for, and how they go about looking. They include short case histories, describe common disorders, and list signs and symptoms that indicate problems.

Tests are presented in a logical sequence, from the simplest to the most complicated, Dr. Zaret notes. Newer tests—often, more specific or less invasive than older ones—are regularly pointed out. Charts supply basic information, such as where the test is done, how long it takes, what equipment is used, what discomfort or pain may occur, what risks or complications may be involved, and the average cost (lower than $100, $100 to 500, or more than $500).

"The book is very comprehensive," says Dr. Zaret, "and it's designed to be exquisitely reader-friendly."



Breaking bread with the new brass

Every other Thursday throughout the academic year, students, faculty and staff file into the Beaumont Room for an experience that is half culinary and half food for thought. During its lunch-hour meetings, Medical School Council hosts sessions on every topic from curriculum development to cancer research to the latest in computer-based teaching.

Last fall this elegant, wood-paneled room was the place to be for dean-watchers. In October and November, Dean David A. Kessler, M.D., and two newly appointed top administrators made presentations to overflow crowds. "If ever there was a case for new facilities, I think you've made it," the dean joked as they squeezed into the first of the two sessions. "There's not a lot of oxygen left, but come on in."

Dr. Kessler and Ruth J. Katz, J.D., M.P.H., the new associate dean for administration, spoke Oct. 16, followed Nov. 20 by Irwin M. Birnbaum, J.D., the school's new chief operating officer. They introduced themselves, discussed some of the school's most pressing issues, and answered questions about school finances, faculty appointments, teaching, clinical care and student life.

"I am here, I believe, to serve the collective wisdom, and I want to be doing what you want me to be doing, focusing on the things you think I should be focusing on," Dr. Kessler told the group. "I'm good at getting things done, but what we get done needs to come from those who have the best ideas—whether it's someone in the mailroom, a first-year student, or someone on the senior faculty. The best ideas deserve the most attention."

In order for Yale to remain at the forefront of American medicine, "there are some major infrastructure issues that we need to address," he said, referring to the school's operating deficits over the past two years. Yale has seen a decline in clinical income under managed care compounded by problems with the school's computerized billing system. On the positive side, the federal office of the Inspector General gave the school a clean bill of health in November subsequent to an audit regarding its Medicare billing practices, and NIH grant income rose nearly 8 percent this year with larger growth anticipated in future years.

"This is a great institution, and it has a long history," Dr. Kessler said. "And we will do well, better than well. But we have to get certain things in order, so I am spending a portion of my time on the fiscal side of the house, making sure this place is vibrant and can compete with the best, and have the resources to do that."

David A. Kessler

Ruth J. Katz

Irwin M. Birnbaum

The medical school needs additional space, including a new anatomy lab and new research quarters, issues that will be addressed in a facilities plan now being formulated, he said. New buildings are part of that plan, as well as renovations of existing space following the model of the physiology wing of Sterling Hall of Medicine that was completed in the fall. (See *Page 8.*) Other priorities for the medical school include aggressive searches for a number of department chairs, recruitment of senior women to the faculty, new fund-raising initiatives, and improvements for students.

"I take our responsibility to teach very seriously," Dr. Kessler said, "I care less about what we teach as opposed to how we teach. There is a core of knowledge that keeps changing. You're not going to learn everything. But I'd like everybody to be well trained. There is no reason to sit in any lecture, go to any course that isn't excellent here."

Dr. Kessler and Ms. Katz, a former congressional counsel and an expert in health policy, have been meeting with students to discuss financial aid, housing, security and other issues. Since arriving in July, Ms. Katz has coordinated the formation of new student affairs committees, served as the liaison between the medical school and the VA Connecticut Healthcare System in West Haven, and worked on several fund-raising projects.

"On a daily basis, I work with the department chairs and faculty members to help address the issues they face in getting their own jobs done," she said. "In brief, I work to make the dean's office the user-friendly place it can and should be."

Mr. Birnbaum, who Dr. Kessler introduced as "the best in the field of medical and hospital finance," was the long-time chief financial officer of New York's Montefiore Medical Center. He recalled meeting Dr. Kessler there in 1982, when Dr. Kessler was applying for the job of special assistant to the president. "In came a guy with red hair and a scraggly red beard, and I asked him, 'Why do you want this job?' He told me that in 10 or 15 years, he wanted to be the head of a major medical center or dean of a medical school."

Along the way, Mr. Birnbaum said, Dr. Kessler was sidetracked. They prepared together for Dr. Kessler's Senate confirmation testimony before he was sworn in as U.S. food and drug commissioner in 1990. After Dr. Kessler announced in late 1996 that he would leave the Food and Drug Administration, and accepted the deanship at Yale, he phoned Mr. Birnbaum in late March 1997 to ask him to come to New Haven. "The No. 1 reason I wanted to do it was David Kessler," Mr. Birnbaum said. "He just wants to make change, and make change in the right direction. I wanted to be a part of it."

Mr. Birnbaum said the financial challenges to the medical school are significant but manageable. Beyond the bottom-line concerns, he said, are fundamental questions about how to educate students and residents in the era of managed care, when patients are discharged earlier from the hospital. "The question is not whether Yale will survive. Yale will not only survive, it will thrive," he said. "The changes will be in how we teach."

University of California professor named dean of nursing school

Catherine Lynch Gilliss, D.N.Sc., chair of the Department of Family Health Care Nursing at the University of California, San Francisco, has been named dean of the Yale School of Nursing for a five-year term beginning July 1. She will succeed Judith B. Krauss, M.S.N., who joined the nursing school faculty 26 years ago and has served as dean for nearly 13 years.

Dr. Gilliss, a certified adult nurse practitioner, has taught at the University of California since 1984, where she received her doctor of nursing science degree and completed a postdoctoral fellowship. She previously held teaching positions at several universities including The Catholic University of America in Washington, D.C., the University of Maryland and the University of Portland, where she serves as a trustee.

MICHAEL MARSLAND

Catherine L. Gilliss

Her research has focused on innovative models of nursing intervention for patients and their families, especially during recovery from life-threatening illnesses such as coronary bypass surgery. Most recently, she completed an enumerative study of the primary care work force in the state of California.

During her tenure, Dean Krauss has made several key appointments to the faculty and overseen the expansion of the school's research programs. A new doctoral program was added in 1994, and the school moved to newly renovated state-of-the-art teaching facilities in 1995. In addition, the school has strengthened and developed new clinical partnerships with several clinical agencies throughout Connecticut. A noted authority on the care of people with serious and persistent mental disorders, Dean Krauss will return to a teaching and mental health policy role on the faculty.

Grant from insurer funds two outcomes research projects

Insurance giant Aetna Inc. has awarded more than $750,000 to the School of Medicine to fund research aimed at improving health outcomes. The grants are among $6 million awarded to 13 institutions through the company's Quality Care Research Fund.

The two grants are as follows:

▶ $468,066 to the School of Medicine and Yale New Haven Health System in collaboration with Aetna subsidiary U.S. Quality Algorithms to compare managed care and fee-for-service insurance in the care and outcomes of elderly patients with heart attacks. This study will build on the Cooperative Cardiovascular Project (CCP), a national Medicare quality improvement project, to compare tests, procedures, specialty care, readmissions and mortality among those elderly heart attack patients treated under managed care and those treated under traditional fee-for-service.

"Managed care is emerging as an important system of administering medical care to the elderly individuals, and this grant will allow us to evaluate how well it serves elderly patients after heart attacks," said Harlan M. Krumholz, M.D., who will lead the study. Dr. Krumholz is associate professor of medicine (cardiology) and director of the Center for Outcomes Research at Yale-New Haven Hospital.

▶ $300,000 to the School of Medicine to study the effectiveness of Bright Beginnings. This volunteer-based mentoring program that encourages vulnerable, young mothers to develop healthy lifestyles for themselves and their children and to make good use of illness prevention resources. The study will examine the effectiveness of this broad-based, parent support program by evaluating such measures as completion of well-baby check-ups, inappropriate use of the emergency department, the number of preventable injuries and each mother's sense of parenting competency.

"We believe that Bright Beginnings could serve as a model to help alleviate some of the substantial health problems faced by underserved, inner-city children and their families," said John M. Leventhal, M.D., HS '76, professor of pediatrics and medical director of the program, which has served 115 families in greater New Haven during the past three years. Added Elizabeth Demir, chair of the Bright Beginnings advisory committee: "This Aetna grant will allow us to expand the number of successful matches between mothers and mentors this promising program can sustain each year and, if study results substantiate our early findings, we should be able to attract continued funding."

The program was launched in 1995 by the Friends of the Children's Hospital, a volunteer organization affiliated with the Department of Pediatrics.

Psychiatric hospitals may be deluged with sex offenders

When convicted sex offenders finish serving prison time, many of them will go directly from a jail cell to a psychiatric ward. A June 1997 U.S. Supreme Court ruling says that prisoners who fit the profile of "sexually violent preda-

tors" will immediately be committed to hospitals for psychiatric care.

At an estimated annual cost of between $60,000 to $130,000 per patient, this will drain a psychiatric system that is already strapped for funds, says Howard V. Zonana, M.D., professor of psychiatry at the medical school and clinical lecturer at Yale Law School.

"Society certainly has a right to be protected from sexual violence," says Dr. Zonana, who chairs the American Psychiatric Association's Task Force on Sexually Dangerous Offenders. "But I am also concerned with the enormous cost and the impact on the quality of care this ruling will have on patients with severe incapacitating mental illnesses whose ability to survive in the community requires extensive resources."

According to Dr. Zonana, whose views were expressed in the Nov. 14 issue of the journal *Science*, treatment for sex offenders requires maximum-security facilities that are not usually found in hospital settings.

"If sex offenders are unable to control their behavior, they should be given longer prison terms and those who need psychiatric treatment should have it available before the end of their criminal sentences," says Dr. Zonana.

The U.S. Supreme Court ruling found that "sexually violent predators" can be hospitalized after and only after they have served their entire criminal sentence. Dr. Zonana maintains that these statutes provide a very low threshold for people to be determined mentally ill. The court's decision makes it possible for sex offenders to be hospitalized based on remote past behavior and any mental abnormality or personality disorder that makes them likely to repeat their behavior.

According to Dr. Zonana, this issue raises tough questions such as what mental illnesses or conditions are sufficient to meet the sexually violent predator requirement.

"This law is so broadly drawn that rapists who display anti-social behavior or traits could be hospitalized," says Dr. Zonana. "This is transforming criminal behavior into mental illness, further stigmatizing the mentally ill and serving a primary function of preventive detention."

EPH, Hospice Institute work to improve access to care

The John D. Thompson Hospice Institute in Branford, Conn., and experts from Yale's Department of Epidemiology and Public Health have launched a three-year educational program to improve access to palliative care for the terminally ill.

"Our partnership with Yale will provide a much-needed educational effort about hospice and palliative care," says Rosemary Johnson-Hurzeler, R.N., M.P.H. '75, the institute's president and chief executive officer. "The care provided, as well as the related educational and research programs, will focus on life, not death," she adds.

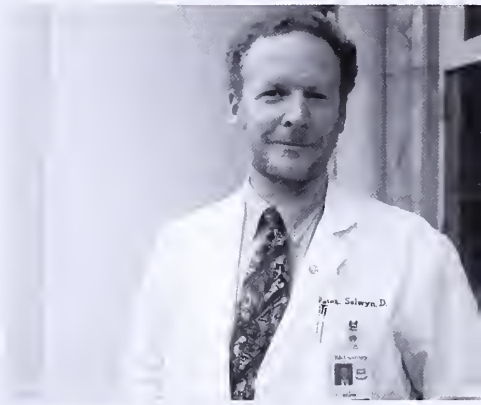
According to Elizabeth H. Bradley, Ph.D., assistant professor of public health at Yale, the project is offering a formal education program to physicians, nurses and other health care providers at acute-care hospitals in Connecticut. "We will measure the impact of the educational program on medical professionals' knowledge and attitudes about hospice, as well as utilization of hospice services," says Dr. Bradley, research director for the hospice project. The educational program was designed by the John D. Thompson Hospice Institute for Education, Training and Research Inc. (named for a late Yale EPH faculty member) and its affiliate, the Connecticut Hospice, the nation's first hospice program. In future years, the two groups anticipate making this educational program available to all hospitals in Connecticut.

Physician's award will support end-of-life AIDS care

As a patient's life comes to an end, physicians and care providers are faced with the unique task of tending to the spiritual as well as medical needs of their patients. Yale physician Peter A. Selwyn, M.D., M.P.H., associate director of Yale's AIDS Program and associate professor of medicine, has dedicated a significant part of his career to improving end-of-life care for AIDS patients. In September, he was one of 12 physicians chosen to receive the Faculty Scholars Award from the Open Society Institute's Project on Death in America (PDIA), funded by the financier George Soros.

Dr. Selwyn will receive up to $65,000 for three years from PDIA, a nationwide program aimed at advancing medical education, awareness and clinical care in end-of-life care. Dr. Selwyn will use the award to help develop curricula at the School of Medicine on end-of-life care. He will also help develop a model clinical program at Leeway, a 30-bed skilled nursing facility for people with HIV and AIDS in New Haven, where he is medical director.

"Despite recent advances in therapy, the AIDS epidemic is still affecting people in the prime of their lives with a life-threatening illness," says Dr. Selwyn. "This grant will aid in the improvement and development of new strategies for end-of-life care and to help increase awareness about this often overlooked area of medicine for doctors in training."



Peter A. Selwyn

Dr. Selwyn has chronicled his experiences in a book of memoirs entitled *Surviving the Fall: The Personal Journey of an AIDS Doctor*, to be published by Yale University Press this spring. The book explores the early days of the AIDS epidemic, when Dr. Selwyn worked at Montefiore Medical Center in New York City, and focuses on the ways in which working with dying patients led him to come to terms with his own personal history of grief and loss.

Study explores connections between menopause and mood

The number of women experiencing menopause is expected to triple over the next decade, causing an increased demand for more effective treatment of symptoms such as mood changes. To address this situation, Angela Cappiello, M.D., Ph.D., chief of the Menopause Mood Disorders Clinic and co-director of the Behavioral Gynecology Program at the School of Medicine, has launched a series of studies on mood disorders in menopausal women that may offer relief for some symptoms of menopause.

"My goal is to understand the connection between the brain and the female hormone estrogen," says Dr. Cappiello, whose study is funded by the Lilly Center for Women's Health. "Female hormones may protect women from stress. Loss of estrogen could cause women to be more vulnerable to stressful life changes that usually occur around the time of menopause, including changes in employment, marriage, and children leaving home."

Dr. Cappiello is studying how healthy menopausal women respond to a serotonin depletion induced by a low tryptophan diet. She expects that menopausal women treated with estrogen will have a more stable mood and will be less sensitive to the mood changes of a low tryptophan diet. In addition, Dr. Cappiello is also testing whether the most effective treatment for depressed menopausal women is estrogen alone, fluoxetine (Prozac) alone, or the combination of both fluoxetine and estrogen.

"If we can prove that estrogen regulates serotonin function, then that will be a big finding," says Dr. Cappiello.

An estimated 30 million women are expected to reach menopause in the next 10 years, and more than one-third of a woman's life is post-menopausal, according to Dr. Cappiello. Previous research has shown that estrogen regulates brain activity and that loss of estrogen can affect mood and behavior. Approximately 85 percent of women have some kind of reaction to estrogen loss, such as mood changes, depression, hot flashes and insomnia. Fifteen percent of menopausal women suffer from more severe symptoms.

"We want women to know that treatment is available," says Dr. Cappiello who will use her study to inform women that they do not have to suffer in silence. "Research on menopause is relatively new. It is getting more attention because more and more women are becoming menopausal and there is greater interest in women's health issues."

The Menopause Mood Disorders Clinic is part of the Yale Behavioral Gynecology Program operated jointly by the departments of Psychiatry and of Obstetrics and Gynecology at the School of Medicine.

A MODEL RENOVATION

MICHAEL FITZSOUSA (2)

"This is something I got very good at in Washington," Dean David A. Kessler, M.D., above left, joked as he joined in the ribbon-cutting ceremony celebrating the renovation of 15,000 square feet in the Department of Cellular and Molecular Physiology. The $4.9 million project, the first of several that are anticipated to renovate existing space in the medical school's main building originally constructed in 1924, was supported, in part, by a $1.5 million grant from the National Science Foundation. Architecturally, the renovation changed a series of small, often oddly shaped rooms into six larger flexible laboratory modules, two flexible core facilities (one for microscopy and another for graphics), and several smaller laboratory support spaces, including cold room, equipment rooms and biological and radioactive waste storage areas. With Dr. Kessler are, above from left: Virginia M. Chapman, department Chair Walter F. Boron, M.D., Ph.D., John Giovannone, former Dean Gerard N. Burrow, M.D., architect Barry Svigals, and John Bollier. Listening to the dedication were former Dean Robert W. Berliner, M.D., far left, and Emile L. Boulepaep, M.D., both members of the physiology faculty.

Contributors: Helaine Patterson, Karen Peart, Michael Fitzsousa, Judith Winslow, Cynthia Atwood, Ilene Shub Lefland, Susan Alksnis and Carolyn Battista.

New research finds link between religion and health in the elderly

For the elderly, religion may do more than ease the soul. In fact, attendance at religious services may actually improve physical health and psychological well-being. That according to two new reports, co-authored by Stanislav V. Kasl, Ph.D., professor of epidemiology in the Department of Epidemiology and Public Health, and Ellen Idler, Ph.D., associate professor of sociology at Rutgers' Institute for Health, Health Care Policy and Aging Research.

The reports reveal the findings of a 12-year study conducted by Yale public health faculty and funded by the National Institute on Aging (NIA). The study sampled 2,812 people age 65 and over from Protestant, Catholic, Jewish and other religious backgrounds in New Haven. Subjects were interviewed annually from 1982 to 1989 and again in 1994.

The two reports were published in the Nov. 15 issue of the *Journal of Gerontology*. The first report, *Religion Among Disabled and Nondisabled Persons I: Cross-sectional Patterns in Health Practices, Social Activities and Well-being*, explores the impact of participating in religious services on risky health behaviors, friendships and family ties, and depression.

The three major findings for elderly people who participated in religious services are:

▶ Lower frequency of unhealthy behaviors: Subjects are healthier because they are more likely to engage in good health habits, such as exercise, and are less likely to have participated in risky behaviors, such as excessive smoking and heavy drinking, due in part to social and behavioral guidelines set forth and reinforced by the religious organizations.

▶ Stronger support systems and social ties: Subjects reported more friendships, closer relationships with more family members, and participation in more leisure activities, such as visits to museums and sporting events. In addition, they were more likely to have celebrated the winter holidays with more than one group of people.

▶ Improved emotional well-being: Subjects reported increased feelings of optimism and happiness and fewer symptoms of depression. The impact was the greatest for people experiencing functional disability due to chronic illness. Functional disability is defined as difficulty handling such daily activities as climbing stairs, using the toilet or carrying groceries.

The report is important because it measured many other kinds of resources in elderly people's lives, and found that attendance at religious services was consistently associated with most of these resources. "Attendance acted as a linchpin because it was associated with better overall health practices, more friends and relatives, more social activities and higher levels of well-being," notes Dr. Idler.

The second report, *Religion Among Disabled and Nondisabled Persons II: Attendance at Religious Services as a Predictor of the Course of Disability*, explores how religious involvement can influence changes in physical health over a 12-year period. These findings show that attendance at religious services was a good predictor of functional ability in later life by comparing a person's functional ability in 1982 to the changes that occurred during each follow-up year. "Over the long-term, people who had better health levels in 1982 and continued attending religious services were able to maintain higher levels of functioning and psychological health through 1988," says Dr. Idler, who received a Ph.D. degree in 1985 from Yale.

"Even after we took out the other variables such as friendship, leisure activities and social support, there was still evidence that attendance at religious services had a positive impact on health, particularly for those who experienced some level of disability at the beginning of the survey," she adds. Some of the subgroups studied, such as people who already had some disability, continued to experience the positive effects through 1994, but the overall numbers were lower due to a decline in the subject pool. "There were so many reasons for thinking that we should expect better health among people who are religiously involved, but until now it wasn't anything we were able to quantify," says Dr. Idler. "We also found that it wasn't a person's individual feelings of religiousness that made the difference, it was acting as part of the larger worship group that fostered positive health."

"This study is important because it has a large representative sample of community-living elderly, a longitudinal follow-up to study changes over time and rigorous statistical adjustments for the influence of many other variables so that the unique effect of religiousness can be better identified," adds Yale's Dr. Kasl.

The study was commissioned as part of the NIA-Established Populations for the Epidemiologic Study of the Elderly, which included separate studies conducted by Harvard University, Duke University and the University of Iowa.

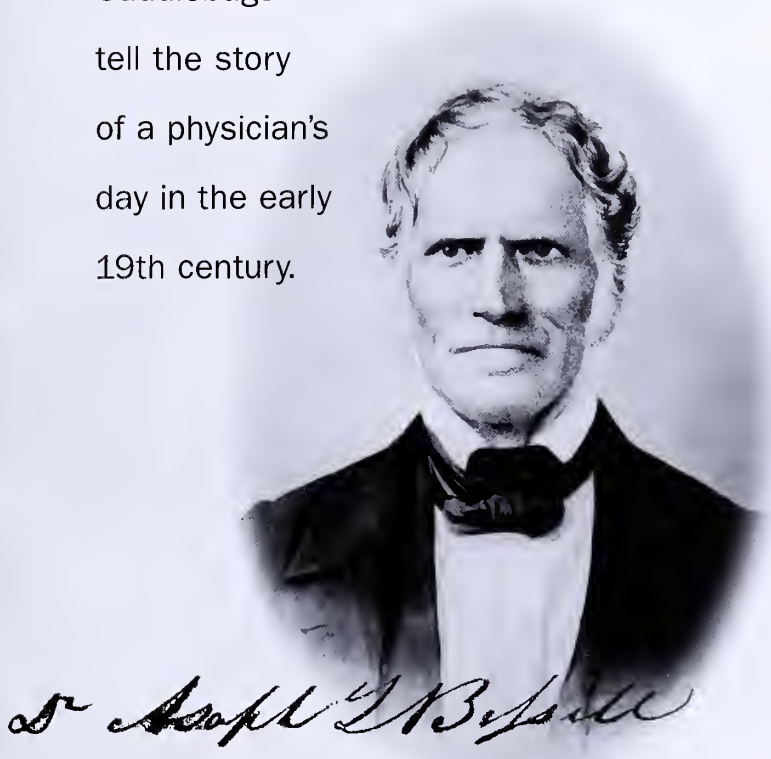
Dr. Bissell's saddlebags, frayed from use, contained no surgical tools, only medicine.

When house calls were horse calls

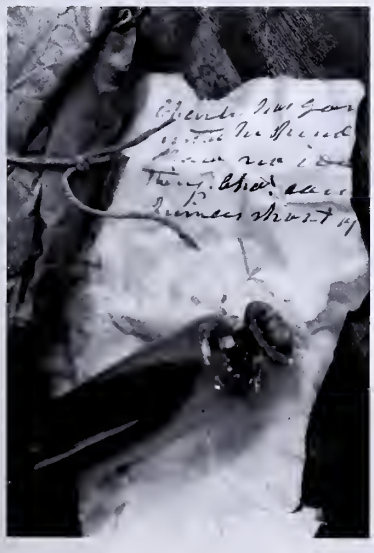
Saddlebags tell the story of a physician's day in the early 19th century.

By John Curtis

Photographs by Terry Dagradi
Biomedical Communications



Above: A portrait of Dr. Bissell, and his signature, taken from his copy of a medical journal. Below: Medicines of the time would have included emetics and cathartics, which Dr. Bissell kept in small glass bottles or wrapped in paper, tied with string and labeled in his own hand.



In a box in an office at the Medical Historical Library sit a pair of leather saddlebags, stiff with age, frayed from use and still holding some of the nostrums and powders that made up a physician's pharmacopoeia in the first half of the 19th century.

Small glass bottles and yellowed paper packets contain such remedies as ergot to strengthen uterine contractions during childbirth and Peruvian bark to treat fevers. They belonged to Asaph Leavitt Bissell, M.D., one of Yale's earliest medical graduates. Dr. Bissell, a member of the school's second class, practiced in Suffield, Conn., a tobacco-farming community where his parents had once lived and where his family still plays a prominent role. Charles Bissell Jr., the physician's great-great-grandson and a member of the Yale College Class of 1945w, surmises that the saddlebags were always near the door ready for use. "He would hop on his horse," says Mr. Bissell, a present-day resident of Suffield, "and go out to take care of someone."

After Asaph Bissell's death in 1850, the saddlebags were handed down from father to son until 1996, when Mr. Bissell donated them to the medical school. "I thought it was the appropriate place to have them."

Asaph Bissell was born in 1791 in Hanover, N.H., and began medical studies at Dartmouth in 1811. Two years later he went to New Haven with Dr. Nathan Smith, who had been lured away from Dartmouth to become the founding dean of the medical faculty at Yale. Dr. Bissell graduated in 1815.

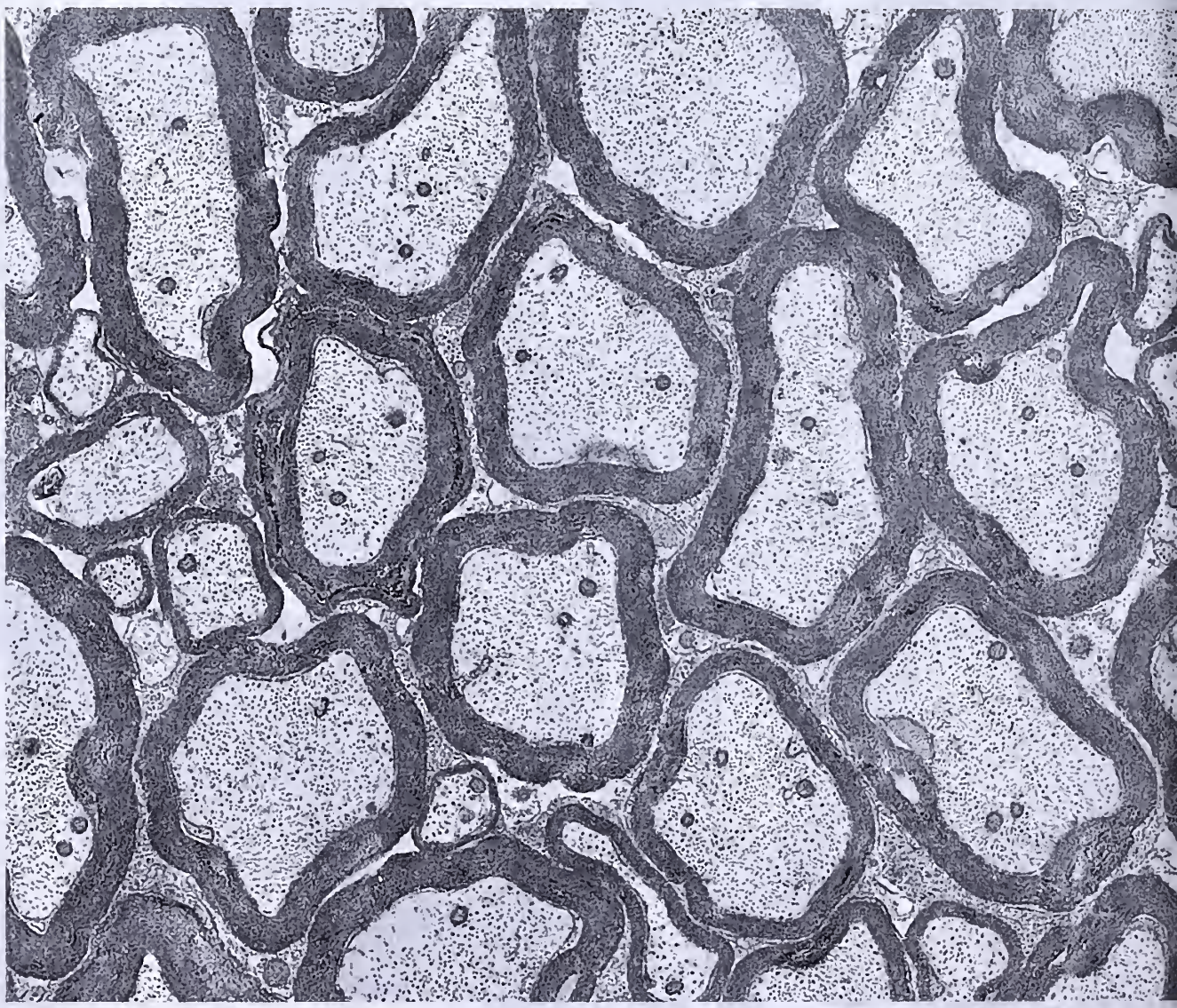
According to John Harley Warner, Ph.D., professor of the history of medicine, a medical kit of the time "would have included emetics and cathartics, and purgatives like calomel. It would probably have included some opiates. I would be very surprised if he wouldn't have had a lancet for letting blood [although no instruments remain in the bags today]. Anything having to do with surgery would have been very superficial."

According to Historical Librarian Toby Appel, Ph.D., the bags will join surgical instruments and other artifacts of medical history on display there. **YM**

John Curtis is a staff writer.

Navigating the spinal

STEPHEN WAXMAN

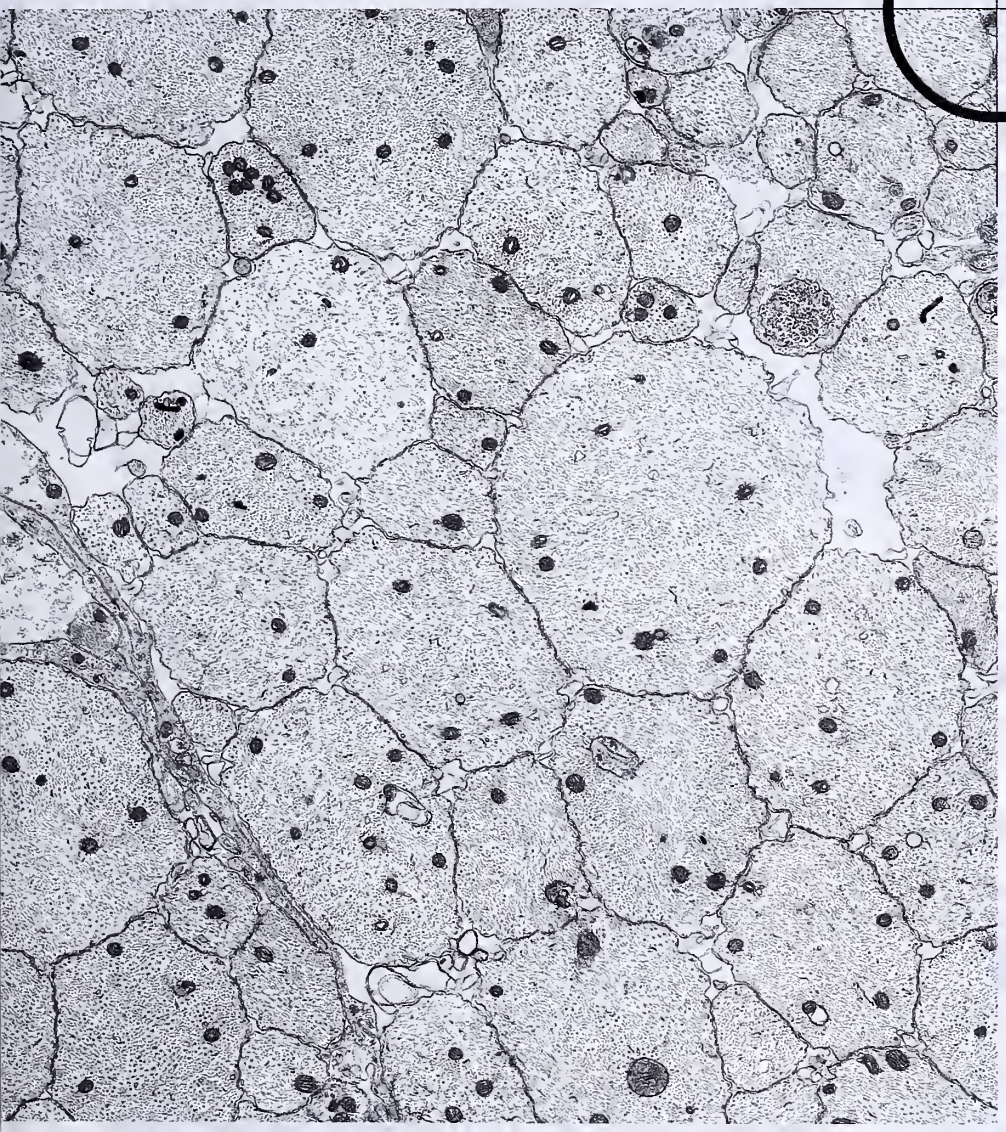


Myelinated healthy axons, above, and demyelinated axons, right, as they appear after injury to the spinal cord. Determining how to restore this protective coating to injured nerve cells is central to Yale's spinal cord research effort.

Once injured, the spinal cord cannot heal—at least that's what medicine has long believed. Now Yale scientists are mapping this terra incognita and providing real hope to people with paralysis.

cord

By Rachel Engers



riginating in the brain, stretching down the back and extending its reach through the peripheral nerves to every part of the body from the toes to the fingertips, the spinal cord is the body's information highway. Despite its importance, it is smaller than one might expect: just 18 inches long and about half an inch wide. It's also quite vulnerable. All it takes is a motor vehicle accident or a miscalculated dive into a swimming pool for the spinal cord to be compressed or twisted. In an instant, sensation and movement may cease altogether.

Each year in the United States, spinal cord injury deprives close to 14,000 people of the ability to walk, to use their arms and hands, or in some cases, to breathe unaided. Of the approximately 250,000 Americans who are paralyzed, a disproportionate number have been injured in the prime of their lives. Many, like actor Christopher Reeve, who was paralyzed from the neck down after falling from a horse in 1995, are traumatized at the peak of an active and vigorous life.

Although physicians have believed for thousands of years that an injured spinal cord could not be repaired, new scientific evidence indicates that this might not be true. "For about the past 10 years," says Stephen G. Waxman, M.D., Ph.D., professor and chair of the Department of Neurology, "we have had the sense that restoration of function after spinal cord injury is not an unrealistic goal." Applying new understanding of how nerve cells

Rachel Engers is a writer in Simsbury, Conn.

Neurology chair and center Director Stephen Waxman: "The goal of repairing the injured spinal cord, at least in some patients, is a realistic one."

die and how they might be revived, Yale scientists have made important steps toward the goal of someday reversing paralysis.

Much of this work has been done in partnership with the Paralyzed Veterans of America and its largest chapter, the Eastern Paralyzed Veterans Association. In cooperation with the federal Department of Veterans Affairs, these two groups helped establish the PVA/EPVA Center for Neuroscience and Regeneration Research at Yale, which opened in 1988 at the VA medical facility in West Haven. In the decade that has followed, PVA/EPVA Center scientists have gained ground in several areas. They demonstrated that damage to the protective coating of nerve cells plays a key role in producing paralysis after spinal cord injury, and have focused their efforts on finding ways to restore nerve function where this myelin layer has been stripped away. They also uncovered the molecular mechanism by which remissions occur in patients with multiple sclerosis, a disease that also attacks the protective coating of nerve cells. And they have developed the basis for new treatments for pain and muscle spasticity specific to spinal cord injury. The major goal of the program is to restore total function in individuals who have sustained spinal cord injuries. Along the way, this research program is aimed at finding ways to improve quality of life for patients while the search for a cure progresses.

A DECADE OF ADVANCES

These milestones and others were celebrated during a two-day program in late September marking 10 years of collaboration among Yale, the VA, and the PVA and EPVA. Speaking to more than 100 members of the veterans groups who came to New Haven for the event, Dr. Waxman said their support has provided not only funding but, through interaction between patients and scientists, motivation to work hard for a breakthrough. "We don't yet have a cure in hand," he told the group, "but we've made enough progress that I know we will come up with more effective treatments. A cure is now a realistic goal."

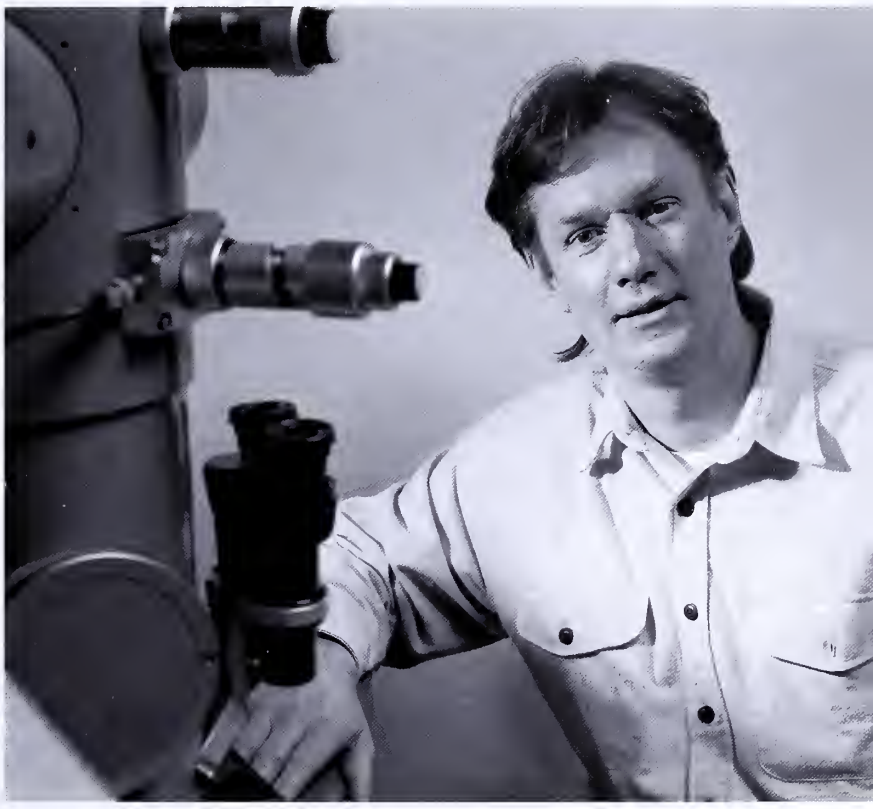
Because scientists thought that nerves in the central nervous system (unlike those in the peripheral nervous system) were incapable of regrowing after injury, they believed the only way to restore function would be to rebuild an entire spinal cord, surely a formidable task. Recent discoveries at Yale and around the world have changed that picture significantly. In 1988, Dr. Waxman put together two crucial pieces of information that, while previously known, had never been connected. One was the observation that among paralyzed patients, some nerve cells were found to survive at the site of injury—even in patients who had no function below the injury. The second was the knowledge that myelin was part of the puzzle in paralysis.

Myelin is a fatty sheath that insulates nerve cells and speeds the conduction of impulses along the spinal cord. When a spinal cord is damaged, some axons are severed. Others survive, but their myelin is stripped away. Dr. Waxman set out to find why the surviving axons were unable to function, and, in doing so, made the connection to the critical role of myelin in spinal cord injury. His research showed that nerve fibers within the spinal cord work somewhat like electrical cords—when their protective coating is removed, conduction is impaired. He discovered that it is this demyelination that prevents the surviving axons from properly carrying information. "In addition to the strategy of regrowing axons, this discovery opened up the possibility of repairing existing ones," says Dr. Waxman, the Helen Wilshire Walsh Director of the PVA/EPVA Center. "Damage to the myelin had been talked about even in 1906, but had been buried in the literature." This finding focused attention on the goal of restoring nerve impulse conduction in demyelinated axons, an approach to promoting functional recovery in spinal cord injury.

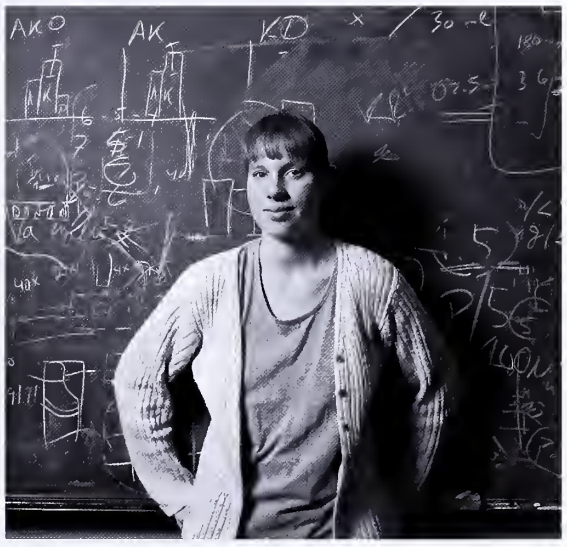
Is the theory correct? To find out, scientists at Yale

are experimenting with ways to mend the damaged myelin sheath in an injured spinal cord. Jeffery D. Kocsis, Ph.D., associate director of the PVA/EPVA Center and a professor of neurology and neurobiology, has carried out studies using the transplantation of glial cells to stimulate the renewed production of myelin and restore the conduction of electrical impulses through the nerve cells. Glia, whose name is derived from the Greek word for glue, are cells that fill in the spaces in the nervous system not occupied by nerve cells. Outnumbering nerve cells 10 to one, glia provide support for nerve cells, with complex functions ranging from producing myelin to regulating the metabolism.

Dr. Kocsis began work on the transplantation of cells four years ago. His interest was sparked by other research done in the 1980s in France and England showing that when glial cells were injected into the spinal cords of myelin-deficient rats, the cells produced anatomically correct myelin. "When I learned of the research, I wondered if the myelin would work properly," says Dr. Kocsis. To find out, he bred his own colony of myelin-deficient rats at the PVA/EPVA Center and injected two types of cultured glial cells—oligodendrocytes and astrocytes—into their spinal cords. He found that injecting glial cells not only produced myelin but restored impulse conduction.



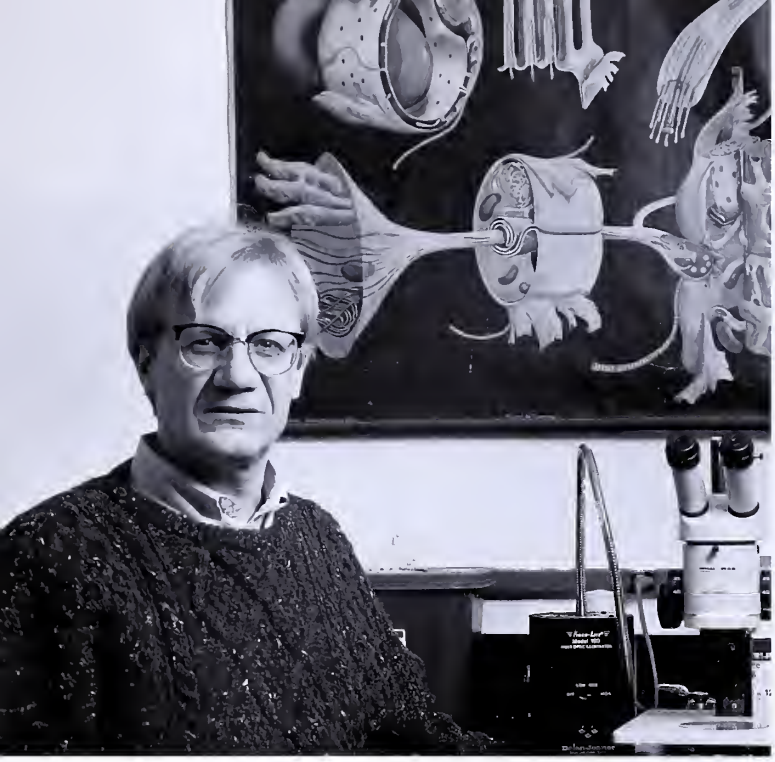
Joel Black is associate director of the PVA/EPVA Center. Jenny Fjell, below, is a predoctoral fellow who came to Yale from Karolinska Institute in Sweden, another of the world's leading centers for spinal cord injury research.



ROBERT LISAK

Now, Dr. Kocsis is looking for ways to make this discovery useful to humans with spinal cord injuries. His research was spurred on by an important finding made by William F. Blakemore, D.V.M., a fellow collaborator in The Myelin Project. (This Washington-based organization was founded by Augusto and Michaela Odone of Fairfax, Va., after their son contracted adrenoleuko-dystrophy, a myelin-attacking disease. The 1992 film *Lorenzo's Oil* was based on their story.) Dr. Blakemore, of the University of Cambridge, found a way to demyelinate the spinal cord of a rat and this paved the way for Dr. Kocsis and others to experiment with the insertion of cells from the central and peripheral nervous systems, as well as genetically engineered cells. In these experiments, Dr. Kocsis found that extensive remyelination occurred when Schwann cells (from the peripheral nervous system) were mixed with astrocytes (from the brain).

The newest and most exciting aspect of this research is focused on the olfactory ensheathing cell, a peripheral glial cell located in the nose. "These cells are unique," Dr. Kocsis says. "Under different conditions, they can differentiate either into Schwann cells or astrocytes. We have found that they make myelin and migrate tremen-



ROBERT LISAK

Jeffery Kocsis found that injecting glial cells into the spinal cords of rats not only produced new myelin but also restored impulse conduction.

dously." This is encouraging because it may mean that only one type of cell is needed to restore myelin (eliminating the cumbersome process of mixing Schwann cells and astrocytes, as well as the need for the removal of astrocytes from the brain via a biopsy). Dr. Kocsis is also collaborating with Alexion Pharmaceuticals in New Haven to develop transgenic pig cells for transplantation into human spinal cords.

CLUES ABOUT MS

Multiple sclerosis, a disease that affects more than 300,000 people in this country and an estimated 2.5 million worldwide, also results from neurological damage. As with spinal cord injury, the myelin surrounding the axons is destroyed, preventing them from transmitting signals to the brain. But unlike most neurological diseases, in which injury to the brain or spinal cord is generally irreversible, multiple sclerosis (MS) often includes remissions in which patients regain lost vision or movement spontaneously. Scientists have long been mystified as to the causes of these remissions.

A team of researchers, assembled by Dr. Waxman at the PVA/EPVA Center, has dissected nerve fibers molecule by molecule to identify the molecular basis for MS remission. They found that injured nerve fibers can heal themselves by inserting new sodium channels into the cell membranes. These sodium channels act like molecular batteries, powering the flow of impulses through the nerve fibers despite the absence of myelin at the site of injury. "We are trying to determine where the sodium channels are produced and how they are redistributed after injury," says Joel A. Black, Ph.D., associate director of the PVA/EPVA Center. The next step is to find a way to induce the insertion of these critical sodium channels into demyelinated nerve fibers. "My job," says Dr. Black, "is to tell the physiologists what I find so that they can design a drug." Success in this area may be applicable to those with paralyzing spinal cord injuries as well. "It's just a matter of time before we make significant advances that improve the lives of people with spinal cord injuries," says Dr. Black.

Another strategy has emerged from the work of Drs. Kocsis, Waxman and colleagues. They have furthered the development of a drug called 4-aminopyridine (4-AP), which improves impulse conduction in damaged nerve fibers. The drug, now in Phase III clinical trials for multiple sclerosis, works to reverse symptoms such as weakness and visual loss in MS patients. Early clinical trials have started to test 4-AP's benefits for patients with spinal cord injury. These initial studies suggest that treatment with 4-AP may reduce pain and spasticity. "The patients who have responded to 4-AP know it is not going to cure them, but it appears to improve the quality of their lives," says Dr. Kocsis. These inquiries into pain and spasticity were prompted by discussions with members of the PVA, who had approached Dr. Waxman's team several years ago in search of answers.

Although it is not a cure and despite side effects that may include trembling and seizures, 4-AP has been met with enthusiasm. "We feel that science is on the verge of a breakthrough, especially with 4-AP, which has really meant a lot to those of us with spinal cord injuries," says Kenneth Huber, president of the PVA, which funded early studies on 4-AP. "The return that some people have experienced has given us a great deal of hope."

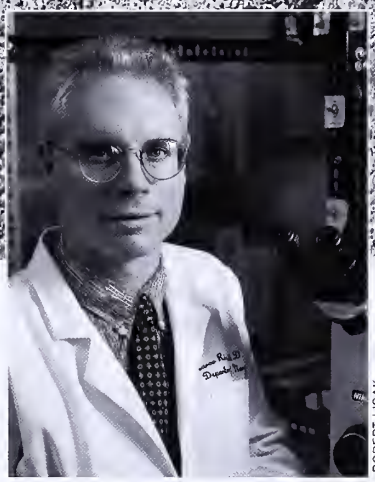
Scientists at the PVA/EPVA Center and in Yale's Department of Pharmacology played an important role in the development of 4-AP by identifying the molecules that prevent nerve impulses from traveling through the spinal cord in the aftermath of an injury. In axons, nerve activity is modulated by specialized molecules called potassium channels, which were discovered in the 1950s by Nobel prize winners Alan Hodgkin and Sir Andrew Huxley. Hodgkin and Huxley did their research on squids, which have very large nerve fibers. Three decades later, Yale researchers showed that, in mammals, the potassium channels are located beneath the myelin, which covers and masks them.

Working in separate laboratories at Yale but communicating closely, the PVA/EPVA Center's team and J. Murdoch Ritchie, Ph.D., the Eugene Higgins Professor of Pharmacology, showed that when axons lose their myelin, these potassium channel molecules are exposed and halt nerve conduction, acting as "locked brakes." This

CONTINUED ON PAGE 19

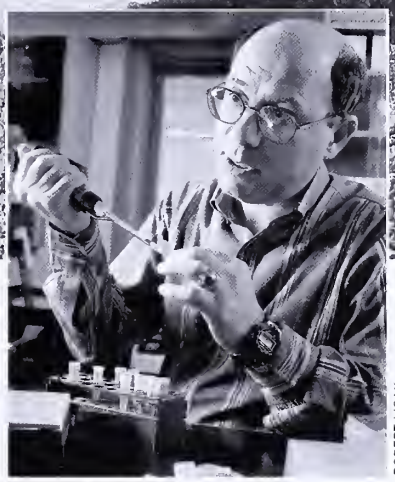
JOEL BLACK

Nerve fibers, seen through the electron microscope following a specialized technique called freeze-fracture, are magnified more than 100,000 times. The dozens of small openings seen at left are sodium channels, the molecular batteries that produce nerve impulses.



ROBERT LISAK

Marco Rizzo



ROBERT LISAK

Sulayman Dib-Hajj

Solutions to pain

Unlike a broken arm or leg, a damaged spinal cord does not stop hurting once the body heals. An estimated 60 percent of those with spinal cord injuries suffer from chronic pain for which there is currently no treatment. At the PVA/EPVA Center, Marco A. Rizzo, M.D., Ph.D., assistant professor of neurology, and Sulayman Dib-Hajj, Ph.D., an associate research scientist, are part of a team that is developing the basis for drugs that will end post-spinal cord injury pain, again exploiting the properties of sodium channels.

After injury, the genes that produce some types of sodium channels are turned on, producing too many of these channels. The genes for other sodium channels are turned off, and these channels disappear. The work of Dr. Rizzo and Dr. Dib-Hajj suggests that this change is a root cause of pain. Unlike potassium channels, which block the transmission of impulses after injury, sodium channels produce an abnormal "repetitive firing" of impulses. The challenge now is to identify the varying types of sodium channels and determine how to inhibit those that trigger pain. Two dozen sodium channels have been identified in organisms from jellyfish to humans, and scientists believe there may be many more. Using computerized sequence analysis, Dr. Dib-Hajj has studied their development over the course of evolution, charting the differences that are evident between species. "We can learn a lot by comparing the sequences," he explains. "The idea is that if function is conserved over evolutionary time, we may be able to identify a similarly conserved amino acid sequence and determine experimentally if it underlies that function of the protein. Which amino acid residues cause the sodium channel to open and close or to be fast or slow? These are important issues for rational drug design that targets specific channels."

In addition to pain, most patients with spinal cord injuries and MS experience debilitating muscle spasms caused by damage to axons in the spinal cord. Scientists at Yale are examining the physiological basis for spasticity and are developing the basis for new drugs to alter the opening of sodium channels or modulate the level of GABA, a neurotransmitter produced by the body that prevents hyperactive uninhibited nerve activity.

Laboratory meets real life

A broken spinal cord cannot be healed. Case closed. That was the message James Peters received from physicians when his spinal cord was injured during an explosion at an army base in 1967. Until recently, he and other paralyzed veterans had no reason to believe they would ever walk again.

"Now, there is a renewed sense of hope," said Mr. Peters, executive director of the Eastern Paralyzed Veterans Association, who recently visited the laboratories at the PVA/EPVA Center for Neuroscience and Regeneration Research at Yale. "The tunnel now has a light."

Located on the West Haven campus of the VA Connecticut Healthcare System, the PVA/EPVA Center was founded as a collaborative effort among the University, the Paralyzed Veterans of America, the Eastern Paralyzed Veterans Association, and the Department of Veterans Affairs in 1987. It opened the following year.

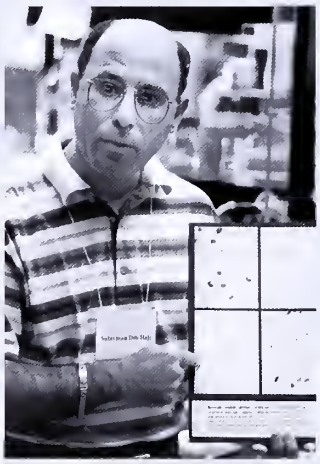
During two days of lectures, tours and gatherings at Yale and the VA campus in late September, the founding partners celebrated a decade of advances in neuroscience research. As part of the celebration, Stephen G. Waxman, M.D., Ph.D., gave the first annual Helen Wilshire Walsh lecture, *From Molecules to Man: Approaching a New Neurology of the Spinal Cord*, summarizing the discoveries at the PVA/EPVA Center that are bringing a cure for spinal cord injuries closer.

Hearing Dr. Waxman explain how lengthy and complicated the process of discovery can be actually was encouraging to Chris A. Timpanelli, an attorney in Stratford, Conn., who was diagnosed with multiple sclerosis 10 years ago. "Some people would be disheartened by this," he says, "but I look at it another way. We are lucky to have people this dedicated. Knowing this has been more therapeutic than any drug."

Currently, about 30 scientists work at the PVA/EPVA Center. More than 50 scientists have trained there, many continuing their own spinal cord research in laboratories around the world. "The work of this lab is very relevant to the clinic and the concerns of patients. That's what attracted me as a student," Mark Baccei, who was explaining his studies on calcium channels, told the visitors. He is a third-year graduate student in the interdisciplinary neuroscience program at Yale. Martin Young, treasurer of the EPVA, was one of those listening. "I know of no place in the world," he said, "where they are doing this as intensively as at Yale."

The partnership between scientists and non-scientists has been beneficial to both groups. "When we're working at the bench, designing an experiment or building a model, we are thinking in very abstract ways. But when we are interacting with people, it gives us a better perspective," said associate research scientist Sulayman Dib-Hajj, Ph.D. "It's not just science for the sake of science, but science that may eventually lead to improvements in the lives of people with these injuries. This is a very powerful motivation."

Last fall's celebration of the PVA/EPVA Center was a chance for scientists to discuss their work with members of the two veterans organizations, and to listen to their views and ideas. Sulayman Dib-Hajj, left, and Karen Lankford, below, were among those explaining recent research findings. Below left: Joseph Segarra, right, president of the EPVA, talks with Stephen Waxman, left, Peter Addesso and Mary Segarra during a tour of the lab.



PETER CASOLINO (3)

Background: Astrocytes, the star-shaped glial cells that outnumber nerve cells in the spinal cord 10 to 1, traditionally have been thought responsible for scarring. Yale scientists have produced new evidence that these cells play a role in restoring nerve conduction.

STEPHEN WAXMAN (BACKGROUND)

CONTINUED FROM PAGE 16

discovery provided a target—if the potassium channels could be turned off, the brakes would no longer be locked. The drug 4-AP turns off these unmasked potassium channels, thereby improving transmission of impulses and restoring some lost functions.

STOPPING CELL DEATH

One of the latest and most innovative investigations at the PVA/EPVA Center involves the prevention of nerve cell damage before it occurs. When the spinal cord is traumatized, nerve cells die, but not all at once.

Research at the PVA/EPVA Center has indicated that cell death is caused by a process akin to sabotage. The initial blow to the spinal cord kills some cells instantaneously and then sets off some secondary processes which cause the body to attack itself. An abnormal influx of calcium, a byproduct of the first round of cell death, gnaws away at nearby nerve cells. Death occurs in waves, taking hours or even days to complete. The timing of cell destruction, however, leaves a window of opportunity in which damage might be limited. Yale scientists have targeted the specific molecules that release calcium to the axons and are working to develop the foundation for drugs which will inhibit these molecules and stem the tide of calcium at the time of injury. If this research is successful, scientists may be able to prevent a spinal cord injury from resulting in paraplegia or quadriplegia by intervening in the process of cell death and "rescuing" nerve cells.

In the last decade, advances at the PVA/EPVA Center at Yale and other research institutions around the world have been made on such a broad front that the field of neurology is undergoing a dramatic change. "Traditionally, neurology has been an intellectually beautiful discipline, but we did not have therapies," says Dr. Waxman. "A neurologist would go through a meticulous mental exercise and arrive at a diagnosis. But, we would have nothing to offer the patient, and that has to change."

Dr. Waxman believes that neuroscientists will very soon be able to help patients in ways that were once thought impossible. He is optimistic that within the next decade researchers at Yale or elsewhere will find a vaccine for MS and a cure for spinal cord injuries. "We're approaching a new—and much more hopeful neurology of the spinal cord," Dr. Waxman says. "The goal of repairing the injured spinal cord, at least in some patients, is a realistic one and we're moving as fast as we can in this direction." **YM**

PETER CASOLINO (4)

A celebration of progress

Michael Delaney, past president of the PVA, talks to a fellow visitor to Yale during the celebration last fall of the 10th anniversary of the PVA/EPVA Center.

Yale President Richard C. Levin, left, with PVA President Kenneth Huber, right, and Executive Director Gordon Mansfield.

Stephen Waxman, left, and Langdon Clarke at the announcement of the Helen Wilshire Walsh Directorship at the PVA/EPVA Center for Neuroscience and Regeneration Research. Dr. Waxman gave the first annual lecture in Mrs. Walsh's honor as part of the program celebrating the 10-year partnership that built and continues to support the center. The endowment was established through a bequest from the estate of Mrs. Walsh, an advocate of research in spinal cord injury who supported the work of the PVA, the EPVA and Yale for many years. Mr. Clarke, grandson of the late Mrs. Walsh, was instrumental in creating the endowment and directing the use of the funds for research in neurology at Yale.

Last year Yale University honored the executive director of EPVA by naming the James J. Peters Conference Room at Yale in the PVA/EPVA Center for Neuroscience and Regeneration Research. The plaque that commemorates the occasion reads: "Jim Peters is a repository of knowledge and a source of inspiration. He is central to the battle against spinal cord dysfunction." Center Director Stephen Waxman hosted a dinner at the Yale Club of New York in June. From left, Gerard Kelly, deputy executive director; Vivian Beyda, Dr.P.H., director of research and education; Joseph Segarra, president; Dr. Waxman, and Mr. Peters.

EASTERN PARALYZED VETERANS ASSOCIATION

Stephen Waxman, backed by the founders of the PVA/EPVA Center. From left: Gerard Kelly, John Bollinger, Joseph Segarra, Paul Hoffman, Kenneth Huber, Gordon Mansfield and James Peters.

Music and medicine

Musical aptitude and a gift for healing coincide more often than one might imagine.

By Karen Schmidt

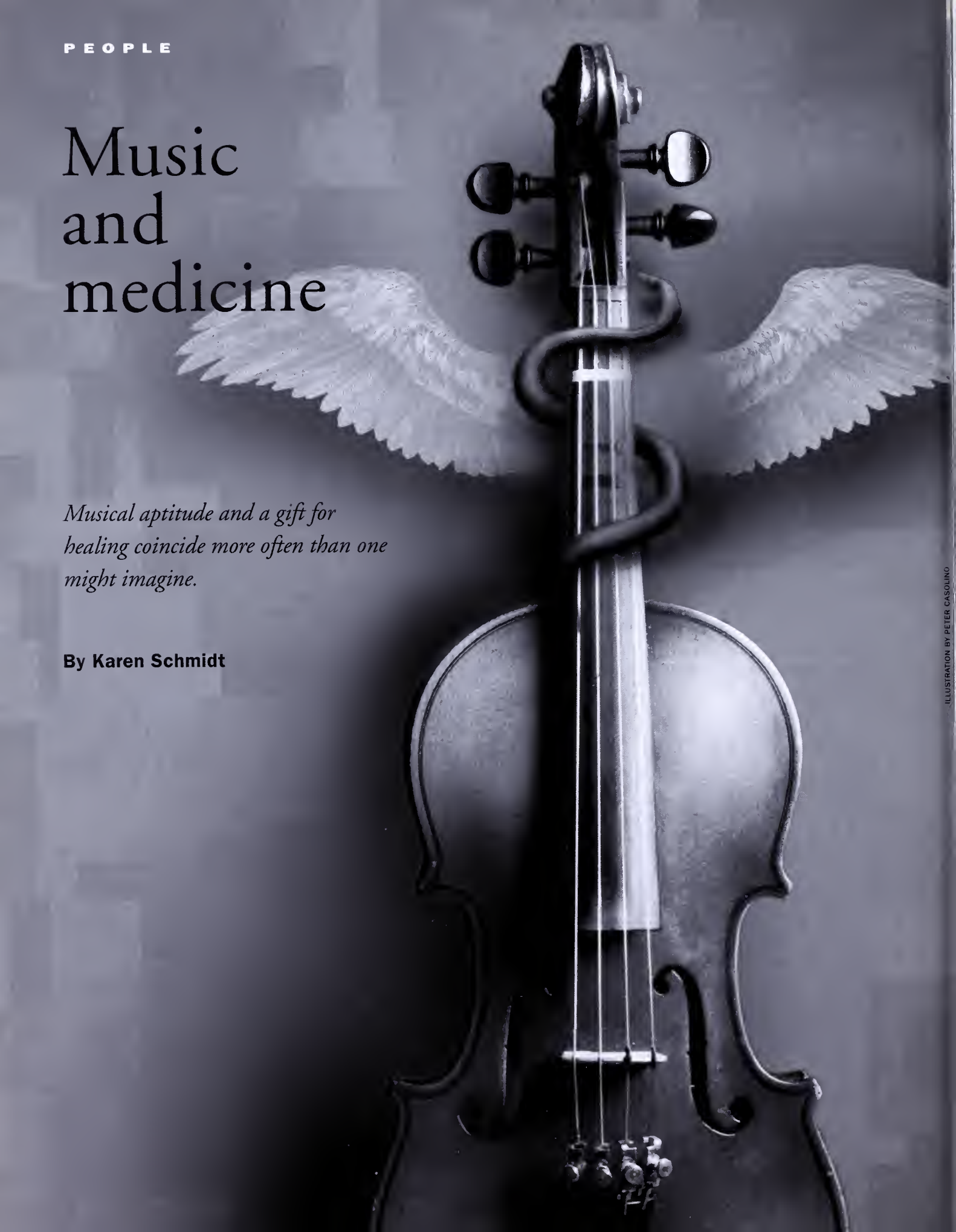


ILLUSTRATION BY PETER CASOLINO

What was the first human music? A whistled imitation of a bird call? A rhythmic pounding that mimicked a heartbeat or hoof beat? A croon to soothe a crying baby or comfort a sick friend?

Music was probably born of the natural rhythms of life. So it shouldn't come as a surprise when people who dedicate themselves to life science release their creative energy in music.

Both music and medicine are strict disciplines, even though one is considered an art and one a science. Both demand practitioners who learn complex skills, practice them exhaustively, then impose a set of rules on what's naturally messy—a disease, an injury, a series of unrelated sounds. And both require enormous dedication, so much that it would seem impossible for one person to do both.

But some scientists manage. They realize medicine and music aren't mutually exclusive. Not only can the two disciplines coexist; given the right conditions, they can coalesce.

ROCKING RESEARCHERS

Consider the lyrics of the original love song/lab song *She's a Knockout* by Ira Mellman, Ph.D., bass player for Yale's biorocking band, the Cellmates. "She knows how to get into your genes/And what recombination means. She's got the magic touch/And I need her oh so much. She's a knockout."

Only a medical scientist is likely to catch the reference to an experimental mouse known as a "knockout," but an average listener would still hear a love song. "It's kind of an interesting niche," says Dr. Mellman, professor of cell biology and director of the Program in Biological and Biomedical Sciences. "You write about what you know."

Dr. Mellman's musical colleague Richard A. Flavell, Ph.D., chief of the Section of Immunobiology and a Howard Hughes Medical Institute investigator, writes songs that are more unabashedly scientific. Dr. Flavell has penned the *RO1 Blues*, tracking the trials of an investigator trying to win a National Institutes of Health grant, *Molecular Millionaire*, about a postdoc who wants to earn big money doing biotechnology research, and *DNA*, to the tune of the Sex Pistols' punk-rock anthem *EMI*.

Though the Cellmates call their niche biorock, the six-member group doesn't limit itself to its own biologically inspired music. Thanks to a mix of musical cultures and generations, they play everything from Jerry Lee Lewis to The Pretenders to Phish, a contemporary band that contributed the tunes *Golgi Apparatus* and *Down With Disease* to the Cellmates' repertoire.

Their venues have ranged from departmental parties to the American Museum of Natural History in Washington, the site of the 1995 annual meeting of the American Society for Cell Biology. "We do it because it's wonderful fun. It's incredible fun," says Dr. Flavell, a leading Lyme disease researcher. "It's an enormous release."

In addition to Drs. Mellman and Flavell, the group includes guitarist Leonard K. Kaczmarek, Ph.D., chair of the Department of Pharmacology; drummer William M. Philbrick, Ph.D., associate professor of medicine; lead vocalist Tamar Boursalian, an immunobiology graduate student; and the group's only non-scientist, Madlyn Flavell (Richard's wife) on keyboards.

Since the band members are best known for their lab work, audiences aren't always sure what they're going to see and hear. "People have expectations that it will be just useless," Dr. Flavell says. But since the members have strong musical backgrounds, the band's sound is remarkably sophisticated. "The level of musicianship is very good," Dr. Mellman says. "Enough of us have done this professionally or close to professionally that we know what the expectations are."

Dr. Mellman trained as a classical musician from childhood, and went to Oberlin College in Ohio to continue his music studies. During his college years, he frequently traveled to New York to play saxophone in recording studio gigs, produced songs, and played with a group he calls "the best managed and best produced band that never made it."

But on a tour playing with Paul Anka's orchestra, Dr. Mellman decided he didn't want to be a professional musician if it meant ending up like some of his colleagues. "You could see that they were automatons, they were dead, and I did not want that." He quit the music program, and ended up majoring in biology.

Dr. Kaczmarek began playing guitar while he was growing up in London. He once played Albert Hall, and as a member of a group called The Exiles, opened for Eric Clapton at the London club Eel Pie Island.

"The trouble is, there were so many bands in London in the '60s. It was incredibly competitive," Dr. Kaczmarek says. So he decided against music as a career. "It's easier to be a scientist playing music on the side than a musician doing science on the side."

Dr. Flavell started playing guitar as a teen-ager in

Karen Schmidt is a writer in New Haven and a first-year graduate student in Epidemiology and Public Health.

Mitosis

I.
There was a girl from a midwest town,
She didn't smile, she didn't frown
When other children went out to play
She stayed inside and watched the
cells all day

This made her momma very sad,
It made her poppa very mad,
To see their beautiful little girl
Have the cells become her whole world

But with the cells she did stay
On the microscope she all day
What she watching was lots of fun,
She see mitosis, mon!
And she say:
Chorus

One cell will get you two cells,
Two cells will get you four
Unless one dies then,
You have just three cells
But these make six cells
Before your eyes

II.
The girl she grow now day by day
Until a Ph.D. she did say,
Is just the very right thing for me
If a scientist I am to be

So she went to San Francisco,
All the way from O-hi-o
She took a bike, she took a train,
Still she got there all the same

When she saw those hills so high,
And the bridges that touched the sky,
It brought a tear right to her eye,
But she say:
Chorus

III.
Lots of people she got to know,
Lots of cells in San Francisco,
The cell divisions she got to see,
Were more beautiful than the sea

This made her momma very proud
Her poppa too would sing out loud
Still it made her kind of sad,
For the life she never had
Her university the best in the land
She wanted more or she'd throw it
in the can
So she joined a rock and roll band,
She's singing:
Chorus

— Ira Mellman

PETER CASOLINO

Leonard Kaczmarek, left, is chair of pharmacology at Yale. Cellmate Richard Flavell heads the immunobiology section and is co-inventor of a Lyme disease vaccine. Both came to the United States from England, where they performed in rock bands during the 1960s.

PETER CASOLINO

The Cellmates may lose lead singer Tamar Boursalian, right front, later this year when she completes her graduate studies. "Unfortunately," jokes one of the senior Cellmates, "none of us is on her thesis committee."

Norfolk, England, and formed his first band at age 15. "We were pretty awful," he admits. His bands improved over the years, and one even played on the same bill as The Animals. But Dr. Flavell says he never seriously considered a career in music, and grew away from it during his postdoc years.

Then in the mid-'80s, he bought a new guitar and set up a recording studio in his home in Boston so he and his wife, Madlyn, could record music together with occasional vocal help from their children.

Some time after Dr. Flavell arrived at Yale, he learned that both Dr. Mellman and Dr. Kaczmarek had played professionally and invited them to dinner. "The ulterior motive," Dr. Mellman recalls, "was to play."

The Cellmates' first real performance was a New Year's Eve party, Dr. Flavell recalls. Eventually the band replaced its mechanical rhythm box with Dr. Philbrick on drums, and recruited Ms. Boursalian as a vocalist. "It just clicked," says Dr. Mellman, who describes her as the best singer he's ever performed with. "It was obvious that if we wanted to work on it, it could be more than just junk."

The Cellmates played at immunology and neuroscience parties and retreats. The first national gig came a couple of years ago, at the official opening of the Massachusetts Institute of Technology's new biology building. "That was fun," Dr. Flavell says. "We actually had the faculty of MIT singing a chorus on the stage." Since then, they've played at a retreat for the drug company Merck, an anniversary party for Princeton's molecular biology department, and at the 1996 Cold Spring Harbor Symposium, where James Watson himself (of the team that discovered the structure of DNA) enjoyed rocking to the music. The musicians even get paid for their work—usually more, Dr. Kaczmarek says, than they're paid for giving scientific talks. "The idea of having scientists play music is rarer than having scientists give talks," he says.

Though they only manage to rehearse every few weeks and play about six times a year, the Cellmates hope to keep going, and possibly make a real recording.

"It's a very good outlet," Dr. Mellman says. "You have to pay attention. It's one of the few things you can do that just wipes the slate clean, reformats the hard disk."

A PHYSICAL EXPERIENCE

A singer—the one musician whose own body acts as the instrument—may come closest to linking music and biology.

"Music, when it really works, is a physical experience," says Kyle D. Pruett, M.D., a child psychiatrist at Yale's Child Study Center. "It takes over your entire body."

Dr. Pruett, a professional tenor who has performed throughout the region, discovered the phenomenon while

singing centuries-old music in a madrigal group in high school. "When you get it right, even if you're 15 years old, it's not an experience your body forgets," he says.

And Dr. Pruett says the musician's need to listen and be patient has helped "incredibly" in his medical practice. He even saw the disciplines merge neatly years ago before one of his first opera performances, Benjamin Britten's *Prodigal Son.* Another performer, a young boy suffering from stage fright, had locked himself in a bathroom before the show, and Dr. Pruett managed to convince him to perform.

"I think after that experience," he says, "I had become convinced there was a way for me to become a good doctor and a good musician."

Dr. Pruett grew up in an Indiana household in which "music was a given, it was not an add-on." He started singing in a church choir as a boy, and studied voice with the choir director. In high school, he sang in the madrigal group and performed musical comedy. At the same time, his interest in biology was sparked by a

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FRANK POOLE

Kyle Pruett, a child psychiatrist well known for his work on fatherhood, also sings opera and performs professionally. He recently collaborated with composer Fenno Heath and soprano Judith Caldwell on the CD *I'll Sing and Ever Shall: Songs for Judy and Kyle.* "There are occasionally moments," he says of his choice of career and avocation, "where I wonder, 'What if I had not tried to ride both these horses?'"

The ear's amplifier

Using sound and music to study the delicate workings of hair cells may provide answers about hearing loss.

The body's musical sense might go all the way down to the cellular level.

Well, maybe it isn't music in the traditional sense. But Joseph Santos-Sacchi, Ph.D., professor of surgery (otolaryngology) and of neurobiology, is studying cells in the inner ear that seem to dance in response to music. He even has a videotape of the cylindrical cells dancing to the sound of the *William Tell* Overture.

"This cell movement is unique. It's unlike any other movement found in the body." says Dr. Santos-Sacchi (who denies any real musical talent but has a saxophone, clarinet and keyboards at home.) Since hair cells allow us to hear, understanding how this unusual dancing movement relates to cell function could be a key to eventually unlocking treatments for certain forms of hearing loss.

When hair cells in the inner ear detect a mechanical disturbance—a sound wave—they respond by sending information about the sound to the auditory nerve and on to the brain. There are two types of hair cells: inner and outer.

"Most of the information you hear comes from the inner hair cells," he says. But Dr. Santos-Sacchi studies the outer hair cells, which have very few direct connections to the auditory nerve but still play a role in sound reception.

The outer hair cells seem to actually change their length—by changing the surface area of their cell membranes—in response to sound. "Presumably, they start jumping up and down," he says. "At least, that's what happens *in vitro*."

Dr. Santos-Sacchi takes the outer hair cells from guinea pigs and studies the electrical signals that correspond to the cells' motion. If the researchers can figure out how to modulate that motility, it may be a step towards understanding how the outer hair cells work.

That's important because the outer hair cells seem to be part of a sort of "cochlear amplifier" that uses a mechanical feedback mechanism to boost the vibration of the basilar membrane of the cochlea.

Outer hair cells tend to be the first to go in response to any insult, such as disease or loud noises. They don't regenerate in mammals, so the result can be hearing loss.

"Presumably, the way that works," Dr. Santos-Sacchi says, "is that the inner hair cells are no longer getting that boost."

At Norfolk festival, the hills are alive with remedies

Yale physicians, musicians target problems of performance.

The physical sensations of fear are familiar to all of us: the dry mouth, queasy stomach, pounding heart and shaky muscles.

Kyle D. Pruett, M.D., describes it as the sympathetic nervous system's primitive fight-or-flight response, as the human body prepares for the moment when the campfire goes out and the circling saber-toothed tiger decides to strike. But that cascade of symptoms is precisely the last thing a musician wants in the moments before a performance, when small-muscle coordination is critical.

"You do not want Pleistocene-era feelings flowing through your body," Dr. Pruett, a clinical professor at the Yale Child Study Center and a professional tenor, told a group of fellow physicians and performers last summer. Dr. Pruett was one of the speakers and coordinators for the fourth annual Medical Problems in the Performing Arts conference, held at the Norfolk Chamber Music Festival in northwestern Connecticut in collaboration with the Yale Summer School of Music.

Dr. Pruett talked about performance anxiety or, as he prefers to call it, performance awareness. It's one of the most disabling health problems a performer can face, and can cripple a career if left untreated. The conference was designed to explore performance anxiety and other medical problems that plague performing artists, especially musicians. These "small-muscle Olympians," as Dr. Pruett calls them, suffer from health problems ranging from tendinitis to hearing loss, and as a group of patients, tend to be neglected.

"It's basically a misunderstood, undertreated group," says Peter Jokl, M.D. '68, HS '69-73, professor of orthopaedics and rehabilitation and chief of the section of sports medicine.

Dr. Jokl, Dr. Pruett and Martin W. Sklaire, M.D., HS '62, coordinated the conference, along with festival manager Elaine Carroll and director Joan Panetti. The sponsors were the Yale Summer School of Music, the Child Study Center and the sports medicine section.

About 10 years ago, Dr. Sklaire, clinical professor of pediatrics, took a course in Aspen, Colo., about medical injuries to performers. As an amateur piano, clarinet and cello player, he had some idea of the physical stresses musicians face. As a specialist in pediatric and adolescent medicine with extensive experience in sports medicine, he saw a clear connection. "A lot of injuries to musicians are similar to injuries to athletes," many stemming from overuse, Dr. Sklaire says.

The very act of playing an instrument can force the body into unnatural positions, Dr. Sklaire says. "If you're spending enough time, you're going to have aches and pains as a result," he says. For professional musicians whose livelihoods depend on playing, injuries can be more than a nuisance.

Paul W. Brown, M.D., clinical professor of orthopaedics and rehabilitation and of plastic surgery, spoke at the conference about some of the upper extremity problems musicians can face. These include overuse injuries, such as tendinitis, nerve compression or entrapment, and focal dystonia, the loss of control over an individual or group of muscles.

In some cases, a cure can be as simple as a small change in practice habits, such as taking regular rests, or a change in musical technique. Dr. Brown described one patient, a French horn player, who had been complaining of arm pain. He found she was gripping her instrument white-knuckle tight. "The cure here was not medical," he explained. "It

KAREN SCHMIDT

Otolaryngologist David Astrachan works with performers at Norfolk on ways to prevent and manage ear, nose and throat injuries. Hearing loss tops the list.

was just a matter of changing her musical technique."

Some cases are more difficult, as when the only real treatment is rest, "which professional musicians don't take kindly to at all," he said. Part of the reason musicians may be undertreated is that their livelihood is threatened: They don't want to be told they have to stop playing. On the other hand, musicians tend to be highly motivated, hardworking and interested in their own treatment, precisely because the stakes are so high, Dr. Brown said.

David I. Astrachan, M.D. '84, a clinical instructor in otolaryngology, talked about ear, nose and throat injuries to performers. One of the most serious health problems among musicians can be hearing loss. It's most common in percussionists and violinists, but can affect anyone in an orchestra, and it's often irreversible, he said.

Wind instruments can peak at 123 decibels. "That's jet aircraft noise," Dr. Astrachan said. Using earplugs can reduce the noise by 25 decibels. "That can be all you need to take a potentially damaging sound and make it less damaging," he said; musicians who don't want to use earplugs in performance are encouraged to at least use them in rehearsals.

The conference also included a panel discussion with members of the Vermeer String Quartet, which performed at the festival the night before the conference. Afternoon workshops examined hearing problems, rehabilitation of hand injuries, and relaxation techniques.

Though attendance at the conference has been modest, Dr. Sklaire says he and his colleagues want to continue organizing it. "I think we're all committed to perpetuating this," he says.

"As an academic institution, this is the type of thing we should do," Dr. Jokl says. "A university should be a repository of this kind of knowledge."

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teacher who "taught science with the passion of a Shakespearean actor."

"He had such respect for science as a discipline and, really, an art," Dr. Pruett says.

Dr. Pruett came to Yale College and majored in history and music. "I didn't see any point in doing medicine twice. I would do college once and medicine in medical school," he says. He continued to sing, and traveled to Europe with the Yale Glee Club in his junior year. He was invited to sing in Europe, but was told he would have to work harder at his music. "So I spent a summer thinking about it very seriously," he says. "But, in the end, the service commitment had deeper roots in me."

While in medical school at Tufts University, he got a position singing in an Episcopal church. "I think it kept me sane," he says. "It was such a healing environment for me compared to medical school." When he returned to Yale for his residency, he went back to his old music teacher, and began singing opera. "I didn't like opera," he admits. "I liked *lieder* and musical comedy and oratory and sacred music." Now, most of his musical work is in opera, which he describes as "a true mega-art form." Though Dr. Pruett says he loves being a physician, he sometimes wonders what a musical career might have been like. "There are occasionally moments," he says, "where I wonder, 'What if I had not tried to ride both of these horses?' "

ORDER AND EXPRESSION

As the most mathematical of the arts, music seems to hold a particular fascination for scientific thinkers seeking the creative without straying too far from the rational.

"There is certainly creativity in medicine, in the thinking process," says Fredric O. Finklestein, M.D., a nephrologist and clinical professor of medicine. But that creativity is constrained by the structures of science. For a physician, it is often difficult if not impossible to get "that spark of originality" that happens in the arts, he says.

Dr. Finklestein majored in history of music as part of Yale's undergraduate Class of 1963, doing pre-med work at the same time. His senior thesis addressed the creative process in 20th-century music and how composers imposed a variety of rigorous external forms to achieve freedom of expression.

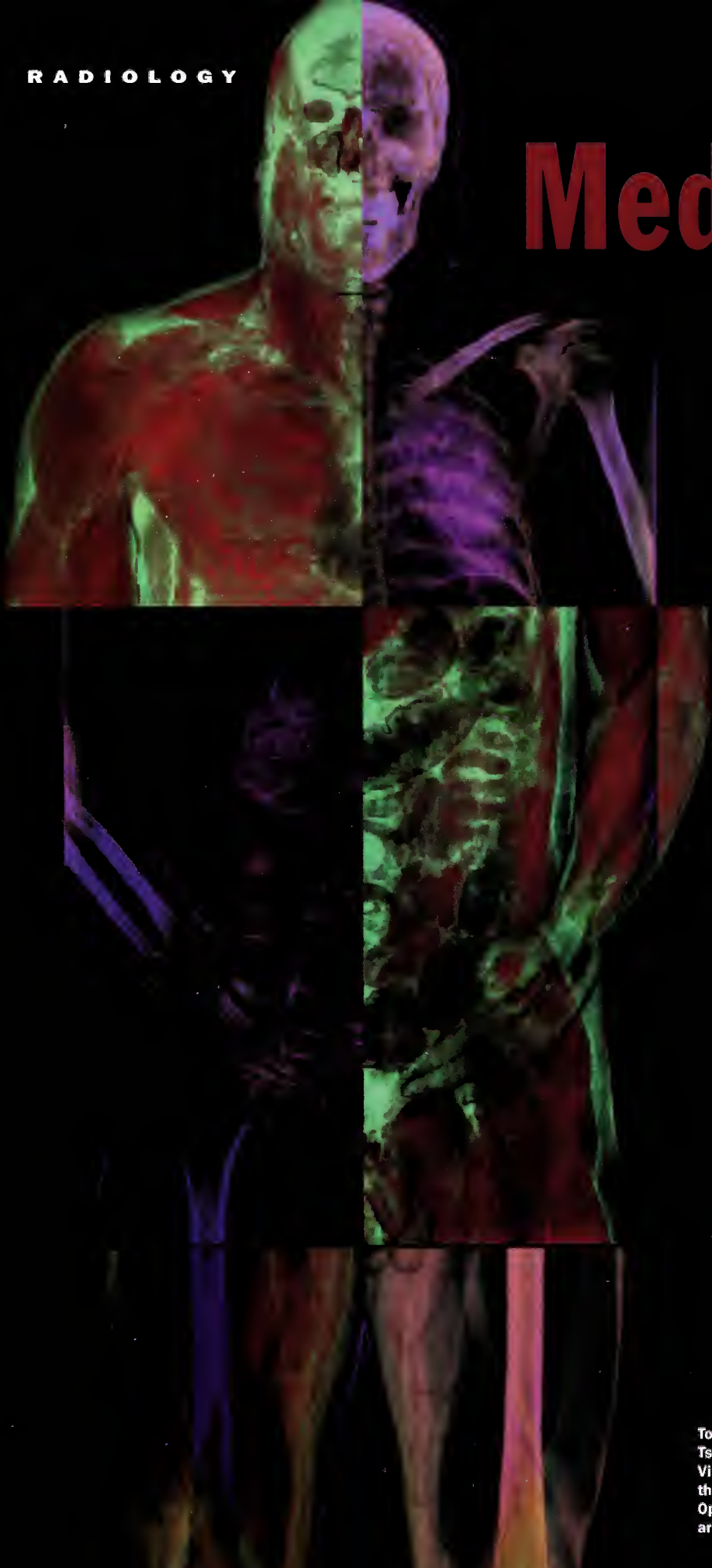
Though Dr. Finklestein still plays piano and clarinet, he doesn't perform. He sees music as a creative respite from his clinical work, and says he doesn't regret choosing medicine over music as a career. "I really enjoy medicine. I really love the work, so I don't really have second thoughts about it in that sense."

Besides, he sees a clear link between the two fields. Both require rigor, practice and discipline. "In medicine we have to pay endless attention to detail," Dr. Finklestein says. "If you're seeing a patient, you have to impose this external rigorousness on taking the history and the physical."

Only after gathering that information can the creative part of medicine begin, leading to the diagnosis. "You have to have an ordered framework in order to have this creative expression," he says. But even in that process, the freedom must be tempered. "You have to impose these external forms on what you do."

He compares the rigor of medicine to what the great, early 20th-century composer Igor Stravinsky said about music: Freedom of expression in music can only be achieved by imposing strict form. Stravinsky, who was born in 1882, explained it like this: "The more art is controlled, limited, worked over," he wrote, "the more it is free." **YM**

Medicine's new eyes



To create this composite of the body, Alexander Tsiaras assembled photographic slices from the Visible Man images, then rotated and manipulated the data set to achieve the desired effect. Opposite: The lungs, liver, intestines and skeleton are visualized in this composite of the upper body.

Armed with powerful new imaging devices, clinicians and researchers can peer into the body more clearly than ever before. What they are seeing is revolutionizing medicine.

By Marc Wortman

ANATOMICAL TRAVELOGUE/WARNER BOOKS (2)

When something goes seriously wrong inside the body, there's only one course of action: look inside, identify the problem and then figure out how best to fix it. For most of medical history, that crucial first step of making a correct diagnosis has required penetrating the living person's sealed physiological system, inherently a dangerous and complex surgical process. Then, a century ago, the arrival of the X-ray gave medicine the ability to see through the body's surface without cutting it open.

While X-ray images in various forms continue to be one of medicine's diagnostic mainstays, they offer a limited, static portrait of the living human organism. Over the last 10 years, imaging technology has traveled light years from the world in which X-rays were the only means of looking into humans without resorting to the knife. An explosion of advances in other forms of imaging technology has given physicians new eyes, allowing them to peer into the most minute recesses of the body and observe dynamic physiological and biochemical processes in action. As a result, for the first time clinicians and researchers can ask biological questions directly and watch the living, fully awake body as it responds.

Marc Wortman, a regular contributor to *Yale Medicine*, received an award of merit in the National Health Information Awards Competition for his 1996 article on Lyme disease.

About the images

"Radiologists are like abstract expressionists," says Alexander Tsiaras, the LIFE magazine photographer whose work illustrates this issue's cover story on advances in medical imaging. "They have a special talent for looking at a fragment of information in two dimensions and extrapolating it to three. In their mind's eye, they can create a whole from a single section or slice."

Mr. Tsiaras' art is more dazzling to the eye than the workaday images that radiologists use to diagnose disease and guide treatment. But advances in imaging technology, a field that traces its origins to the discovery of the X-ray in 1895, are closing the gap between the often-cryptic images that are a radiologist's stock-in-trade and the artist's more comprehensible, if less concrete, rendering of anatomy.

Working with specialists in other disciplines—surgery, neurology, psychiatry, computer science, physics, photography and the graphic arts—radiologists are developing ways to better visualize the body, its structures and its metabolism. New techniques such as helical CT, PET and functional MRI (See *An Imaging Glossary*), and the overlaying of these images into composites, are beginning to resemble the high-tech special effects of Hollywood.

"Art and diagnostic imaging converge daily and will do so increasingly in the next century," says department Chair Bruce L. McClennan, M.D. "There's a long tradition of artists who combine physical reality with the ideal, and the desire to find beauty in the real world as it exists in flesh and blood."

It is this last quality, says surgery Chair Ronald C. Merrell, M.D., that distingulshes Mr. Tsiaras' data-derived images from the work of many artists. "You can go back to his original image and reinterpret it yourself. It's all there in his database." This highly graphic and accessible presentation of anatomy, he adds, provides a common language for imaging specialists and surgeons. "His visualization of actual structures could be enlightening to diagnostic radiologists, and his translation of radiographic images makes radiology far more comprehensible to surgeons. It could potentially do some great good."

Mr. Tsiaras spent six months last year collaborating with the Department of Surgery, through a grant from NASA, to promote the visualization of abstract disease processes and human anatomy. He is the founder and principal in the New York City-based Anatomical Travelogue, and the author of *Body Voyage: A Three-Dimensional Tour of a Real Human Body* (1997, Warner Books).

Michael Fitzsousa, Editor

For patients, this has meant vast improvements in care and raised hopes for better diagnosis and cure where none existed before. From knee injuries to Parkinson's disease, the advanced imaging technology provides a means of rapidly and precisely measuring the extent of tissue damage and locating functional disturbances. Armed with such knowledge, specialists can then choose the least invasive and most effective treatment option. There is less need for exploratory surgery, less possibility of causing inadvertent harm and increased likelihood of rapid recovery.

Investigators in a wide range of fields now employ a great wealth of advanced imaging tools—computed tomography, functional magnetic resonance imaging, single photon emission computed tomography, and positron emission tomography scans. (See *An Imaging Glossary.*) Through the eyes of this technology, investigators can visualize human physiology in action and, increasingly, explain how it works at the most basic levels, from thought to movement. "Most people think of imaging as something static," says Bruce L. McClennan, M.D., chair of the medical school Department of Diagnostic Radiology and chief of diagnostic imaging at Yale-New Haven Hospital. "But those days are gone forever. More and more, physicians want not just form but function. And we can deliver it. It's brought about a revolution in how we practice medicine. Already we've cut down drastically on the use of X-rays and X-ray films, and they'll virtually disappear in the next century. And that's just the beginning.

"Just one example: we're now developing interventional imaging magnets to do medical procedures while the patient is actually inside the magnet. The information will be right there for the clinician. For the patient, it means less waiting, more accurate diagnosis and treatment, less surgery and swifter recovery."

For researchers, seeing the body through the new imaging devices has begun to answer ages-old questions about what actually goes on in almost every imaginable bodily functions. Anatomical structures and their respective biological functions can be studied simultaneously. For example, the contracting walls of the heart and the firing cells in the brain can be observed in action so that normal and abnormal behaviors of the body's essential functions can be charted and compared. Equipped with the findings, physicians and scientists can develop new therapies for disorders. The observing eye of the investigator can zoom without resistance through every passage and wall in the body to uncover otherwise hidden disease processes. The imaging technology needed to do this is enormously complex, yet its effect is to simplify treatment and greatly ease and speed the healing process.

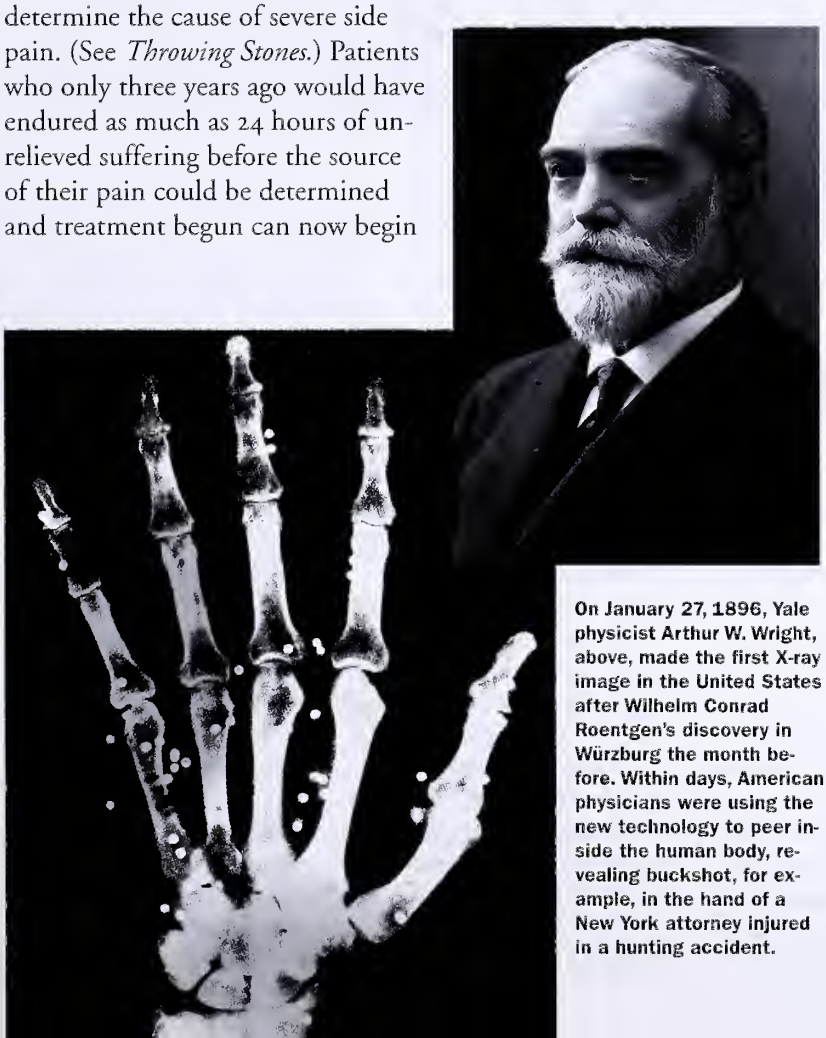
While the diagnostic imaging field is now so wide that no institution can command a full range of applications, Yale is a leader in an exceptionally high number. An especially important area is breast needle localization, in which biopsies of suspicious lumps can be accomplished with much greater accuracy. This may prove to be an invaluable tool for cancer patients, most importantly in the diagnosis of breast cancer. "Breast imaging," says Dr. McClennan, "is a huge problem facing our field." Eventually, he believes, the emerging capability to image breast tissue accurately while simultaneously removing suspicious lumps "will obviate the

"[With the next generation of imaging applications] the information will be right there for the clinician. For the patient, it means less waiting, more accurate diagnosis and treatment, less surgery and swifter recovery."
— Bruce L. McClennan

Better imaging techniques, says department Chair Bruce L. McClennan, "have brought about a revolution in the way we practice medicine."

need to go to the operating room. We're going to eventually eliminate the knife."

Improvements in high-speed diagnostic imaging tools have already saved many lives, countless hours of suffering, and enormous amounts of money by shortening the time needed to come up with an explanation for patients' woes. One recent example is a new kidney stone diagnostic procedure, developed at Yale, that has eliminated the need for long waits to determine the cause of severe side pain. (See *Throwing Stones.*) Patients who only three years ago would have endured as much as 24 hours of unrelieved suffering before the source of their pain could be determined and treatment begun can now begin treatment within five minutes of arrival in the Emergency Department.



On January 27, 1896, Yale physicist Arthur W. Wright, above, made the first X-ray image in the United States after Wilhelm Conrad Roentgen's discovery in Würzburg the month before. Within days, American physicians were using the new technology to peer inside the human body, revealing buckshot, for example, in the hand of a New York attorney injured in a hunting accident.

Many of the advances have been made possible by the application of computing technology to imaging devices. In its turn, the computerization of diagnostic imaging is rapidly reshaping the nature of medical communications. Yale is part of a nationwide movement exploring the possibilities for computer networking among physicians, allowing for faster diagnosis, the sharing of information between specialists and clinicians over long distances and improved storage of patient data.

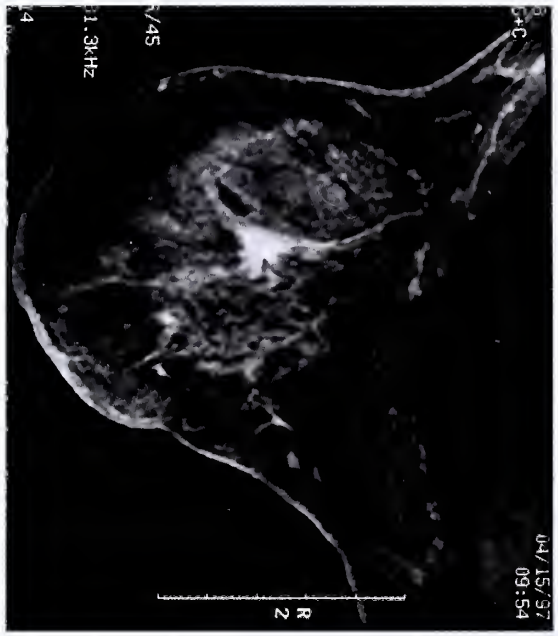
While the newer imaging technologies have opened up new possibilities for investigation and improved clinical care, they also serve the recent priorities of managed care for holding down costs for therapies and preventing more serious, and more expensive, medical problems. For instance, advances made possible by imaging technology, such as the high-speed diagnosis of kidney stones and needle localization biopsies, reduce time patients need to spend in the hospital and often end the need for multiple and redundant procedures. They

also potentially lower the number of patients whose conditions worsen, resulting in the need for extended care.

WATCHING THE BRAIN WORK

In the federally designated Decade of the Brain, it is inside the skull that the frontiers of medicine have been pushed furthest by applications of imaging technology. Perhaps more than any other institution, Yale is noted for using its imaging technology to learn more about how the brain functions. Investigators are mapping out brain structures and exploring the biochemistry of many fundamental mental processes, such as memory, vision, reading, attention, hearing and even smell, as well as disorders in those processes. These conditions include dyslexia, schizophrenia, autism and brain trauma from stroke, alcoholism and epilepsy. "Brain imaging has become one of the hottest fields in the biological sciences. There are always new applications for MR being found," says medical physicist R. Todd Constable, Ph.D., an assistant professor of diagnostic radiology, who works closely with clinicians on magnetic resonance imaging (MRI) projects. "Our research imager is swamped. It's tough to book time."

Irena Tocino, opposite page, head of the radiology department's breast imaging section, has demonstrated new uses of magnetic resonance imaging in detecting tumors. The original X-ray film, right, suggested the presence of a small cancer but was not conclusive. The subsequent MR image, center, was easy to interpret and allowed a definitive diagnosis, says Dr. Tocino. A breast biopsy confirmed the diagnosis.



An imaging glossary

Looking into the human body without opening it up has been a tool for medicine for more than a century. Exposing film to X-ray beams passed through the body provided readable images of solid structures like bones and masses of dense, soft tissue, such as muscle and brain. In many ways, the basic concepts in imaging technology have changed remarkably little.

Discovered by Wilhelm Conrad Roentgen in 1895, **X-rays** are beams of radiation that pass through different kinds of tissue in varying amounts. On photographic film, air and soft tissue will register in different shades of black while bone will show up as white. In dense organs like breast tissue, a radiologist will read the film for subtle gradations to spot anomalies that are potential indicators of disease.

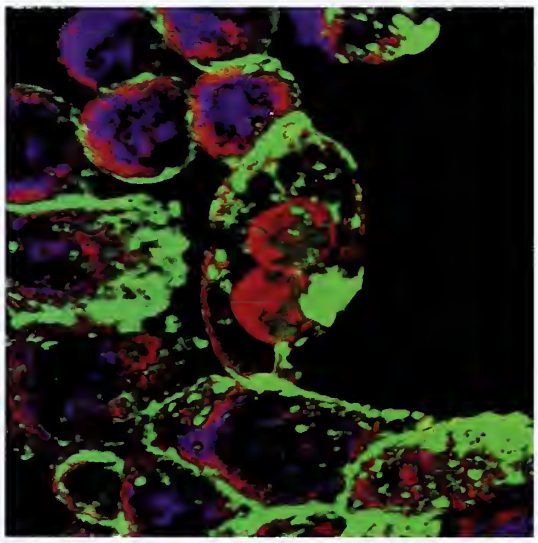
Computed tomography (CT) takes an X-ray camera and spins it about the subject's body to take a cross-sectional image, or slice. The X-rays from the CT scanner are picked up by sensors linked to a computer that generates a highly detailed video image. A significant technical advance, a helical CT scanner moves over the patient, taking rapid, overlapping images of large portions of the body. When rendered on the computer, the images can be viewed from any angle and perspective. For instance, tours through a virtual, 3D image of an organ allow physicians to study areas of the body requiring reconstructive surgery prior to operating or to inspect precancerous polyps in the colon to determine appropriate treatment.

Using pharmaceuticals "tagged" with nuclear trace elements, **single photon emission computed tomography (SPECT)** and **positron emission tomography (PET)** scanners can detect and measure the site, speed and

Much of that work involves mapping out brain anatomy and function. In order to observe the brain in action, study subjects enter the machine and then are given a battery of tests while their brain activity is imaged and recorded. "Any task you can perform on a computer or a video player," says John C. Gore, Ph.D., director of the NMR Physics Research Group and professor of diagnostic radiology and applied physics, "can be projected, controlled and recorded." Study subjects lie down inside the functional MRI (fMRI) machine, which is specially outfitted for research. It may have a video screen placed just outside it from which images are then reflected through a series of mirrors to the supine subject. Headphones can be used for delivering sound tasks, or an air circulation system for olfactory studies. Anyone who has undergone an MR scan knows the magnet's hollow rhythmic beat can be unnerving. Subjects can't move about inside the tube and anyone prone to claustrophobia would be better off skipping the exercise. While the subjects perform tasks, whether it's bending a finger or reading a word, their brain activity can then be imaged and sites mapped for specific activities, from muscle activation to language usage.

With all that data as a baseline for normal brain

ROBERT LISAK



THE ANATOMICAL TRAVELOGUE

Antibodies surround breast cancer cells, above, in an image captured by a confocal laser scanning electron microscope.

quantity of absorption of the radiopharmaceutical. The minute change can be recorded to show, for instance, the body repairing tiny fractures in bone structure or the rate of uptake of neurotransmitters in the brain. Yale researchers have used PET and SPECT to develop a new method for detecting Parkinson's disease prior to the onset of the shaking and other behavioral symptoms associated with it. Physicians can now begin treatment early enough, in many cases, to prevent the most devastating symptoms altogether.

The advent of **Magnetic Resonance Imaging (MRI)**—first used clinically in 1986, followed by a giant leap forward with the arrival of **functional MRI (fMRI)** in 1990—made the dynamism of life visible for the first time without significantly interfering with that dynamic. The tube-shaped magnet of the MRI machine creates a massive yet harmless magnetic field around the body that causes hydrogen atoms to line up uniformly. When the magnetic field is switched off, the atoms relax back to their normal patterns, giving off detectable signals as they do. A computer records the process, which occurs at varying rates depending on the tissue, and then generates highly detailed images. Radiologists can set the magnet for study of anatomy through sensitivity to tissue or they can observe function, or metabolic activity, through sensitivity to blood oxygenation. When a portion of the brain is activated, an fMRI scan can detect increased blood flow. By overlaying an anatomical with a functional study, researchers can map out which sites in the brain serve to control different activities, or they can compare function in a normal brain versus that of a person with a mental illness or such disorders as learning disabilities or autism.

Using a new technique for rapid, total-body MRI, the entire human body can be imaged in as little as 18 seconds.

anatomy and function, investigators then begin to observe differences in the brains of those with cognitive and mental disorders, from learning disabilities, post-traumatic stress syndrome and epilepsy to schizophrenia, alcoholism and stroke. (See *What the Brain Thinks While Reading*) The investigators hope eventually to develop reliable diagnostic tools and therapies for these disorders that remain among the most difficult to diagnose and most resistant to treatment.

Already, neurosurgeons and neurologists have begun to find practical tools derived from these experimental studies. For instance, Dennis Spencer, M.D., the Harvey and Kate Cushing Professor and chair of neurosurgery, has been testing fMRI as a noninvasive, extremely rapid method of examining the brain prior to surgery. Patients with seizure disorders or tumors who need surgery may soon be able to have their brain anatomy mapped out without the extended preoperative procedures that are now necessary. (See *Peeling Back the Skull without a Knife*) The potential savings in time, money and pain are almost incalculable.

Stroke is another area in which new applications of imaging technology hold great promise. By understanding which areas of the brain have been damaged by trauma or stroke, more appropriate therapies can be prescribed for individuals. Assistant professor of neuroradiology Robert K. Fulbright, M.D., director of clinical fMRI, has shown that stroke, epileptic seizures and other neuronal activity change the way water molecules move in the brain. Diffusion weighted imaging, an MRI technique that measures these changes, is now regarded as the most sensitive way to detect stroke in patients during the first few hours after symptoms occur. Actual scanning can take less than a minute, with results following within a half hour. "We can rule out hemorrhages and tumors and detect stroke very, very early. This gives us a tool for rapid treatment and for developing new treatments. New drugs are now in development to limit damage from, or even prevent stroke."

NEW WAYS TO IMPROVE CARE

The advantages for clinical care and medical research the newer technologies offer are easy to imagine. The reality of their application is much tougher.

Much about how MRI works is simply not understood, and the process of getting readable images from machines can be enormously complex. It's not like an X-ray in which the tube shoots, film gets exposed to radiation on the other side of the body and a photographic negative of anatomical structures follows. Even the most basic MRI scan requires a highly specialized team to operate it and process the data emerging from it. The more

ELIZABETH MCFARLAND/MALLINCKRODT INSTITUTE OF RADIOLOGY

Imaging techniques have been used to diagnose cancer since the application of the X-ray. Now, the digital reconstruction of data generated by helical CT provides a view of structures from a vantage point inside the body. This frame from a virtual flythrough of the colon reveals a 1-centimeter polyp.

complex the question the less certain are the data and the more post-processing must take place to clarify just what the eye of the scanner has seen. "You don't just get an area of the brain to light up," says medical physicist Dr. Constable of studies of brain activation. "Nobody knows why functional MRI works or why images change," adds Dr. Gore.

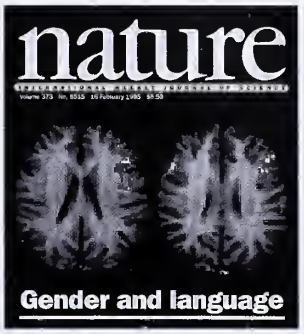
That is why many of the frontiers of diagnostic imaging are being explored as much by physicists as by radiologists. Dr. Gore, who is himself a physicist, directs a large team comprising physicists, neuroscientists, radiologists and computer scientists who work with researchers throughout the School of Medicine and indeed the entire University using MRI for their research. Biological investigators need Gore's group to help them develop imaging methods and then explain just what it is they're seeing. Says Dr. Gore: "We continually find that what we think are simple tasks—like listening to a tone in the ear for example—may also evoke a transient response in areas of the brain that we were not expecting." Figuring out what causes those responses and eliminating "noise" from small movements or individual variations in brain structure require complex calculations.

The future of imaging technology promises to alter medicine radically, from diagnostic and treatment methods to administration of care. Some of the most speculative uses already developed for the new imaging technologies seem to have jumped from the screens of science fiction movies.

Eventually, patients will very likely be able to walk into a clinic, get a complete body scan in a matter of minutes, have it diagnosed for problems and then stored away for future reference. Kevin M. Johnson, M.D., a diagnostic radiologist doing MR research, has already perfected a new technique for rapid total body MRI, in which a patient's entire body can be imaged without great blurring in as little as a scant 18 seconds. Using an adaptation to the scanner, Johnson can move his study subjects on a sliding table swiftly through the MRI machine, getting 180 cross-sectional images along the way. The complete picture gives a much wider scope for diagnosis than current procedures. The images can also be stacked for animated tours. While many questions remain, Dr. Johnson believes that the new technique is especially promising for detecting the spread of cancers, which now is usually done in limited regions using a CT (computed tomography) body scanner and an ingested or injected nuclear tracer. "We can do a workup faster and with less inconvenience and suffering for the patient," says Dr. Johnson, assistant professor of diagnostic radiology. "And you get to see the entire body and not just a limited area." He believes that, when coupled with existing tests, the rapid total body MRI will eventually provide better cancer detection.

What the brain thinks while reading

If men and women sometimes seem like they come from different planets, the difference in how their brains go about reading may help explain just how far apart those planets are. Husband-and-wife team of pediatric neurologist Bennett A. Shaywitz, M.D., and developmental pediatrician Sally E. Shaywitz, M.D., together with their team of investigators, electrified the neuroscientific world when they reported in 1995 in the journal *Nature* that female subjects had areas in both brain hemispheres active during reading while male subjects had only one. This was the first time functional differences in the brains of men and women had been shown. While it demonstrates important anatomical differences between the brains, it also may help explain why neurologists report that women with strokes tend to recover language abilities more rapidly than men.



The Shaywitzs' finding was in fact a byproduct of a much larger investigation of reading and language usage designed to identify neurological differences in the brains of non-impaired readers and those with dyslexia. "We're developing a much more in-depth picture of how the brain works in non-impaired readers and people with reading difficulties," says Robert K. Fulbright, M.D., director of clinical fMRI and a collaborator with the Shaywitzs.

Use of language for reading is an enormously complex mental activity involving motor-speech areas and language reception regions in the brain. Investigators ask study subjects to sound out nonsense words projected on a screen that is reflected to them while they undergo functional imaging. Areas of activation are then overlapped with anatomical scans. The results of each subject are "averaged" out to create a common brain space to account for individual differences in size and anatomy. The researchers are analyzing the data to determine differences between non-impaired readers and those with disabilities. Eventually, clinicians will diagnose children with various learning disabilities early on and begin treatment to prevent a lifetime of difficulties. "Reading disability is a circumscribed deficit surrounded by strengths," says Dr. Sally Shaywitz, professor of pediatrics and a faculty member in the Child Study Center. [Bennett Shaywitz is a professor with appointments in pediatrics, neurology and the Child Study Center.] "You need to identify those strengths, make the child aware of those strengths, and then maximize them to help overcome the disability."

The three-dimensional quality of computer animated graphics has given viewers playing video games or watching movies a feeling of entering into a world of virtual reality. A similar experience is now possible in traveling at high speed through the body. Where now a viewing scope must be inserted into the partially anesthetized body and passed through the colon, aortic vessels or bronchial tubes until an obstruction is encountered, radiologists will soon rely upon virtual equivalents. And the virtual tour will be a better diagnostic tool than current invasive procedures. Colorized, animated, volumetric renderings on the computer of CT scans provide a realistic image of the interior of the body's passages. Using a joystick, the viewer can travel up and down or zoom in on sites, such as polyps, atherosclerotic plaque buildup or ulcers. There are major

Peeling back the skull without a knife

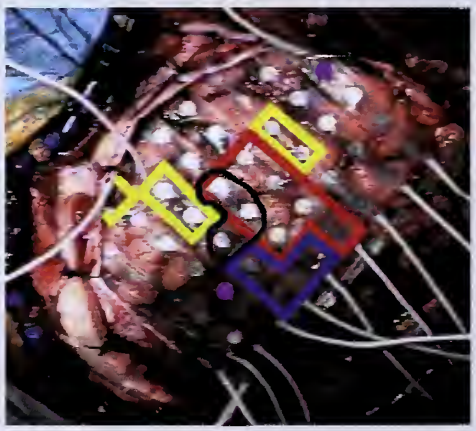
Understanding what transpires inside another person's head may be difficult for anyone, but for a surgeon about to operate on the brain, that knowledge can be a matter of life and death. New applications of functional MRI may make it a far less dangerous process.

For the past decade, patients undergoing brain surgery have benefited from a procedure pioneered at Yale. Before removing tumors, vascular malformations or other lesions that might cause seizure disorders, surgeons must carefully map the surface of the brain to pinpoint areas vital to language, and the organization of motor function, sensation and vision. Prior to surgery, the surgeon removes a portion of the patient's skull and lays a grid of electrodes over the cortex, the outer layer of gray matter at the brain's surface. The fully conscious patient then completes a series of tasks, during which critical regions of the cortex are identified and mapped as areas to avoid during surgery. The entire process lasts about a week and takes place in the Yale Epilepsy Unit.

The chairman of the Department of Neurosurgery, Dennis D. Spencer, M.D., is exploring the use of the fMRI to achieve results superior to those from the electrode grid. A one-hour fMRI exam may eventually replace the week-long monitoring process that is now the state of the art, says medical physicist R. Todd Constable, Ph.D., an assistant professor who is working on the imaging technology with Dr. Spencer. To test this capability, the research team is correlating fMRI data with the already-proven electrode techniques. Says Dr. Spencer: "Surgeons will eventually be able to understand where language is controlled without having to invade the brain and physically map it."

ROBERT LISAK

Neurosurgeon Dennis Spencer prepares to lay down a grid of electrodes on the exposed surface of the brain during a procedure that will map functional locations to be avoided during epilepsy surgery.



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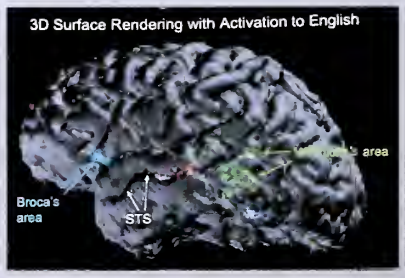
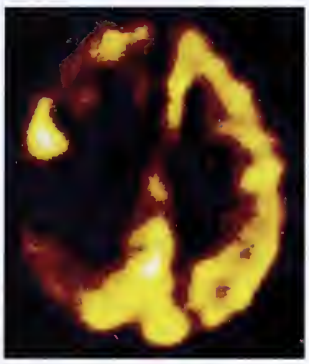


DENNIS SPENCER

The map shown above left is produced from data gathered during a week of observation and EEG recording. The color outlines indicate areas of the cortex that control motor function (red), language and speech (yellow) and sensory ability (blue). The area outlined in black shows surgeons where they can most safely operate to remove the epileptic focus without causing a permanent neurological deficit.

Spencer and colleagues are now using functional MRI studies like the one above to map the brain non-invasively.

advantages to the virtual colonoscopy, angioscopy and bronchoscopy beside not subjecting patients to unpleasant, invasive and potentially hazardous procedures. When an obstruction is encountered that would halt an actual physical exam, the virtual examination simply passes right through it. Using color processing, blood can be "drained" from the heart and vessels to examine walls and valves,



ROBERT SOUFER

Function over form

Positron emission tomography (PET) is especially useful as a tool to visualize metabolism, to see not only the form of a structure but its function as well. The image at left allowed surgeons to diagnose a brain tumor without opening the skull. The patient had been treated for a previous tumor, and the dark area could have been dead tissue from the prior radiation therapy. PET imaging detected metabolic activity consistent with a new tumor. "Only PET can show that difference," says VA PET Center Director Robert Soufer.

A virtual image bank

Images of all sorts can be digitized, then manipulated, compressed, archived and sent between computer workstations over huge distances at speeds limited only by the bandwidth of the line. For radiology and all aspects of medicine dependent on its services, that means a revolution in service delivery is about to take place. Over the next several years, Yale-New Haven Hospital plans to put its own imaging systems online and link into a network within the center. It will very likely be accessible to physicians outside the hospital who hold authorization codes as well. The Picture Archiving and Communications System, or PACS, will allow referring physicians and radiologists to download and discuss patient images at their workstations simultaneously. When radiology goes online, medicine will change dramatically.

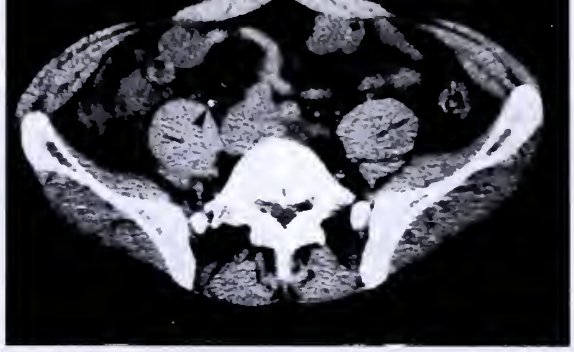
"PACS and teleradiology," says Howard P. Forman, M.D., vice chair for finance and administration in the Department of Diagnostic Radiology, "will make more of a change in medical practice in the next 10 years than anything else now on the horizon."

PACS will go a long way toward making the computerized world of medicine, now only partially implemented, complete. "We can call up any number of images anyplace, anytime," says Pradeep Mutalik, M.D., while sitting at a double monitor workstation specially designed for diagnostic imaging. Dr. Mutalik, along with fellow associate research scientist Vladimir P. Neklesa, M.D., is in charge of bringing PACS online at Yale. Eventually, teams of radiologists based at the medical center will review images sent from satellite sites, clinics and private practices throughout a large region.

The completion of PACS will eliminate the need for storing medical film. Where now a vast film archive holds medical records—with only the most recent images kept at the hospital and the rest warehoused offsite—a theoretically infinitely expandable digital-storage system will keep images at constant ready. Worries about confidentiality appear misplaced. One of the major complaints all physicians make today is that when they need patient images, all too often they're simply not to be found. Says Dr. Mutalik of PACS-based storage: "Unlike film, where there is only one copy, it doesn't sprout legs and walk away." Only those with authorization will be able to enter the secure Web site or the PACS system. For those physicians, however, image retrieval will be almost instantaneous, even for much older images. Eventually, all of an individual's medical records could be downloaded onto a "smart card" that the person might carry like a credit card.

Yale-New Haven Hospital already has a partial network established within the hospital. Funding is in place to begin creating the complete PACS. As with any investment in new high-tech systems, the risks of undertaking the $8-10 million build-out of the system are substantial. Some pioneering hospitals created early versions of PACS before the technology was adequately developed, and soon had to scrap the whole thing. "Timing is everything," says Dr. Neklesa. "We think now is a good time to get in." Department of Diagnostic Radiology chair Bruce L. McClennan, M.D., agrees: "We'll be able to display, store and share information in a high-speed, secure fashion. The clinical networking revolution is here."

For Vladimir Neklesa, right, and Pradeep Mutalik, the future of radiology does not require film.



For the past six decades, physicans have relied on a technique called intravenous pyelogram, left, to determine treatment for patients arriving with a sharp pain in the side. The problem was that IVP can take as long as 24 hours for results. Four years ago, Yale physicians developed a faster, more precise technique—made possible by the advent of helical CT—that in five minutes can distinguish between a kidney stone, indicated by the arrow above left, and an aortic aneurysm, above right. In the case of the aneurysm, immediate surgery saved the patient's life.

Throwing stones

Every day in any large emergency department around the country at least one person, and usually far more, arrives in terrible agony caused by a sharp pain in the side. Getting a correct diagnosis for the source of the pain is the first, all-important, step in relieving the misery. The likeliest cause for most cases of what physicians call "acute flank pain" is a kidney stone. Hardened collections of mineral salts, literally rocks, build up in the kidneys and then enter the ureters, the tubes that run from the kidneys to the bladder. These kidney stones can get stuck, blocking urine flow and causing a horrific pain that has been likened to childbirth in its severity. The trouble is that other possible causes for such pain—from appendicitis to tumorous masses—while less likely, are not rare. Until doctors find the actual cause of the pain, there is virtually nothing they can do to help. Pain relief medication might actually make matters worse in some cases or even prevent correct diagnosis.

For 60 years, physicians had only one method at hand for deciphering whether the pain originated with a blockage caused by a kidney stone, or not. They injected patients intravenously with an iodine solution that is rapidly excreted by the kidneys, and which then would appear white when exposed to X-rays. If there was a blockage, the stone itself might not be visible, but the distended section of ureter above it would be, giving

which would otherwise be obscured, for damage. Eventually, a completely animated, virtual tour of the body may be possible. "The potential is great," says James Brink, M.D., vice chair for clinical affairs and associate professor of diagnostic radiology, who is working with the technology. "Is it ready for primetime? It's too early to tell."

IMAGES WITHOUT FILM

The most far-reaching impact from diagnostic imaging advances, however, may be through communication technology. Digitizing imaging allows for high-speed computer link ups among specialists and clinicians. Doctors on opposite sides of the world will be able to work together to come up with the best diagnosis and treatment for patients. Digital imaging also reduces the space needed for storage of images and the number of personnel necessary for maintaining film archives. At the same time, it enhances access by allowing those with appropriate entry codes to download information. "Theoretically," says Pradeep G. Mutalik, M.D., who is director of radiology information technology and is developing medical communications systems for the Department of Diagnostic Radiology, "the day has arrived when we can dispense with film." Already some military hospitals have gone entirely filmless. Since 1993, digital transfer of images has been possible to the intensive care units at Yale-New Haven Hospital. Eventually, the entire hospital complex will be wired for digital information sharing.

Dr. Mutalik and his colleague Vladimir P. Neklesa, M.D., are responsible for setting up Yale's Picture Archiving and Communications System (PACS), including a Web-based system in which authorized physicians will be able to log on from their office workstation and download archived images. (See *A Virtual Image Bank*) The future of radiology as a profession and medicine

physicians some good evidence about the site and potential danger represented by a stone. If it wasn't a stone, then other procedures could begin, such as exploratory surgery, to figure out what was wrong. Depending on the degree of obstruction, it would take anywhere from 10 minutes to 24 hours to get a clear picture of the ureters. Moreover, in a small number of cases, patients developed adverse reactions to the injected contrast material, and in rare cases, those reactions were life-threatening. Even when the pictures came in, at best, this long-standard diagnostic method, called intravenous pyelogram (IVP), provided only a partial map to the stone. Whether urologists should try an intervention of some sort or just wait to let the stone pass on its own was often a matter of educated guess work. Then, in 1993, Yale-New Haven Hospital acquired a new helical computed tomography (CT) scanner.

A standard CT scanner employs a doughnut-shape X-ray camera adapted to a computer to achieve high-resolution images quickly. It takes from three to five seconds to make each image, or cross-sectional slice, with any extended region of the body, such as a flank being examined for a source of pain, requiring 20 to 30 minutes. The patient needs to hold completely still throughout. As such, it wasn't a practical tool for figuring out why a patient was writhing in agony. The new helical CT scanner, however, took the basic CT technology and sped it up enormously. A partial body scan that previously took a half-hour can now be completed in less than a minute.

Beginning that summer, a team of Yale radiologists and urologists, headed up by Robert C. Smith, M.D., associate professor in the Department of Diagnostic Radiology, took patients arriving with symptoms of kidney stones and ran them through the new helical CT machine. They then compared them with a similar number who underwent a standard diagnostic procedure. Kidney stones will never look the same again. Without using any contrast material, soft tissue appears gray and all stones white under CT scans. "We not only see the blockage," says Dr. Smith, "we can see the stone perfectly fine as well. We were able to see the stone in virtually every case." And the helical CT scan could detect appendicitis, masses in ovaries and other less common sources of flank pain.

Over the next two years, Dr. Smith's team performed helical CT scans on more than 800 patients experiencing acute flank pain. Diagnostic accuracy proved higher than IVP, and the scans provided much more exact information about the size and location of any stones that were found, making treatment decisions more effective. Patients who once may have waited more than a day in the hospital before diagnosis could be made now start treatment in a matter of minutes. "Usually," says Dr. Smith, "we have an answer within five minutes. No matter how you look at it, CT is more accurate and faster, and there is no known harm other than the necessary low-level radiation exposure." As a result of the Yale study, helical CT scan is now the standard diagnostic procedure for flank pain in most major hospitals around the world.

as a whole will be radically altered by so-called "teleradiology," in which radiologists will provide service to a large region from a single center. "People now see the world through their computers," says Howard P. Forman, M.D., vice chair for finance and administration in diagnostic radiology. "We constantly ask ourselves, How can we deliver information and images to physicians in a seamless manner?"

SOFTWARE VERSUS HARDWARE

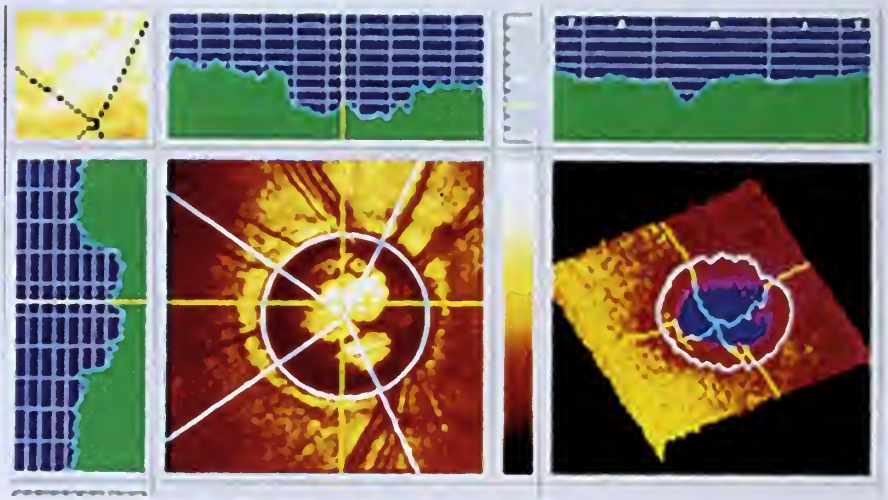
While the tremendous value of many of the technologies is now readily apparent, not all high-tech medical equipment has proven its worth. For many years, promising and extremely expensive new imaging technology seemed to arrive at the medical marketplace every few months. Medical centers invested huge sums to acquire advanced equipment and systems, in some cases only to see it superseded within months. The almost crazed pace

"It used to be a new technology came along and we looked for ways to apply it. Now, we develop applications from the technology that has stabilized. The cutting edge has slowed down."

— Howard P. Forman

Imaging the eye

New diagnostic tool offers insight into glaucoma



M. BRUCE SHIELDS

Confocal laser scanning produces detailed images of the optic nerve head, which is only 1.5 millimeters in diameter. Computer analysis of the data generated during scanning provides information critical to the management of glaucoma.

Laser technology that produces a three-dimensional image of the optic nerve may help ophthalmologists detect the subtle changes that signal the earliest stages of glaucoma. The process, known as confocal scanning laser tomography, is undergoing clinical trials at Yale and the University of California at Los Angeles.

Glaucoma is a condition in which people lose their vision because of abnormally high pressure in the eye. The pressure is the result of fluid buildup caused by blockage in the drainage channel between the back of the cornea and the iris.

"Early detection and appropriate treatment are the only methods of preventing blindness due to glaucoma. Both depend on our ability to analyze the optic nerve to determine if early atrophy is taking place," says M. Bruce Shields, M.D., chair of the Department of Ophthalmology and Visual Science at Yale School of Medicine. His collaborator is Joseph Caprioli, M.D., HS '83, who left Yale last year to become director of the Glaucoma Division of the Jules Stein Eye Institute at UCLA School of Medicine. "There never has been technology sophisticated enough for early diagnosis and careful follow-up," says Dr. Shields. "That is what this laser offers."

The purpose of the Yale-UCLA study is to build scientific evidence confirming that the confocal scanning laser is able to reveal optic nerve damage more accurately than current methods. The scanning laser would aid in screening patients for glaucoma and guiding treatment of those with established disease more precisely. The optic nerve contains nearly a million fibers that send visual signals from the retina to the brain. Although glaucoma encompasses a large group of disorders, the common denominator is gradual deterioration of the optic nerve, leading to blindness.

The visible end of the nerve, referred to as the optic nerve head, may be compared to the eraser end of a pencil, Dr. Shields explains. The nerve extends backward from the eye to the brain, and the portion that can be seen resembles a disc. As nerve fibers die, changes occur in the contour of the optic nerve head. The actual loss of nerve fiber bundles and a posterior deformity—in which the disc bows backward, creating a cup-like malformation—are two changes that may be visible.

During examination with the confocal scanning laser, the patient's head rests in a device similar to a slit lamp, the standard instrument in every ophthalmologist's office. The laser is housed in a camera-like device in front of the patient's eye. The beam is focused on a small portion of tissue in the eye. The reflected light passes through an opening said to be confocal to the laser focus, so that the photodetector "sees" only the small area. The beam scans back and forth across the nerve. Probing deeper with each scan, it completes 32 images of nerve tissue in one second. The laser is attached to a computer, which analyzes data and integrates the images into a three-dimensional model on a monitor.

For more than a decade, beginning in the 1980s, Dr. Shields and Dr. Caprioli corresponded with each other about the separate studies they were conducting in glaucoma. During that time, Dr. Shields was a faculty member at Duke University and Dr. Caprioli was director of the glaucoma service at Yale. They first discussed collaborating on clinical measurements of optic nerve damage in late 1996 and early 1997.

Dr. Shields, who also is chief of ophthalmology at Yale-New Haven Hospital, recently completed a term as president of the American Glaucoma Society. He is author of the *Textbook of Glaucoma*, now in its fourth U.S. edition. The book has been translated into German, Japanese, Portuguese and Spanish.

Scientists at about a dozen institutions around the world, including Japan and Finland, are conducting research similar to the Yale-UCLA study, says Dr. Shields. "Even though we feel strongly that this new technology does offer something we don't have today," he adds, "we need long-term clinical trials to prove its value."

Julie Miller

"The powers that be say, 'How much faster is it?' 'How much cheaper?' We're constantly sorting out the hype from what will really bear fruit."

— Bruce McClennan

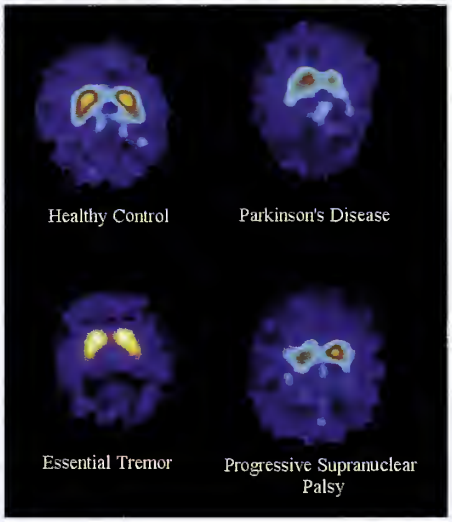
of imaging technology development that took place in the 1980s has slowed considerably as the hardware revolution seems to have crested for the moment. Most recent advances have come about through development of software, new applications of existing technologies and the convergence of a variety of techniques rather than the creation of another new generation of machines. "It used to be," explains Dr. Forman, "the field developed things in what could be seen as a backward way. A new technology came along and we looked for ways to apply it. Now, we develop applications from the technology that has stabilized. The cutting edge has slowed down."

Part of that slowing has occurred because of economics. The arrival of managed care has meant that the high cost of purchasing high-tech care systems must be justified through improved patient outcomes over existing forms of treatment. With a new, high-power fMRI machine costing more than $4 million just to purchase and millions more to operate, clinicians and researchers need to prove that it will not only provide better clinical outcomes for patients, but will pay its own way. Clinicians must now think both like healers and like business managers. Says department chair Dr. McClennan: "It's a different world. The assessment of technology is much more demanding because there is such a constraint on resources. The powers that be say, 'How much faster is it?' 'How much cheaper?' and 'Show me the outcome studies before I'll spend a dollar.' We're constantly sorting out the hype from what will really bear fruit."

Given the enormous costs of equipment and the rapid sweep of technological change in diagnostic imaging, the risks of doing a high-tech belly flop are great. The School of Medicine is continuously bombarded by companies seeking testing and adaptation of their equipment. The capabilities claimed by the manufacturers of these new technological wonders sometimes vastly outpace reality. There are occasions when new systems can do more than the current state of patient care and academic research actually demand. Says Dr. McClennan: "We need to ask, where is the technology leading us and who is in charge? The challenge is to keep medicine and technology married and not get distracted." Like most marriages, the road has sometimes been bumpy, but it's a marriage that all believe will continue. **YM**

KEVIN MCCARTHY

Magnetic resonance images of the brain, shown above, along with electrophysiology recordings, are used to identify the approximate locations of seizure-generating brain tissue. Using a stereotactic frame, the tissue to be studied is targeted (intersection of yellow lines) and a trajectory plotted. An electrode may then be inserted precisely.



JOHN SEIBYL

These SPECT images of the brain pinpoint locations where dopamine transport occurs. The images compare healthy individuals to patients with Parkinson's disease and two other disorders in which dopamine tranfer is impaired, progressive supranuclear palsy and essential tremor. The technique is being evaluated for the diagnosis and monitoring of Parkinson's and related diseases.

Faculty join Institute of Medicine

Three medical school faculty members are among the 60 new members elected to the Institute of Medicine. They are:

▶Mark R. Cullen, M.D. '76, professor of medicine (occupational and environmental medicine) and of public health, and director of the Yale Occupational and Environmental Medicine Program. Dr. Cullen has centered his work on strategies for investigation of toxic agents causing health effects in humans. Two of his current research areas focus on occupational asthma, particularly due to diisocyanates, and host factors in asbestos-related pulmonary fibrosis and lung cancer.

▶Ralph I. Horwitz, M.D., the Harold H. Hines Jr. Professor of Medicine and Epidemiology and chair of the Department of Internal Medicine. Dr. Horwitz has conducted clinical research on a wide range of topics, including the link between Reye's syndrome and aspirin, heart attacks, asthma and the use of inhalers, prostate gland and surgical treatment, and the epidemiologic aspects of disease.

Mark R. Cullen

JERRY DOMIAN/BIOMEDICAL COMMUNICATIONS (2)

George Miller

▶George Miller Jr., M.D., the John F. Enders Professor of Pediatric Infectious Diseases and professor of epidemiology and of molecular biophysics and biochemistry. Dr. Miller concentrates his research on tumor viruses, including the Epstein-Barr and Kaposi's sarcoma viruses.

MICHAEL MARSLAND

Ralph I. Horwitz

FACULTY NOTES

James J. Abrahams, M.D., associate professor of diagnostic radiology and surgery (otolaryngology), presented an abstract titled *Augmentation Procedures of the Jaw in Patients with Inadequate Bone for Dental Implants: Radiographic Appearance,* at the annual meeting of the Radiological Society of North America in Chicago in December.

Gerard N. Burrow, M.D. '58, the David Paige Smith Professor of Medicine (endocrinology) and special advisor to the president for health affairs, was among the speakers at a Smithsonian/Hoffman-LaRoche Symposium held in September at the National Museum of American History in Washington. Dr. Burrow's talk was titled *Preparing for the Information Age in Health Care.*

Liza Cariago-Lo, M.S., Ed.D., has been named director of the Office of Multicultural Affairs and will work under the direction of Assistant Dean Forrester A. Lee, M.D. '79.

J.G. Collins, Ph.D., professor of anesthesiology and lecturer in pharmacology, and **D. Helaine Patterson**, director of medical school public information, are among seven individuals selected to become the first fellows of Connecticut United for Research Excellence Inc. (CURE). Dr. Collins was recognized for his efforts, inspiration, leadership and vision as a past chair of CURE and his role as founding father of *BioRAP*, a life sciences learning publication for middle school students sponsored by CURE. Ms. Patterson was recognized for her public relations advice and editorial oversight on many CURE publications.

James P. Comer, M.D., HS '64-67, the Maurice Falk Professor in the Child Study Center and Department of Psychiatry and director of the School Development Program, was one of three

recipients of the Camille O. Cosby World of Children Award in November. The award, given by the Judge Baker Children's Center in Boston, is named in honor of the wife of entertainer Bill Cosby and recognizes outstanding achievement in improving the lives of disadvantaged children. The other two recipients were children's advocate Tipper Gore and BankBoston CEO Chad Gifford.

Vincent T. DeVita, M.D., director of the Yale Cancer Center and professor of medicine (oncology) and epidemiology and public health, received the Key to the Cure Award at the Cure for Lymphoma Foundation's third annual Cabaret for a Cure dinner in November at the Plaza Hotel in New York City. He was also presented the Presidential Award from the New England Cancer Society at its annual meeting this fall in New Haven.

John Elefteriades, M.D. '72, professor and chief of cardiothoracic surgery, was named College Governor-Elect for Connecticut by the Board of Trustees of the American College of Cardiology. After a one-year term, he will become College Governor for the state until the year 2002. Dr. Elefteriades also served as visiting professor in August in Japan, where he spoke on minimally invasive cardiac surgery and left ventricular remodeling by aneurysmectomy and Batista operations.

Janine Evans, M.D., assistant professor of medicine (rheumatology), has been appointed medical director of the Yale-New Haven Physician Hospital Organization and the Yale-New Haven Medical Staff Independent Practice Association (IPA). In this dual role, Dr. Evans will collaborate with Yale University, Yale Faculty Practice and community physicians on the IPA to coordinate effective medical management, utilization and quality assurance in the delivery of health care. She will also work with physicians to develop programs and policies that support high-quality, cost-effective health care to the patients who are covered through health plans that have contracted with the Yale New Haven Health System.

Bruce C. Fichandler, PA-C '73, physician assistant in surgery, lecturer in surgery (plastic), and director of admissions for the Yale Physician Associate (PA) Program, was presented the Second Annual Alumni Award at PA graduation ceremonies in August. He also received the Jack Cole Society Award for his significant contributions in support of the physician associate profession. Society namesake Jack W. Cole, M.D., former chair of surgery and a founder of the PA Program, gave the Commencement address.

Myron Genel, M.D., associate dean for government and community affairs and professor of pediatrics, was re-elected to the American Medical Association's Scientific Council and named to its executive committee by the AMA House of Delegates at the annual meeting in June.


Gerhard H. Giebisch

Gerhard H. Giebisch, M.D., Sterling Professor of Cellular and Molecular Physiology, was awarded an honorary doctorate from the University of Vienna in June. The award was given in conjunction with a symposium entitled *Renal Electrolyte Metabolism Physiology and Pathophysiology*, on the occasion of Dr. Giebisch's 70th birthday. The event was organized by **John P. Geibel**, M.D., Ph.D., associate professor of surgery (gastroenterology) at Yale, and Jurg Graf, M.D., of the department of general and experimental pathology at the University of Austria. Speakers from Yale included **Walter F. Boron**, M.D., Ph.D., professor and chairman of cellular and molecular physiology, and **Peter S. Aronson**, M.D., C.N.H. Long Professor of Internal Medicine (nephrology) and of cellular and molecular physiology, and chief of the section of nephrology.

Thomas M. Gill, M.D., assistant professor of medicine (geriatrics), was one of 10 junior faculty to receive the Paul


PA PROGRAM

Alumnus Bruce Fichandler with Elaine Grant, assistant dean and director of the Physician Associate Program.

Beeson Physician Faculty Scholars in Aging Research Award from The American Federation for Aging Research. This $450,000 award is funded by the John A. Hartford Foundation, the Commonwealth Fund, and the Alliance for Aging Research on behalf of donor friends. He also received a $240,000 Generalist Physician Faculty Scholars Award from The Robert Wood Johnson Foundation, the nation's largest philanthropy devoted exclusively to health and health care. Both awards will support Dr. Gill's research on identifying the precipitating events leading to new dependence in activities of daily living among frail, community-living elderly persons. "This research," says Dr. Gill, "will lead to an improved understanding of the disabling process and, in turn, will enable investigators to better design effective and efficient strategies to prevent, slow or reverse functional decline."


Caleb Gonzalez

Caleb Gonzalez, M.D., professor of ophthalmology, was one of five pediatric ophthalmologists to receive the Honor Award from the American Association for Pediatric Ophthalmology and Strabismus (AAPOS) at its annual meeting in April in Charleston, S.C. This award

is to recognize outstanding achievement and distinguished service to the AAPOS. Dr. Gonzalez received a similar honor in 1992 from the American Academy of Ophthalmology.

Martin E. Gordon, M.D. '46, clinical professor of medicine and chairman of the Board of Trustees of the Associates of the Harvey Cushing/John Hay Whitney Medical Library, was one of the three Deans of the Academy, finalist judges for more than 600 entries to the American Medical Association's 1997 International Health and Medical Film Competition in November in San Francisco. Dr. Gordon was a John Muir Film Festival winner in 1976 and has received numerous other awards as a director/producer of medical films.

Charles A. Greer, Ph.D., professor of neurosurgery and neurobiology, organized and chaired the joint meeting of the International Symposium on Olfaction and Taste XXI and the Association for Chemoreception XIX meeting in San Diego. The joint meeting, which occurs every 12 years in the U.S., was the largest to date and included 652 presentations from around the world.

Pasko Rakic, M.D., chairman and Dorys McConnell Duberg Professor of Neurobiology, was honored during the meeting with the 19th Givaudan-Roure Lectureship.

Donald W. Kohn, M.D., clinical professor of surgery (dental) and pediatrics, and chief of dentistry at Yale-New Haven Hospital, was named president of the International Association of Pediatric Dentistry at the Association's XVI Congress in Buenos Aires in September.

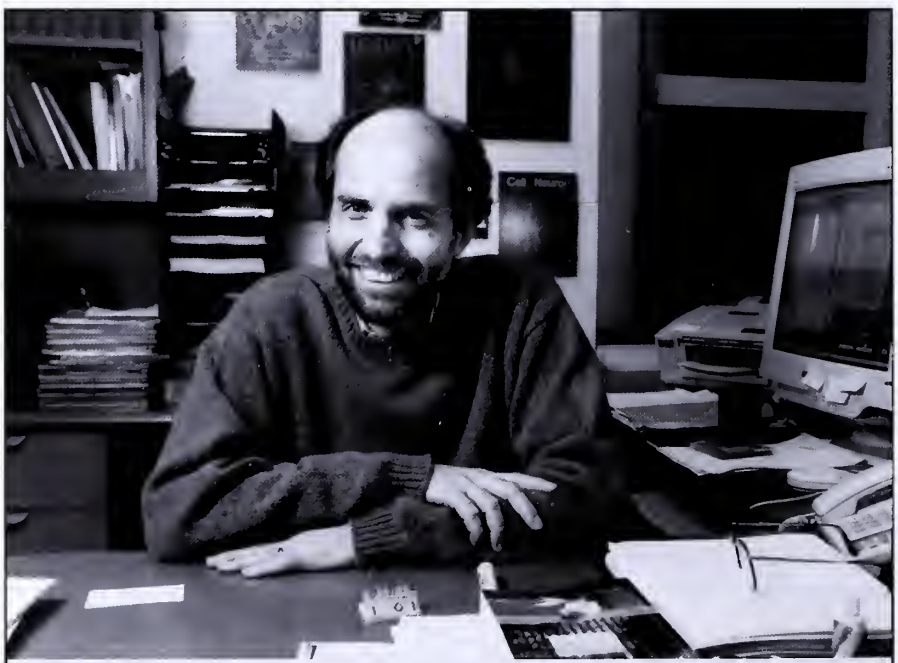
Keat-Jin Lee, M.D., associate clinical professor of surgery (otolaryngology), spoke on the *Advanced Points of Ear Surgery* at the annual Chilean Congress of Ear, Nose, Throat Conference in Chile in November. He is also Secretary-Treasurer of the American Academy of Otolaryngology until 1999.

Richard H. Mattson, M.D. '53, professor of neurology and vice chair for academic affairs, was honored with the 1997 Clinical Investigator Award by the American Epilepsy Society/Milken Family Foundation Epilepsy Research Award Program. The award was given in Boston in December for his epilepsy research over a 35-year period. In another presentation, Dr. Mattson was awarded the Novartis Epileptology Prize for 1997 at the 22nd International Epilepsy Congress in Dublin last July. The prize was given in recognition of his outstanding achievements in the field of epilepsy with a particular interest in researching the optimal use of anti-epileptic drugs. Dr. Mattson was also selected as the Hans Berger Lecturer at the 25th Hans Berger Symposium in June. This honor was based on early work on sleep deprivation, as well as on intensive CCTV/EEG monitoring studies.

Richard H. Mattson

The Albert Schweitzer Institute for the Humanities sponsored **James R. Merikangas**, M.D., lecturer in psychiatry and attending in psychiatry and neurology at Yale-New Haven Hospital, to present seminars in child psychiatry and neurology to the faculties of Vilnius University Center for Children with Developmental Disorders in Lithuania and the universities of Tartu and Tallinn in Estonia. These seminars, funded by the Open Society Institute/Soros Foundation, were held from June 27 to July 3, 1997.

Marvin Moser, M.D., clinical professor of medicine, was recognized for outstanding contributions to hypertension



PETER CASOLINO

New chair for Cell Biology

When Pietro De Camilli, M.D., returned to Italy in 1981 after three years as a postdoctoral fellow and assistant professor at the School of Medicine, chairing a department at Yale was the furthest thing from his mind. But events brought him back to New Haven in 1987, and last Nov. 1, after another decade on the faculty, he assumed the leadership of the Department of Cell Biology for a two-year term. Since his postdoctoral days in the late 1970s, he has focused his research on synapses, the junctions which transmit information between neurons in the brain. "These studies have a direct impact in the fields of neurological and psychiatric diseases, but also have general relevance in cell biology," says Dr. De Camilli, who studied medicine and endocrinology at the universities of Milan and Pavia. Dr. De Camilli is a Howard Hughes Medical Institute investigator and serves on the boards of a half-dozen journals including the *Journal of Neuroscience*. The department has 11 primary investigators and 43 graduate students.

treatment and control by the National Heart, Lung & Blood Institute at the 25th anniversary dinner of the National High Blood Pressure Education Program in November in Washington. Dr. Moser has been the senior medical consultant to the national program for 24 years.

Eric J. Nestler, M.D. '83, Ph.D. '82, professor of psychiatry, neurobiology, and pharmacology, and **Benjamin S. Bunney**, M.D., the chair and Charles B.G. Murphy Professor of Psychiatry and professor of pharmacology, participated in the Consensus Development Conference on Effective Medical Treatment of Heroin Addiction in November at the National Institutes of Health in Bethesda, Md.

Herbert S. Sacks, M.D. '52, clinical professor of child and adolescent psychiatry at the Child Study Center, became president of the 42,000-member American Psychiatric Association in July. Dr. Sacks will use his office to speak out on behalf of children and for reforms in the juvenile justice system.

Gerald I. Shulman, M.D., Ph.D., professor of medicine (endocrinology), and of cellular and molecular physiology, was one of two researchers awarded the Boehringer Mannheim and the Juvenile Diabetes Foundation International Diabetes Care Research Award for 1997. The $100,000 prize, presented at the International Diabetes Federation Meeting in July in Helskini, is awarded to stimulate innovation in the field of diabetes research leading to practical advances in prevention, detection, treatment and cure for diabetes and its complications.

Scott W. Wolfe, M.D., associate professor of orthopaedic surgery and director of the orthopaedic and rehabilitation department's hand and upper extremity service, is the recipient of the 1997-1998 Bunnell Traveling Fellowship in Hand Surgery, awarded annually by the American Society for Surgery of the Hand. This award provides funds for travel to international and/or domestic medical centers to pursue educational interests in the study of the hand. Dr. Wolfe will report on his educational experience at the 1997-1998 residents and fellows conference and annual meeting of the society.

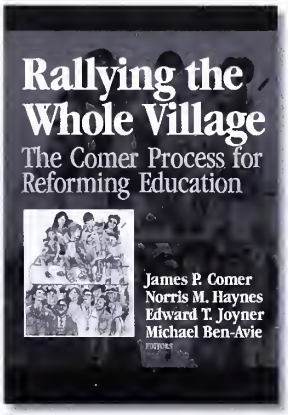
Eiji Yanagisawa, M.D., clinical professor of surgery (otolaryngology), was guest of honor at the 77th Annual Scientific Meeting of the American Broncho-Esophagological Association in Scottsdale, Ariz., last May. He also served as one of two judges from the United States at the World Video Festival held in conjunction with the XVIth World Congress of Otorhinolaryngology and Head and Neck Surgery in Sydney, Australia, last March. In February 1997, he was guest lecturer at the International Symposium on Endoscopic Surgery in Otolaryngology in Mexico City.

JOHN CURTIS

Entrance to Sterling Hall of Medicine, Winter 1998

NEW BOOKS

Rallying the Whole Village: The Comer Process for Reforming Education edited by James P. Comer, M.D., HS '64-67, Maurice Falk Professor of Psychiatry; Norris M. Haynes, Ph.D., associate professor; Edward T. Joyner, Ed.D., M.A.T., lecturer; and Michael Ben-Avie, M.A., M.Phil., associate research scientist, all in the Child Study Center, Teachers College Press (N.Y.) 1996.



Some Chose to Stay: Faith and Ethics in a Time of Plague by Alan C. Mermann, M.D., M.Div. '79, medical school chaplain and clinical professor of pediatrics, Humanities Press (N.J.) 1997.

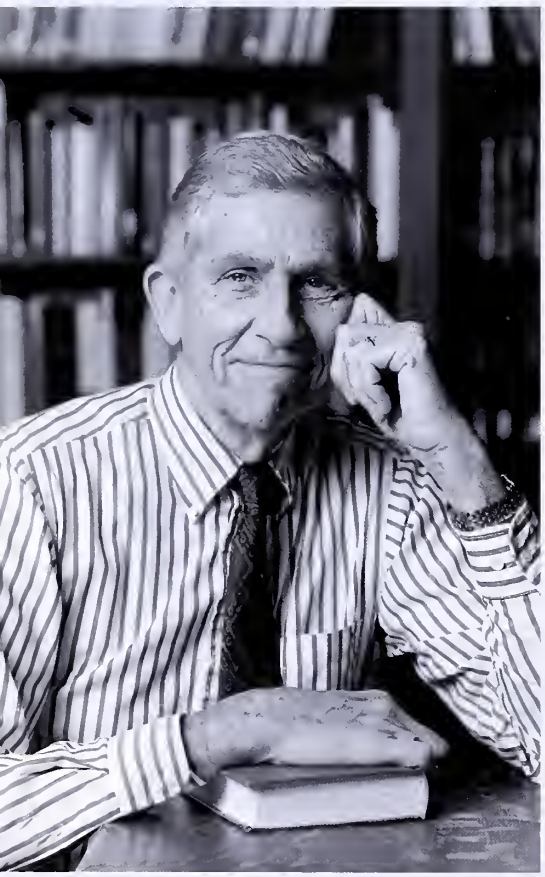
Sports and Exercise for Children with Chronic Health Conditions edited by Barry Goldberg, M.D., HS '71, director of sports medicine at the University Health Services, clinical professor of pediatrics, Human Kinetics Publishers, Inc. (Ill.) 1995.

Reverie and Interpretation: Sensing Something Human by Thomas H. Ogden, M.D. '72, Jason Aronson Inc. (N.J.) 1997.

The Yale University School of Medicine Patient's Guide to Medical Tests by faculty members at the Yale University School of Medicine. Senior editor Barry L. Zaret, M.D. is Robert W. Berliner Professor of Medicine and professor of diagnostic radiology. Peter I. Jatlow, M.D., HS '65, professor of laboratory medicine and psychiatry, and Lee D. Katz, M.D., HS '86, associate professor of diagnostic radiology, orthopaedics and rehabilitation and medicine, are associate editors. Houghton Mifflin Company (Boston/N.Y.) 1997.

Medical school chaplain promotes a curriculum of caring

By Carolyn Battista



MICHAEL MARSLAND

Medical school chaplain Alan Mermann's new book explores the importance of the human connection in medicine.

It's a rare medical school that has its own chaplain, especially a chaplain who frequents the anatomy lab and writes about Albert Camus. But at Yale, that personage is Alan C. Mermann, M.D., M.Div. '79 who trained and practiced as a pediatrician and is now a clinical professor of pediatrics. He's also an author whose varied writings include a new book of essays entitled *Some Chose to Stay: Faith and Ethics in a Time of Plague*, published in December by Humanities Press.

Ordained as a minister in 1979 after 25 years in pediatric practice, Dr. Mermann says that he often visits the first-year anatomy lab, "just to be there." He knows how hard it is for young medical students to deal with that first cadaver. His essays describe his own experiences in finding a foundation on which to build a life of conviction and commitment. This is the focus of much of his work at the medical school, where he teaches, listens, counsels and involves students in eye-opening activities.

He points out that at Yale, where students may hold any, or no, religious beliefs, his work usually has little to do with formal religion. It has everything to do with helping students understand what it means—and what it takes—to be a good doctor.

Students want to become "caring, compassionate physicians," he says, but they worry about losing compassion as they train in hectic hospital settings (where the patient may seem less a person than the subject of clinical laboratory reports). He aims to help students keep on caring.

One essay in his new book deals with Albert Camus' 1956 novel, *The Plague*. A major character is a physician who never abandons the plague victims, and Dr. Mermann points out that a major theme is how important it is to be with and for people. "This is something that can be taught," he says. "You can learn how to do it, and it's something that should constantly be a part of medical education." His essay goes on to describe his seminar in which first-year medical students are paired with seriously ill patients—often, people who are dying. It's a seminar with much to teach about being with and for others. "The patients teach the students," he says.

As chairman of the pediatric bioethics committee at Yale-New Haven Hospital, Dr. Mermann also includes students in meetings where parents and physicians discuss painfully difficult decisions—for example, how long to provide extended life support when a 3-year-old has suffered serious brain damage in a car accident. "We just sit and talk, until all comments and opinions have been voiced," he says. "It can take a while." Students learn that in medicine, there often are no easy answers.

He also hopes to show students that medicine is not something to practice competitively. Collegiality and the sharing of knowledge are most important. "We're in this together," he tells them.

His essays touch on many books—including the Bible, *Walden* and *Cry, the Beloved Country*—that along with various experiences have shown him what needs to be done. He tells of his decisions to become a pediatrician and a minister, and to take action amidst such plagues as disease, poverty, racism and war.

He hopes that his work can help students awaken to what lies around and before them. "Physicians," he says, "need to be alert."

Carolyn Battista is a writer in Waterford, Conn.

For the new dean, a welcome to Yale

Symposium stresses crucial links between science and health

Four of Yale's leading research scientists and physicians presented findings and an overview of their work at an October symposium welcoming David A. Kessler, M.D., to the school as dean. On a day focused on the application of research to clinical medicine, their reports were followed by a discussion among leaders of several of the world's top private-sector research operations.

Advancing the Public's Health Through Research included presentations by Marie E. Egan, M.D., assistant professor of pediatrics (respiratory); Erol Fikrig, M.D., associate professor of medicine (rheumatology); David B. Simon, M.D., assistant professor of medicine (nephrology); and Tian Xu, Ph.D., assistant professor of genetics and an investigator at the Howard Hughes Medical Institute. It was moderated by Richard P. Lifton, M.D., Ph.D., professor of medicine, genetics and molecular biophysics and biochemistry, and an investigator at the Howard Hughes Medical Institute.

The presentations—on work related to cystic fibrosis, Lyme disease, hypertension and cancer—were followed by a roundtable discussion by senior research executives at five major pharmaceutical and technology companies. The speakers—Michael J. Berendt, Ph.D., of Bayer Corp.; George M. Milne, Ph.D., of Pfizer; Peter Mueller, Ph.D., of Boehringer-Ingelheim, Inc.; Mark C. Rogers, Ph.D., of Perkin Elmer; and Peter S. Ringrose, Ph.D., of Bristol-Myers Squibb—discussed *Creating a Positive Relationship Between Academia and Industry: Promise and Challenges.* The discussion was moderated by Gregory E. Gardiner, Ph.D., director of the Yale Office of Cooperative Research.

At the end of the day, Dr. Kessler shared some of his thoughts about what it means to be dean at this juncture in the school's history, and what it means to pursue scientific discovery at an academic health center. His remarks follow.

"The days are gone when any one aspect of a great university could successfully exist without a passionate interaction of all the parts with the whole."

Dean Kessler spoke of a new unity: "We must bind ourselves together."

Remarks by David A. Kessler, M.D.

It gives me enormous pleasure to stand before you as the 15th dean of the Yale School of Medicine. It is an honor to have been chosen to lead this institution into the next century. There is no better place I'd rather be than here at Yale. I am particularly honored to stand here tonight among two of our former distinguished deans, Jerry Burrow and Bob Berliner. I accept the responsibility of continuing their stewardship.

It is a source of satisfaction to know that I have come to a place that has maintained its standards of excellence in a world of ever-changing perspectives. But it is also an exciting challenge to contemplate the work that lies ahead. For excellence is elastic, it knows no limits, and it is maintained not only by the preservation of the best of the past, but by the need to dare, and the willingness to embrace both innovation and experimentation.

Excellence is a reflection of spiritual wealth, and the conservation of that wealth is a notion that is cherished at Yale. This Yale idea of excellence is composed of two impulses that are interwoven. The first is the diversity of our institution, our schools and the departments within them, each intellectually independent and protective of that independence. The second is the universal purpose of the institution as a whole, which binds together the various parts and makes them greater than each would be standing alone.

Aristotle said that man is by nature a social animal. We go to schools, we marry, have families, join churches and clubs together in discrete bundles that are stabilized, for the most part, by a morality of our own making. This morality, this moral glue that binds us together, comes from diverse sources. It comes from within us, from family teaching, from our religious institutions and our centers of learning. But it also comes from a central purpose, a shared goal that can be achieved when the parts of the whole are meshed together and working toward that end.

In a great university, there must be a sense of union between the diverse parts and the whole. But this union is something that we are inclined to distrust. We tend to fear that a common identity or a common cause might conceal important differences between us, might repress our particular interests and principles. We are tempted to withdraw behind parochial barricades, preferring a smaller loyalty to that of a larger and seemingly impersonal power. And when this happens, when the privileges of the parts become more important than the larger structure of the institution, then the glow of our excellence is dimmed, and we are all the losers. Without in any way diminishing the independent methods of any school, department or individual, we must bind ourselves together.

In short, we must be one. For the days are gone when any one aspect of a great university could successfully exist without a passionate interaction of all the parts with the whole.

The basic science departments and the clinical departments.

The health system, the hospital, and the medical school.

The community physicians and the full-time faculty.

The School of Public Health and the School of Medicine.

The School of Management and the Faculty of Arts and Sciences.

And the medical school within the University.

All of these parts of the whole must share a united vision of the future that focuses on what we want to accomplish. Without that communal outlook, we will never attain our highest goals. With it, there are no limits.

I have come to Yale from the public sector. I always have been, and will continue to be, a staunch supporter of public service. But I must tell you that the transition from the public sector to the private has presented me with fewer problems than I would have thought, for I see no difference in the goals that occupied me there, and the commitments that will occupy me here. I am speaking about the commitment to preserve and strengthen the health of the public through discovery, through the care of patients, and through the education of our future physicians.

But none of these commitments is attainable without a strong team to strive toward the common goal. My thanks go out the deputy deans, Joe Warshaw and Carolyn Slayman, for their strong support and dedication during the transition period and for their willingness to continue in their most important capacities; to the chairs, faculty and students who made me feel at home from the very first day; to our provost, Alison Richard; to our deputy provost, Stephanie Spangler.

I learned in Washington that an agency head could get things done. But I also learned that when an agency head linked up with the president, you could tackle the impossible. And I believe it is the same way at Yale.

It is no secret that I came to Yale in major part because of Rick Levin. Any one dean can accomplish only so much. A dean and a president, working together, is something all together different; working together to sustain the greatness of what is Yale.

The highest of our goals resides in the position of the Yale School of Medicine as a truly great research institution. Science exists in a continuing state of revision and progression, and it is this quest for new knowledge that drives us toward goals of excellence in our basic and clinical research endeavors.

At the scientific symposium this afternoon, we learned from several of our junior faculty about the broad range of their research pursuits—from the role of a regulatory protein in cystic fibrosis, to new treatments for Lyme disease, to insights into the pathophysiology, diagnostics, and therapeutics of high and low blood pressure, to discoveries in the genetics of tumor suppression.

Decades ago, we did not have the tools to study the underlying mechanisms of human disease. So we drew lines between basic sciences and clinical research. Those lines are being erased by advances of scientific understanding.

To truly erase the lines between basic and clinical science, we must include a vision of expanded clinical excellence. We must advance the clinical agenda of the medical school across a broad front to fulfill our mission of providing exemplary models of care to the public and of educating our students at every level. To that end, I am committed to continuing to build the most outstanding clinical faculty who are focused on the study of human disease. I am committed to working with our partners in the hospital and health system to advance jointly an agenda of clinical excellence at the medical center.

During this year's White Coat Ceremony, I told the first-year class that, as we all know, a doctor does not become a healer by virtue of a medical degree. I told them that each one of them will be a healer if the identifiable purposes of their lives are forever bound up with the relief of suffering, with the forestalling of death, and the creation of conditions that are conducive to a more flourishing existence for their patients.

I am committed to making the name of the Yale School of Medicine synonymous with clinical innovation and exemplary clinical practice. I will work with the clinical leadership to support that vision—not at the expense of our basic sciences, but in support of them. In short, excellence across the board; excellence in every endeavor, in everything we do. The excellence of the Yale commitment to the educational process is of great comfort to me, mainly because we have an outstanding faculty, and outstanding students are attracted to such men and women.

I want our young doctors to be devoted forever to a life in medicine. I want them to shine in a reflection of the excellence that is Yale.

Tobacco-control advocate named public health chief in Massachusetts

Howard Kyongju Koh, M.D. '77, B.A. '73, M.P.H., began his duties as commissioner of public health in Massachusetts in September. Dr. Koh, former director of cancer prevention and control at Boston University Medical Center and a professor at the BU schools of medicine and public health, has been a prominent leader of anti-smoking efforts in Massachusetts. He helped coordinate tobacco control activities in Massachusetts that are credited for a rapid decline in cigarette consumption (at a rate three times faster than the national average).

He also helped launch a national program of skin cancer screenings, which have now reached more than a million people. Dr. Koh has concentrated expertise in malignant melanoma, cancer prevention and control, and Asian-American health issues. He and his wife, Dr. Claudia Anne Arrigg, live in Andover, Mass., with their three children.

Howard Kyongju Koh

CLASS NOTES

'30s

Myron E. Wegman, M.D. '32, HS '32-36, a fellow of the American Academy of Pediatrics and dean emeritus of the University of Michigan School of Public Health, received the 1997 E.H. Christopherson Lectureship Award at the November meeting of the American Academy of Pediatrics. The award is given annually to one individual in recognition of his or her outstanding contributions to international child health.

'40s

Class secretary **Albert S. Atwood**, M.D. '45, and his wife, Harriet, made a trip with class agent **Richard W. Breck**, M.D. '45, and his wife, Verne, to Westchester County's only winery. They visited proprietors **George W. Naumburg** Jr., M.D. '45, and his wife, Michelle, at their North Salem Vineyard, said Dr. Breck, who reports: "The grapes had just been picked, and even the white grape juice was delicious."

Robert E. Carroll, M.D. '42, B.A. '38, emeritus professor of clinical orthopaedic surgery at the Columbia University College of Physicians and Surgeons, was presented the Distinguished Service Award at a commencement ceremony in May for his outstanding contributions to the medical school, hospital and the specialty of surgery of the hand. Columbia has established the Robert E. Carroll Professorship in Surgery of the Hand in the Department of Orthopaedic Surgery. Funds for this chair were provided by Dr. Carroll's friends and family.

Jerome H. Shapiro, M.D. '48, of Boston, was awarded a Gold Medal by the Radiological Society of North America in December 1996 for his contributions to teaching and his initiation of standards in radiology representing excellence in the field of radiology.

Robert R. Wagner, M.D. '46, recently retired as chair of the department of microbiology at the University of Virginia School of Medicine. His successor, J. Thomas Parsons, Ph.D., and his colleagues in the basic sciences, have initiated an effort to create the Robert R. Wagner Endowed Fellowship Fund to benefit graduate students in the basic sciences. Dr. Wagner and his wife, Mary, live in Charlottesville, Va.

Morris A. Wessell, M.D. '43, clinical professor of pediatrics, has been awarded the C. Anderson Aldrich Award in Child Development by the American Academy of Pediatrics (AAP). The annual award, presented in November at the annual meeting of the AAP's section of developmental and behavioral pediatrics in New Orleans, seeks to honor a pediatrician whose work with children and their development has been ground-breaking. Since the first award was presented in 1964 there have been 36 honorees, 17 with ties to Yale.

'50s

Paul Calabresi, M.D. '55, has been appointed to Tufts University's Board of Overseers for the School of Medicine, which

Paul Calabresi

advises the university's president and trustees. Dr. Calabresi is professor of medicine (oncology) at Brown University and a member of President Clinton's Cancer Panel. In 1995, he received the St. George Medal for distinguished service in cancer control by the American Cancer Society. He is also a master of the American College of Physicians and a member of the Institute of Medicine of the National Academy of Sciences.

Robert E. Shope, M.D., HS '54-58, served as a member of President Clinton's roundtable discussion on climate change July 24 at the White House. Dr. Shope, professor of pathology, microbiology and immunology at the University of Texas Medical Branch, has devoted his career to the study of tropical diseases. He was a faculty member in epidemiology at Yale from 1965 to 1995 and also served as the director of medical education in the Department of Epidemiology and Public Health and director of the Yale Arbovirus Research Unit.

'60s

Victor J. Burner, M.D. '65, B.A. '59, of Pasadena, Calif., shares news of a musical trip abroad. He recently toured southern China with the Pasadena String Quartet, performing in the conservatories of Canton and Heng Yang. He writes: "You would think we were rock stars by our heroic reception! "

Philip J. DiSaia, M.D., HS '67, chief of the division of gynecologic oncology at the University of California at Irvine, has been elected vice president of the American Board of Obstetrics and Gynecology. He will serve as chairman of the board's policy committee and continue to serve as member of the executive committee.

James J. Murphy, M.D. '64, has retired as chief of radiology at the Asheville (N.C.) Veterans Medical Center after 25 years of federal service.

R. John C. Pearson, M.P.H. '60, HS '61-62, stepped down as chairman of community medicine at the West Virginia University Health Science Center/ Morgantown in September 1996 and took a sabbatical to travel to South Africa from June to October 1997.


Reynold Spector

Reynold Spector, M.D. '66, has been named executive vice president of clinical sciences at Merck Research Laboratories in Rahway, N.J. Dr. Spector joined Merck in 1987 as executive director of clinical sciences. He was promoted to vice president in 1991 and senior vice president in 1994. In 1991 he received the prestigious Harry Gold Award from the American Society of Pharmacology and Experimental Therapeutics for his research and teaching activities.

'70s

David A. Adler, M.D. '73, professor of psychiatry at Tufts University School of Medicine (TUSM), received a five-year National Institute of Mental Health grant to study ways of improving detection and treatment of depression in primary care practices. He also recently completed a term as chairman of the TUSM faculty senate and is chairman

Victor Burner and fellow members of the Pasadena String Quartet thread their way by boat though the mountains of Gweilin, China, last spring.

of the publication board at the Group for the Advancement of Psychiatry. Dr. Adler is senior psychiatrist and director at the Mental Health Services Research Group at New England Medical Center.

Richard Doud Bey, M.D. '79, and his wife, Cheryl, of Winston-Salem, N.C., are the parents of a new daughter, Maris McCammon Bey, born Oct. 30.

James R. Gonzales, M.P.H. '78, of Nutley, N.J., chief operating officer and executive vice president of the East Orange General Hospital, has advanced to diplomate status in the American College of Healthcare Executives.

Frederick L. Greene, M.D., HS '70-76, has been named chairman of the department of general surgery and program director of the surgical residency program at Carolinas Medical Center in Charlotte, N.C. Dr. Green was previously professor of surgery at the University of South Carolina in Columbia.


Anthony V. Proto

Anthony V. Proto, M.D. '71, chairman of the department of radiology at the Medical College of Virginia, Virginia Commonwealth University in Richmond, has been named editor of *Radiology* by the Radiological Society of North America. The journal is celebrating its 75th year.

'80s

Evangeline Franklin, M.D. '82, M.P.H. '82, recently left University MEDNET in Cleveland to become network medical director at Aetna/U.S. Healthcare in Louisiana and Arkansas. At MEDNET, she worked as director of the immediate care department, as medical director of the call center, which she implemented for computerized telephone triage, and as chair of the Clinical Practices Council.

William A. Petit Jr., M.D., HS '85-89, of Plainville, Conn., has been named medical director of the Joslin Center for Diabetes at New Britain General Hospital and director of the section of endocrinology, metabolism and diabetes.

Jonathan A.S. Sherman, who attended the School of Medicine for three years as a member of the Class of 1988, phoned as *Yale Medicine* was going to press to report that his loving wife Karen Avenoso died of cancer Feb. 25. She was a graduate of Dartmouth College, a Rhodes scholar and a reporter for the *Boston Globe*. Mr. Sherman, who went on to graduate from Harvard Business School, is a senior manager of marketing at Johnson & Johnson and lives in Westfield, N.J.

Institute of Medicine adds Yale alumni/ae to its rolls

Four Yale University School of Medicine alumni/ae have been elected to the Institute of Medicine.

Three of the new members are **Jennifer R. Niebyl**, M.D. '67, professor and head of the department of obstetrics and gynecology at the University of Iowa Hospitals and Clinics in Iowa City; **Helen L. Smits**, M.D. '67, president and medical director of HealthRight Inc. in Meriden, Conn.; and **Mark R. Cullen**, M.D. '76, (See *Faculty News*). In addition, **Aaron T. Beck**, M.D. '46, the University Professor Emeritus of Psychiatry at the University of Pennsylvania School of Medicine, was elected to senior membership. [Dr. Beck also received the Cummings PSYCHE Award in September from the Nicholas & Dorothy Cummings Foundation, which cited him as "one of the major figures of 20th-century psychotherapy." The award, made in cooperation with the Institute for Behavioral Healthcare in Portola Valley, Calif., included a cash prize of $50,000 and a bronze statute of the Greek goddess Psyche.]


Helen L. Smits


Aaron T. Beck


Jennifer R. Niebyl

Alumni Fund Report will include campaign highlights

The 1996-97 annual report of the Medical School Alumni Fund will be published separately and mailed this spring. It will include a final report on the School of Medicine portion of the campaign ...and for Yale.

ALUMNI/AE ON CAMPUS

Kim A. Eagle, M.D., HS '79-83, was guest lecturer at Medical Grand Rounds on Nov. 20, where his topic was *The Perspective Cardiac Evaluation of Patients Preoperatively.* Dr. Eagle is the Albion Walter Hewlett Professor of Medicine (Section of Cardiology) at the University of Michigan School of Medicine. Following his Yale training, he completed a cardiology fellowship at Harvard University and remained on the faculty in Cambridge until moving to Michigan in 1994. Dr. Eagle also presented at Cardiology Grand Rounds, where a dialogue on health care in the current setting of managed care ensued.

Dr. Eagle reminisced on *The Environment for Learning the Tradition of Training*, which warmly colored the recollection of his New Haven years. Dr. Eagle has published and lectured extensively on preoperative cardiovascular evaluation procedure prior to cardiac or non-cardiac surgery. In the evolving era of managed health care, Dr. Eagle has been part of a Consultative Task Force of the American Heart Association attempting to provide practice guidelines in this area.

Paul A. Khavari, M.D., Ph.D. '88, HS '88-90, was the Neville & Lucille Kirsch Guest Lecturer Dec. 3 in the Department of Dermatology. Dr. Khavara, assistant professor of dermatology at Stanford, spoke on *Cutaneous Gene Therapy*, then delivered grand rounds on *Gene Regulatory Mechanisms of Epithelial Growth.* His special interests include insights into gene therapy, molecular mechanisms of disease and molecular foundations of anti-cancer therapies. The recipient of many awards while at Yale and since, Dr. Khavari is an advisory member of many national dermatology organizations and at NIH. He has published widely in the dermatology literature.

The late Dr. Neville Kirsch, HS '40-42, whom the department honored with the annual lectureship, had a long and distinguished career both in New York and at the Hartford area hospitals before his death in 1991. Besides having had an active consultative practice he published widely in the medical literature. Publications included studies of foreign body granulomas and veterinary dermatology. The lectureship is sponsored by his wife Lucille Kirsch in memory of his vigorous teaching and clinical career.

Send news of **Alumni/ae On Campus** to Nicholas P.R. Spinelli, M.D. '44, in care of *Yale Medicine.*

Alumni/ae Summit

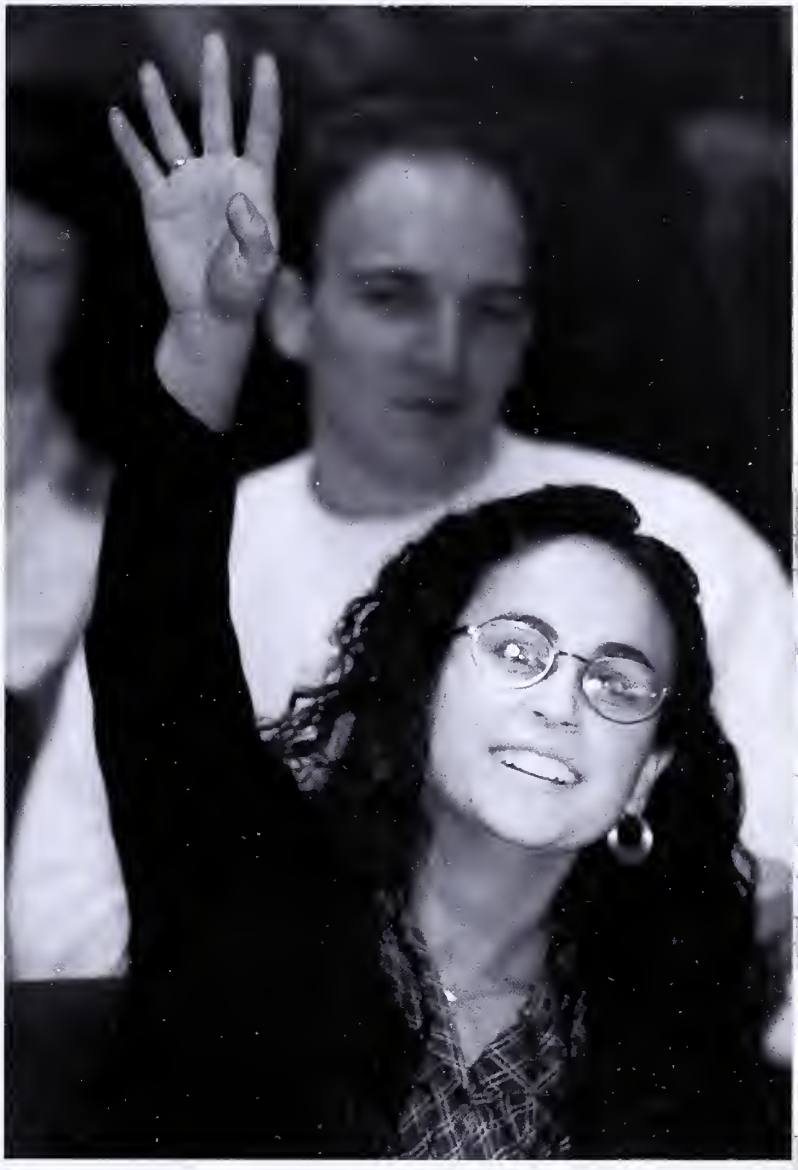
Dean David A. Kessler, M.D., above right, met with alumni at the Oct. 25 meeting of the Association of Yale Alumni in Medicine. The informal discussion ranged from the dean's thoughts about Yale and current affairs in medicine and health to ways in which alumni/ae leaders can help mobilize support for increased financial aid. Above: AYAM members listen as Samuel D. Kushlan, M.D. '35, asks Dr. Kessler a question. Right: Also joining in the discussion were Jocelyn S. Malkin, M.D. '51, and Howard Minners, M.D. '57, both of whom traveled from Washington to attend the meeting.

MELANIE STENGEL (3)

Auction raises funds for homeless shelters and food pantries

The Fifth Annual Hunger and Homelessness Benefit Auction raised more than $20,000 for New Haven homeless shelters and food pantries. Proceeds from the Nov. 21 event were donated to Life Haven, FISH of Greater New Haven, Loaves and Fishes, Rachel's Table, the Downtown Evening Soup Kitchen and the Community Health Care Van. Some noteworthy bids: Last minute negotiating and $500 dollars bought Dean David A. Kessler, M.D., and Director of Admissions Lynne Wootton parts in thesecond-year show. For $1,250 six students will spend a long weekend in the Martha's Vineyard summer home of Drs. Keith Joiner and Jo Ellen Schweinle. Four students, their wallets $1,100 lighter, will tour the White House Oval Office and meet with U.S. Rep. Henry Waxman. One lucky winner will have her dog jogged (yes, jogged) five times for a mere $20. Strangely, no one bid on the "Fish Tank Servicing," in which fish and tank were not included.

—Gregory Raskin, Class of 1998



Second-year student Melissa S. Ellis makes an offer.

STUDENT NOTES

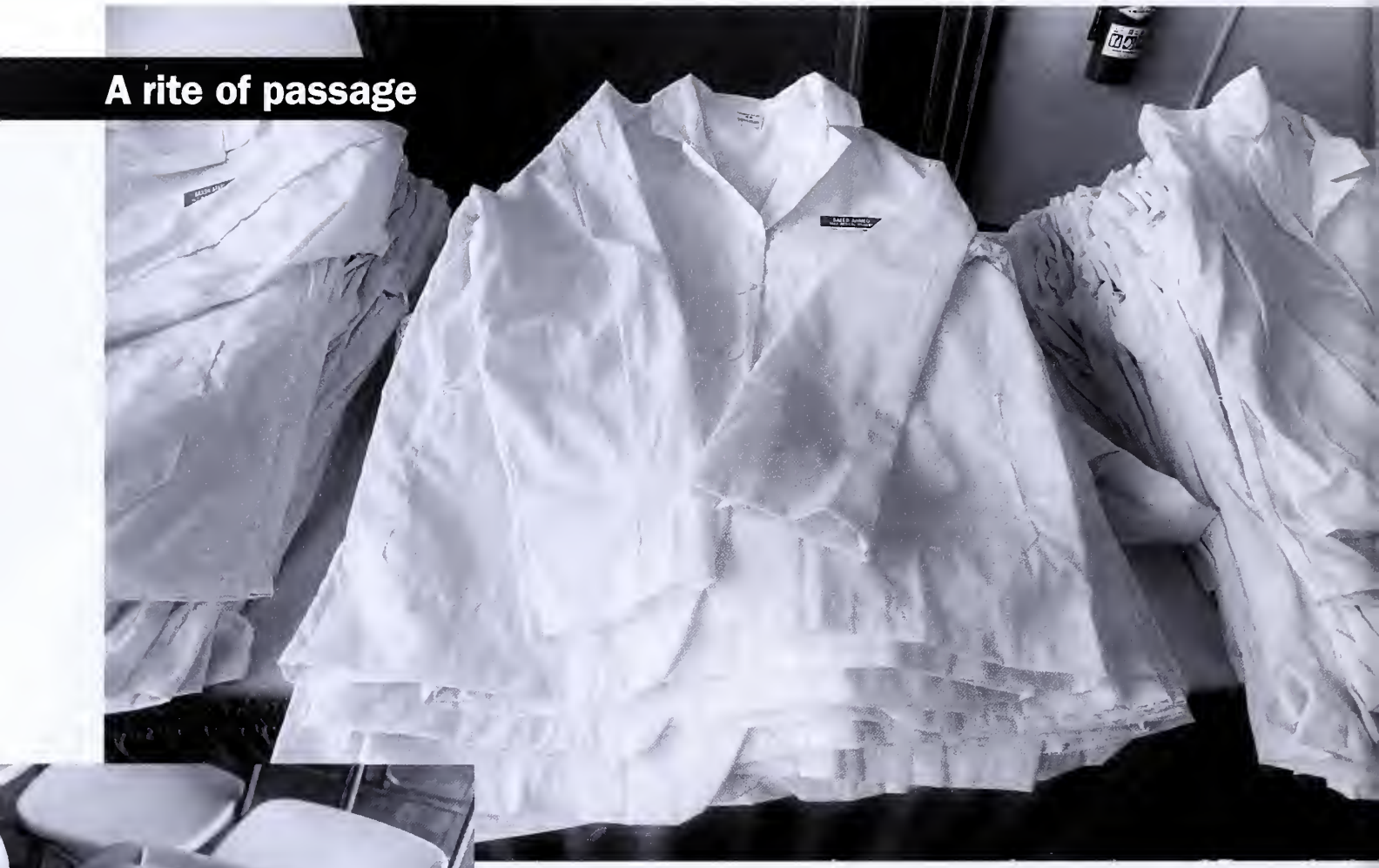
Rajani P. Nadkarni, M.D., postdoctoral fellow in oncology and hematology at Yale, has joined the oncology and hematology practice of Drs. Sorcinelli and Tansino of Meriden, Conn.

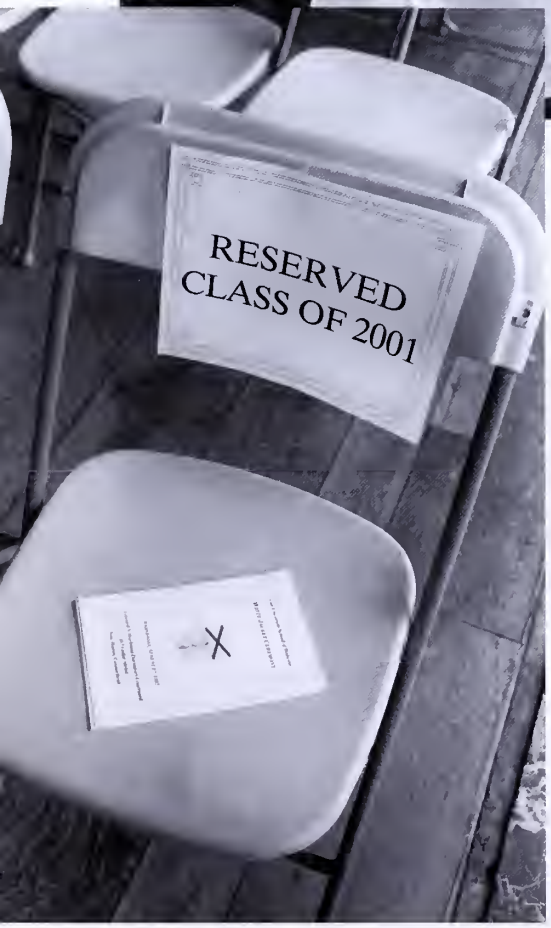
Jing Zang Tao, M.D., a postdoctoral fellow in diagnostic radiology, is working with Kevin Johnson, M.D. in nuclear magnetic resonance.

Above left: Robert H. Gifford, M.D., associate dean for medical education and student affairs, takes a bid during the Fifth Annual Hunger and Homelessness Benefit Auction last November in Mary S. Harkness Auditorium. The event raised more than $20,000 for New Haven homeless shelters and food pantries.

Left: Second-year medical student Jennifer L. Dorosz, left, and Anne F. Pisteil, assistant dean for student affairs at EPH, solicit bids for a bottle of wine at the auction.

A rite of passage





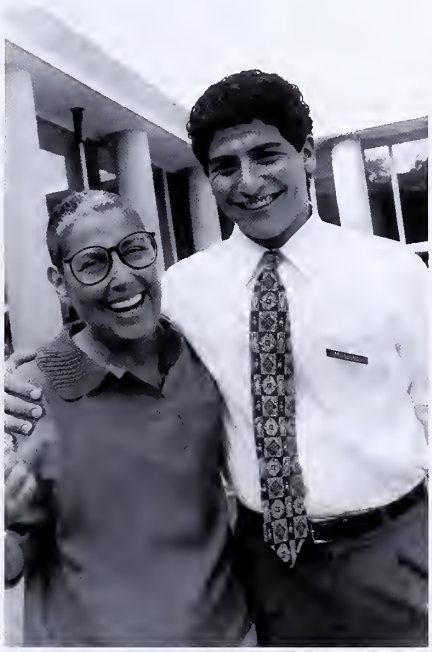
The Class of 2001 required 101 seats for the students from five continents. They're the first class to enter the school under Dr. Kessler's tenure as dean.

School of Medicine Dean David A. Kessler, M.D., helps first-year medical student Emmanuelle M. Clerisme into the white jacket that signifies service to others at the White Coat Ceremony held at the start of the academic year. Merle Waxman, associate dean for academic development, looks on.

Photographs by Gale Zucker

The White Coat Ceremony is a first-year student's initiation into medicine.

Freshmen Sandeep Bansal, Fred Aslan, Monica E. Lopez, Steven A. Farmer and Analene J. Pentopoulos gather at the end of the ceremony.



Aaron S. Covey with his mother, Susan Covey.

Frederick C. Cobey, with his father, James C. Cobey, a house staff officer here from 1973 to 1976.

First-year student Avery S. Grauer smiles with her father, Leonard Grauer, M.D., a 1968 graduate of the School of Medicine. Ms. Grauer's brother, Jonathan, received his Yale M.D. degree in 1997 and is a resident in orthopaedics at Yale-New Haven Hospital.

Andrea L. Ciaranello, Damani A. Piggott, Karl A. Lozanne and Vivian A. Lombillo applaud Dr. Kessler's remarks at the annual ceremony, a welcome to the profession of medicine. "You are a healer," Dr. Kessler told the incoming class, "if the relationship between you and your patient is a covenant of faith, not a business contract, an article of trust, not an exchange of services."

Cost vs. caring

A medical student's financial dilemma

By Ashish Patel

Before last spring's Medical Student Council elections, the candidates were asked to name the issue of highest concern to the student body. The answer that resonated with every student was financial aid. When the new dean, David A. Kessler, M.D., asked the same question at the start of this academic year, the answer again was financial aid. When members of the Student Council presented their report to the Association of Yale Alumni in Medicine in late September, once again they pointed to the urgent need for Yale to seriously look at a medical student's financial burden.

Medical students at Yale face an increasing and ominous threat of excessive indebtedness that may very well affect their choice of a professional field of medicine. Lack of financial aid funds also puts Yale at a competitive disadvantage among its peer institutions.

The cost of medical education has continually risen. Ten years ago, the cost of attending Yale was $21,239 per year for tuition, room, board and related expenses. Today that figure has nearly doubled, to $40,515. Tuition alone for the current academic year rose by $2,000 to $26,700, an increase of 8 percent.

Students meet these costs using personal savings, family contributions, scholarship grants established by alumni/ae, and loans. A majority have little savings, if any, especially after the first year of medical school. Most have left their parents' home and do not receive the family contribution that the school factors into its calculations. Grant money is limited. Furthermore, medical students are discouraged from working because of the intensity of the program, though some do work to meet expenses.

Rise in medical school cost

Year	*Tuition ($)*	*Total ($)*
85/86	11,750	19,635
93/94	20,650	32,910
94/95	22,000	33,435
95/96	23,300	35,825
96/97	24,700	37,700
97/98	26,700	40,515

Source: YSM Financial Aid Office

More than half the cost of a Yale medical education, therefore, is borrowed. When members of the Class of 1997 walked off Harkness Courtyard after Commencement last May, they carried an average debt of $76,644. The largest debt owed by a member of the class was $159,855. Over the course of a 10-year repayment schedule with interest, a student ultimately pays more than half a million dollars.

What appears to make this level of debt justifiable is a false assumption made by policy-makers within the federal government. They assume that all medical students will earn an extraordinarily large income directly out of school. The U.S. Department of Health and Human Services has eliminated all educational loans based on need. Only those students who give up the freedom to choose their field by signing on to a primary care practice receive loans with deferment support. The federal Stafford loan program has stopped its loan deferment during the residency years with the result that many residents are hard pressed to keep up with their payments.

The most disturbing concern stems from the rapidly changing face of managed care medicine. On average, a resident or a fellow earns $35,000 annually. Yale medical graduates generally train for four to seven years past their medical school education. Once this training is complete, the young physicians are expected to cope with a managed care environment that has already squeezed out every possible penny from income. With an estimated physician surplus of more than 30 percent under managed care, even the once-safe assumption of guaranteed employment is no longer valid. What promises to remain is a huge indebtedness on the part of the students, which still has to be paid.

The greatest threat to a young physician's career—being forced to consider cost in choosing a field of medicine—stems from such a difficult financial scenario. Yale School of Medicine has always been fortunate to attract highly qualified students who are dedicated to the profession of healing. Yale students are expected, and for the most part do, choose their fields based on

Ashish Patel, a second-year student, is president of the Medical Student Council.

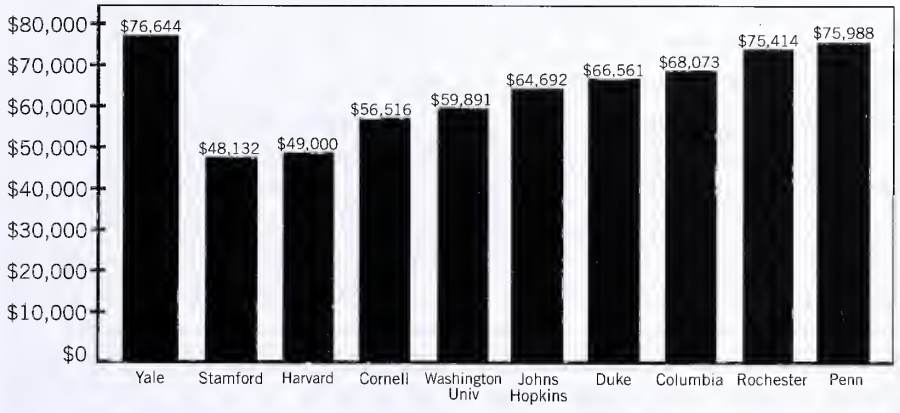
their interest and motivation. One has to wonder, however, whether it is possible to make a residency decision without considering financial compensation. More importantly, is it really possible to practice medicine in one of the noblest fashions, such as practicing in an underserved area, after incurring formidable education debts?

The proof that the financial burden is a real concern comes from the fact that many medical schools have already taken steps to alleviate the problem by actively bolstering their financial aid program. Most schools not only draw on their endowment, as Yale does, but actively fund financial aid through their operating budgets, something Yale does not do. The University of Pennsylvania is working to make much of its program tuition free by the year 2005. Considering the fact that tuition accounts for less than 5 percent of the typical medical school's budget (4 percent at Yale), this revolutionary goal is not impossible.

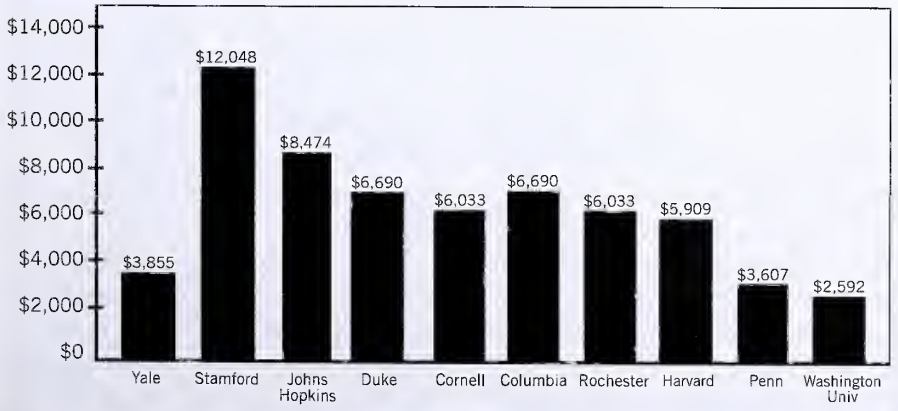
Free tuition may not be necessary. What is required, however, is a serious effort outlining specific cost-reduction objectives. The funds currently available for financial aid all come from the endowment established in part by our generous alumni/ae. Those who choose to give to Yale School of Medicine may consider financial aid as a prime option. Until our endowment rises, we are faced with the fact that spending everything we can from the current endowment for financial aid is inadequate in keeping Yale competitive.

Those of us who love Yale School of Medicine came to Yale for the enthusiasm and energy of student life at school. This energy has to be constantly nourished, for without it, the spirit of Yale Medicine cannot survive. To keep this energy alive, something has to be done to help the financial costs incurred by the students. Tuition increases have to be halted and financial aid has to be increased.

Average debt for Class of '97



Yale scholarships compared to other medical schools



Source: YSM Financial Aid Office

Looking ahead, giving back

Common dreams and feelings of gratitude connect the generations

By David Davison

The dilemma of managing financial stress along with the demands of preparing for a career in medicine is a theme that spans the generations. As Ashish Patel describes in the preceding commentary, most of today's students are saddled with many tens of thousands of dollars of debt. It is a serious problem and a story that should resonate with many Yale School of Medicine alumni/ae.

And while figures from the 1940s might seem quaint today, some alumni/ae of that era can recall $600 tuition bills that they could not afford to meet. After all, these were the war years and the economy was still coming out of the Great Depression. The scholarships they received got them through medical school and into the medical profession. It is not surprising that when it comes to directing their gifts to the school, many alumni/ae—from all eras—want to support financial aid. There is probably no more pure vessel into which an alumnus can choose to pour a contribution.

Today, with tuition rates rising, the pressure on students to finance their medical education can seriously affect the course of their careers, starting with their choice of medical schools. Yale's own research shows that students who prefer to come to Yale are accepting offers from other medical schools because of better financial aid packages. On the national level, research indicates that when burdened by a large debt, many young physicians forego a promising career in research and teaching in order to make an income that will enable them to pay off their heavy loans much sooner.

Dean David A. Kessler, M.D., is working with a student-run committee to address the need for providing more financial aid. At a meeting of the Association of Yale Alumni in Medicine in October, he made it clear that this is an urgent priority.

"We have about $1.4 million available from endowment for financial aid," Dr. Kessler said, "but that is not nearly enough. We need to raise more to stay competitive with other medical schools."

Yale School of Medicine is among the best in the world, but in the category of scholarships and loans available to students, it falls short compared to other prominent institutions such as Columbia, Johns Hopkins, Stanford and Harvard. Each of those schools has approximately three times as much funding available for financial aid. Yale admits students strictly on merit and offers financial aid solely based on need. Schools that can offer students a tuition-free education make it difficult to compete for the best and the brightest.

To help celebrate their 50th reunion, members of the Class of 1944 combined several major gifts to initiate a scholarship endowment. The Class of 1959 did the same for its 35th reunion. A gift of $75,000 is needed to establish a named scholarship fund, although many are at much higher levels. Recent examples of new named funds include the Freshwater/Class of 1972 Scholarship Fund and the Donna and Jack Ogilvie Scholarship Fund. "We need to make sure that the best and brightest candidates are not dissuaded from attending Yale because of the prospect of a large debt," Felix Freshwater, M.D. '72, wrote in an appeal letter to his classmates.

"When tuition rose during my years as a student, Yale gave me a loan so I could afford to continue my studies and graduate," said Nicholas Passarelli, M.D. '59. "My classmates and I are attuned to the needs of today's students and we want to perpetuate the tradition of giving."

The legacy of a Yale medical education is passed on in many ways, through teaching and training. A legacy of gratitude and generosity also connects students and alumni/ae across the generations. The aspiration to become a physician, and the deep feeling of gratitude for the opportunity, remain a common experience.

The students who benefit from scholarship funds regularly communicate with our donors. The following is an excerpt from a letter sent to Dr. Passarelli, that was shared with fellow members of the Class of 1959

David Davison is director of development at the School of Medicine. Write to him at the Office of Medical Development, P.O. Box 7611, New Haven, CT 06519-1714, or via e-mail: david.davison@yale.edu.

who contributed to the class scholarship fund. The student grew up determined to help humankind, but she lacked the financial means to attend college and medical school without help.

Since I was a young child, my dream was always of medicine—and Yale. ... You have provided me with much needed scholarship funding in the quest of my dreams. You have done this while requesting nothing in return. However, I offer you this promise: I intend to return scholarship money to Yale University School of Medicine once I become financially situated. ... I know that there are others like myself who want only to be given the means to obtain their dream.

THE PROGRAM FOR HUMANITIES IN MEDICINE

Lectures at 5 PM on Thursday in the BEAUMONT ROOM, Yale University School Medicine, 333 Cedar Street, New Haven. Refreshments at 4:30 PM. The lectures are free and open to the public. For more information, call Howard Spiro or Clara Gyorgyey at (203) 785-5494.

APRIL 9

OLD MAPS: GUIDES TO THE GEOGRAPHY OF THE EARTH, BODY & MIND

Harold L. Osher, MD
Cardiologist, Cartographer
& Director of Osher Map Library
University of Southern Maine
Portland, Maine

APRIL 16

SENSIBILITY, MEDICINE & THE SPECTACLE OF THE BREAST IN THE 18TH-CENTURY NOVELS

Nina A. Prytula, MPhil
Doctoral Candidate, Department of English
Yale University

APRIL 30

RICHARD SELZER: POET OF THE BODY

Mahala Yates Stripling, PhD
Texas Christian University
Fort Worth, Texas

MAY 7

JAMES JOYCE: MANIC GENIUS & THE FAMILY TRIANGLE

James R Merikangas, MD
Clinical Professor of Psychiatry & Neurology
Yale University School of Medicine

MAY 14

THE EMERGING OF A PHOTOGRAPHIC EYE

Barbara Young, MD
Assistant Professor Emeritus of Psychiatry & Photographer
John Hopkins University
Baltimore, Maryland

Clarence W. Bushnell

Clarence W. Bushnell, M.P.H., of Bridgeport, Conn., died Oct. 28. He was 81.

Mr. Bushnell was born in Lowville, N.Y., and received his nursing degree from Hudson River State Hospital in New York in 1937 before serving in the Coast Guard during World War II. In 1947 he earned his bachelor's degree from New York University and in 1951 received a master's degree in public health from Yale.

From 1951 to 1962, he was the assistant administrator for Massachusetts Memorial Hospital in Boston. From 1962 to 1981, he served as administrator for Bridgeport Hospital in Connecticut and, from 1963 to 1981, was a lecturer in public health and hospital administration at Yale.

Edward C. Curnen Jr.

Edward Charles Curnen Jr., M.D., of Bethany, Conn., died Dec. 1 at the age of 88.

Born in Yonkers, N.Y., Dr. Curnen graduated from Yale College in 1931 and received his medical degree from Harvard in 1935. He served his internship and residency at the Infant's and Children's Hospital in Boston and was a research fellow at Harvard. In 1939, he joined the staff of Rockefeller Institute for Medical Research, now Rockefeller University.

Dr. Curnen served in the Naval Reserve Medical Corps during World War II and retired as commander. He joined the faculty at Yale after the war, as assistant professor of preventive medicine and worked with the Yale Poliomyelities Study Unit. Dr. Curnen was director of the bacteriology laboratories at Grace-New Haven Hospital until 1952 and also was a fellow at Yale's Berkeley College.

In 1952, he joined the University of North Carolina at Chapel Hill as the first professor and chairman of its new pediatrics department. In 1960, Dr. Curnen became the Carpentier Professor and chairman of the department of pediatrics at the Columbia College of Physicians and Surgeons and director of Babies Hospital. He was a fellow of the American Academy of Pediatrics and also served as chairman of its committee on the control of infectious diseases.

Gladys J. Goldman

Gladys Jacoby Goldman, M.P.H., of Clinton, Conn., died Oct. 3 at Yale-New Haven Hospital. She was 87.

Mrs. Goldman was born in Woodside, N.Y. She received her master's degree in public health from Yale in 1947 and taught nursing in New Haven for many years. She was also a department head at New York Hospital/Cornell Medical Center.

Louis Gluck

Louis Gluck, M.D., died of cancer on Nov. 29 at Saddleback Memorial Hospital in Laguna Hills, Calif. He was 73.

Born in Newark, N.J., Dr. Gluck graduated from Rutgers University in 1948 and received his medical degree from the University of Chicago. He joined the faculty at Yale in 1960 as an assistant professor of pediatrics and was associate professor of pediatrics from 1964 until 1968, when he moved to the University of Miami. While at Yale he developed a new design for a nursery for premature infants and ill full-term babies. Dr. Gluck's design for a neonatal intensive care unit was one big open room, filled with incubators, enabling intensive management of newborns.

Dr. Gluck also helped develop a test of the amniotic fluid to determine whether the lungs of a fetus were mature. He later developed a similar intensive-care program at the University of California at San Diego. Dr. Gluck was also a professor at the College of Medicine at the University of California at Irvine.

John C. Haley

John C. Haley, M.D., died Sept. 13 at his home in Cheshire, Conn. He was 83.

Dr. Haley, born in Long Beach, Calif., graduated from Yale College in 1937 and received his medical degree from Yale in 1941. During World War II, he served as a flight surgeon in the Army Air Corps.

Dr. Haley interned at Massachusetts Memorial Hospital in Boston from 1940 to 1941, was a senior intern at Montreal General Hospital until 1942 and served his residency in obstetrics and gynecology at Grace-New Haven Hospital from 1945 until 1948. He joined the faculty at Yale medical school as a clinical instructor of obstetrics and gynecology in 1951, became clinical associate in 1974 and advanced to assistant clinical professor in 1974.

Kathleen H. Howe

Kathleen Hara Howe, M.P.H., died Dec. 3 of cancer at Connecticut Hospice in Branford. She was 85.

Born in Ontario, Dr. Howe graduated from Rollins College in 1933 and earned her master's degree in public health from Yale in 1956. After graduation she joined the faculty at Yale and until 1979 served as an assistant professor and assistant

dean in the Department of Epidemiology and Pubic Health. After her retirement a scholarship fund was established in her name. In 1990 she was awarded the Yale Medal and was later honored by President Bush as one of the "thousand points of light" for her volunteerism with Connecticut Hospice from 1979 to 1997.

Mrs. Howe was the first recipient of the Distinguished Alumni/ae Award in 1988 from the Association of Yale Alumni of Public Health. She also received the Chairman's Award of the Yale Alumni Fund, the Rotary Club Community Service Award, and the Ira V. Hiscock Award of the Connecticut Public Health Association.

Franklin Hutchinson III

Franklin Hutchinson III, M.D., died Oct. 24 at Yale-New Haven Hospital. He was 77.

A native of Brooklyn, N.Y., Dr. Hutchinson received his bachelor's degree in 1942 from the Massachusetts Institute of Technology and his Ph.D. degree in physics in 1948 from Yale. He joined the radiation laboratory at MIT during World War II, developing radar technology for the military. Dr. Hutchinson holds three patents in microwave electronics.

He began his 42-year tenure at Yale in 1948 as an instructor in radiology and biophysics. Dr. Hutchinson became assistant professor of physics in 1951, associate professor of biophysics in 1957, and professor of biophysics in 1960. He served as chairman of the biophysics department for eight years, as well as director of graduate studies and director of undergraduate studies in biophysics. Dr. Hutchinson retired as professor emeritus in 1990.

He was also a consultant in radiology at Yale-New Haven Hospital and had been a member of the advisory committee of the Atomic Bomb Casualty Commission. A fellow of Jonathan Edwards College, he played the French horn with the New Haven Symphony Orchestra.

Dr. Hutchinson continued his research in mutagenesis as part of the radiology laboratory at the School of Medicine until his death.

Warren M. Jones

Warren Mead Jones, M.D., died July 31 at in home in Flourtown, Pa. He was 72.

Born in West Pittston, Pa., Dr. Jones received his bachelor's degree from Lafayette College, his law degree from the University of Pennsylvania and, in 1961, his medical degree from Yale.

Dr. Jones was an ophthalmologist in Flourtown. He was past president of the Montgomery County Medical Society and was a liaison between the Pennsylvania Medical Society and the Pennsylvania Bar Association.

Thomas J. Keenan

Thomas J. Keenan, M.D., of Plymouth and Duxbury, Mass., died Oct. 15 in Jordan Hospital in Plymouth. He was 71.

Born in Glenrock, Wyo., Dr. Keenan served in the Navy before graduating from Whittier College in Spokane, Wash. He received his medical degree in 1957 from the Medical College of Wisconsin. He interned at St. Mary's Hospital in San Francisco and served his residency in anesthesiology at Massachusetts General Hospital in Boston. During that residency, Dr. Keenan was on the house staff of Yale-New Haven Hospital. In 1959 he joined the staff and was a clinical anesthesiologist at Massachusetts General Hospital. Dr. Keenan was on the staff of the Massachusetts Eye and Ear Infirmary from 1969 until his retirement.

Henry V. Kogut

Henry V. Kogut, M.D., of Stratford, Conn., died Oct. 18 in Bridgeport Hospital. He was 79.

Born in Bridgeport, Dr. Kogut received his medical degree from New York Medical College and completed a residency in ophthalmology at Yale in 1948. During World War II, he was a captain in the Army, serving as a flight surgeon in the United States and Germany.

Dr. Kogut practiced ophthalmology in Bridgeport and Stratford for 49 years. In 1979, he received the Physician Recognition Award from the American Medical Association. Dr. Kogut was also a fellow of the American College of Surgeons, the American Academy of Ophthalmology, and the American Society of Contemporary Ophthalmology.

Helen P. Langner

The School of Medicine's oldest alumna, Helen P. Langner, M.D., died Dec. 10 at her home in Milford, Conn. She was 105.

Born in Meriden, Conn., the oldest of six children, Dr. Langner grew up in Milford and graduated from Milford High School in 1910. She attended Hunter College in New York at a time when no Connecticut college would open its doors to her as a woman. After graduating from Hunter in 1914, she taught high school biology in New York.

She returned to Connecticut and was admitted to the Yale School of Medicine. The only woman in her class, Dr. Langner received her medical degree from Yale in 1922. She was the fourth woman to graduate from the medical school.

She took her residency training at a state hospital on Wards Island in New York City, before traveling around the United States to set up child guidance clinics. In 1929, she joined the faculty at Vassar College in Poughkeepsie, N.Y., where she was the head of undergraduate health. She later established a private psychiatry practice in New York City, commuting from her home in Milford. In addition to seeing private patients, she treated patients at New York Hospital Cornell Medical Center and worked part time in the New York City school system.

In 1970 at age 78, she retired from full-time practice but continued to see patients well into her 90s. She served as a consultant both to the Milford health department and at Milford Hospital. She returned annually to the School of Medicine for Alumni Reunion Weekend, celebrating her 75th reunion last June. Her report from the event was pub-

lished in the Fall 1997 issue of *Yale Medicine*.

Dr. Langner dedicated herself to environmental causes, including projects to improve the Milford harbor and to create a nature preserve in the salt marshes at nearby Smith's Point. The area is now a federal wildlife preserve and borders the Audubon Coastal Center.

In 1994, she was inducted as an honorary member of the Class of 1998 by then-Dean Gerard N. Burrow, M.D. '58. At a memorial service for Dr. Langner Feb. 9, her second Yale medical diploma was presented posthumously and accepted by her younger brother, Gustave Langner, 95.

James D. Prokop

James D. Prokop, M.D., died Dec. 1 of cardiac arrest at Greenwich Hospital. He was 64.

Born in Bridgeport, Conn., Dr. Prokop graduated from Yale College in 1955 and from the School of Medicine in 1959. He served his internship and residency, and was chief resident of neurosurgery at New York Hospital Cornell Medical Center from 1959 to 1961. Dr. Prokop was clinical associate at the National Institute of Neurological Diseases and Blindness in Bethesda, Md., from 1961 until 1963.

Dr. Prokop was director of the Department of Neurosurgery at Stamford Hospital and St. Joseph Medical Center from 1976 to 1981. He also headed neurosurgery at Stamford Hospital in 1994-95.

Luther George Simjian

Luther George Simjian, the first director of the School of Medicine's Photography Department and the inventor of dozens of devices, some of them for medicine, died Oct. 23 at his home in Fort Lauderdale, Fla. He was 92.

Mr. Simjian was born in Turkey to well-to-do parents of Armenian descent. According to a 1934 *Washington Post* article, his mother and three sisters were massacred in Turkey and he was separated from his father. He came to the United States in the early 1920s, settling in New Haven with an uncle, and eventually was reunited with his father.

Mr. Simjian worked as a photographer at Yale, where he had hoped to pursue an interest in medicine. But his success as a photographer and inventor swept aside his medical aspirations. He eventually patented nearly 200 inventions, including an autofocus camera in 1932, a color X-ray machine in 1934, an early flight simulator, a teleprompter and a mechanical precursor to the automatic teller machine.

According to Richard G. Snyder, the current president of Reflectone Inc., the Tampa, Fla., company Mr. Simjian founded in Connecticut in 1939, Mr. Simjian was considered "the second Thomas A. Edison" in many quarters. His medical inventions included a supersonic exploring device for ultrasound and the color X-ray machine, which assigned color values to varying shades of gray. He also envisioned linking the machine electronically to remote sites, making the diagnostic images available to physicians hundreds of miles away. In 1978, he received the Eli Whitney Award from the Connecticut Patent Law Association. The Photography Department he directed is known today as Biomedical Communications.

Joseph R. Stanton

Joseph Robert Stanton, M.D., L.L.D., of Needham, Mass., died Sept. 9 at Needham nursing home in Wingate. He was 77.

Born in Brighton, Mass., Dr. Stanton was stricken with polio as a teen-ager and did not pursue his dream of becoming a surgeon. He graduated from Boston College in 1942 and received his medical degree from Yale in 1945 and his L.L.D. from St. Anselm College in 1973. Dr. Stanton was on the staff of Boston University School of Medicine from 1946 to 1951. He then joined the staff of Tufts University School of Medicine as an instructor until 1958 and as associate clinical professor of medicine from 1958 until his retirement in 1985. Dr. Stanton devoted his energies to internal medicine and research on hypertension.

In 1970, after the New York State legislature legalized abortion, he became active in the anti-abortion movement. Dr. Stanton founded the Massachusetts Citizens for Life and the Value of Life Committee of Massachusetts. He was also chief archivist and historian of Massachusetts Citizens for Life.

G. Pierce Taylor

Grosvenor Pierce Taylor, M.P.H., of Shelburne, Mass., died June 7 at Franklin Medical Center in Greenfield, Mass. He was 79.

Mr. Taylor graduated from Amherst College in 1942, then returned to work on his family's apple orchards in Shelburne. He later took a job as a purchasing agent for Professional Equipment Co. of New Haven, Conn., and received his master's degree in public health from Yale in 1961. Mr. Taylor then served as administrator of the Southwestern Michigan Hospital Council and as executive director of the Connecticut Hospital Planning Commission. He retired in 1974.

Seth U. Thaler

Seth U. Thaler, M.D., died Aug. 20 at Arden Hill Hospital in Goshen, N.Y. He was 59.

Born in New York City, Dr. Thaler graduated from Amherst College and received his medical degree

from Yale in 1962. He practiced otolaryngology in Goshen for many years. Dr. Thaler also was medical director at Arden Hill Hospital and a fellow of the American College of Surgeons and the American Association of Otolaryngologists.

Robert E. Waugh

Robert E. Waugh, M.D., of Farmington, Conn., died Aug. 1. He was 64.

Born in Willimantic, Conn., Dr. Waugh was a graduate of Dartmouth College and received his medical degree from Yale in 1959. He was an intern at University of California at Los Angeles, and took his residency training in anesthesiology at Grace-New Haven Hospital from 1961 to 1962.

Dr. Waugh served two years in the Navy as an anesthesiologist at the Portsmouth Naval Hospital in Virginia. In 1964, he joined the staff of New Britain (Conn.) General Hospital and at the time of his retirement in 1991 was the medical director of its ambulatory surgery unit.

Inez E. Wilber

Inez Edith Wilber, M.D., died May 10 at a nursing home in La Jolla, Calif., after suffering a stroke. She was 93.

Dr. Wilber was born in Los Angeles and was raised in Needles, Calif. She received her medical degree from the University of Michigan in 1932 and served her internship and residency at Yale from 1932 to 1935. She practiced ophthalmology in Washington, D.C., from 1939 until she retired and moved to California in 1977.

Dr. Wilber was a district governor of the women's professional organization Zonta International and a member of the American Association of University Women.

IN MEMORIAM

The School of Medicine has received notification of the death of the following persons:

William B. Barry, M.D., Med '36
August 27, 1997

Frank A. Carone, M.D. '52
October 3, 1997

Jean Parker Cobb, M.P.H. '69
May 10, 1996

Marvin B. Day, M.D., Med '38
July 24, 1997

Lee E. Farr, M.D. '33
July 16, 1997

George T. Furlong, M.P.H. '53
October 2, 1997

Gladys Jacoby Goldman, M.P.H. '47
October 3, 1997

John C. Haley, M.D. '40
September 13, 1997

Warren Mead Jones, M.D. '61
July 31, 1997

Perry W. Nadig, M.D., HS '54-57
March 12, 1997

Marion Redmond, M.P.H. '41
October 21, 1992

Dorothy A. Rice, M.P.H. '77
December 23, 1993

Edwin D. Rogers, M.D. '41
May 9, 1995

Joseph R. Stanton, M.D.'45
September 9, 1997

Meritt W. Stark, M.D., HS '43-44
October 20, 1997

Seth U. Thaler, M.D. '62
August 20, 1997

Robert E. Waugh, M.D. '59
August 11, 1997

1997-98 Association of Yale Alumni in Medicine

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Jocelyn S. Malkin, M.D. '51

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YSM Bequest and Endowment

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Martin E. Gordon, M.D. '46

Michael Kashgarian, M.D. '58

Benjamin E. Lyons, M.D. '38

Theoharis C. Theoharides, M.D., Ph.D. '83

AYAM Representative, Medical School Council

Peter N. Herbert, M.D. '67

FRIDAY, JUNE 5

- ▷ School of Medicine Alumni Fund Class Agents and Reunion Gift Chairs Luncheon
- ▷ Class Reunion Programs
- ▷ Association of Yale Alumni in Medicine Executive Committee Meeting
- ▷ Opening Remarks
  Nicholas M. Passarelli, M.D. '59, President, AYAM
  David A. Kessler, M.D., Dean, School of Medicine
- ▷ Special Presentation
  The Yale System, its Evolution, Strengths and Problems
  Robert H. Gifford, M.D., Associate Dean for Medical Education and Student Affairs
- ▷ Dean's Reception
- ▷ New England Clambake

Alumni Reunion Weekend

FRIDAY AND SATURDAY, JUNE 5 AND 6, 1998

SYMPOSIUM HONORING JOHN P. PETERS, M.D.

John Punnett Peters, M.D., (1887-1955) was a legendary member of the Yale medical faculty, revered for his skill and warmth with patients as well as the new scientific ground he broke, especially in the area of metabolism. The seminar will explore these contributions to medicine, as well as the political controversy that surrounded Dr. Peters, an early advocate of socialized medicine who was targeted by conservatives in the late 1940s and early '50s.

TOPICS

The Committee of 430 Physicians
George D. Lundberg, M.D.
Editor in Chief
Journal of the American Medical Association

John Peters, McCarthyism and the Supreme Court Decision
Catherine G. Roraback, LL.B.'48
Attorney-at-Law
Canaan, Conn.

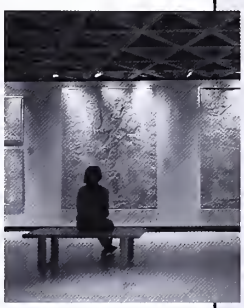
Contributions to Nephrology
Franklin H. Epstein, M.D. '47
Professor of Medicine
Harvard Medical School and Beth Israel Hospital

Contributions to Diabetes Mellitus
Phillip Gorden, M.D., HS '61-66
Director
National Institute of Diabetes and Digestive and Kidney Diseases

Reflections of a Student of Peters
Donald W. Seldin, M.D. '43
Professor of Internal Medicine
University of Texas Southwest Medical Center

SATURDAY, JUNE 6

- ▷ Annual Meeting of the Association of Yale Alumni in Medicine
  Greetings by Nicholas M. Passarelli, M.D. '59, President, AYAM
  Remarks: Dean David A. Kessler, M.D.
  Presentation of the Distinguished Alumni Service Award
- ▷ Sherry/Buffet Luncheon
- ▷ Guided Tours
  Yale University Art Gallery
  Historic Sections of New Haven/Eli Whitney Museum
  Yale-New Haven Children's Hospital/Medical Center
- ▷ Individual Class Parties and Dinners for the five-year reunion classes
- ▷ *Friends of the 50th Dinner* (Honoring the Classes of 1948, 1933, 1938, 1943, and 1993)



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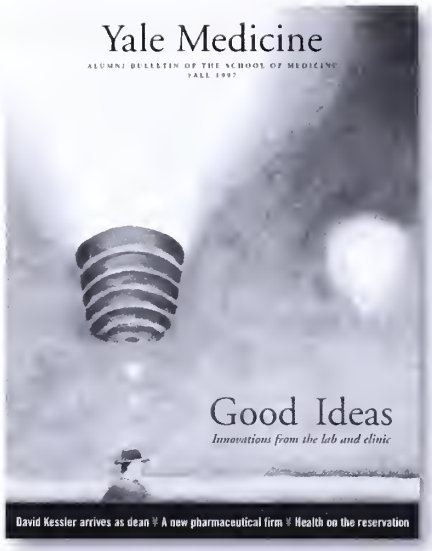
One nation, two views

To the Editor:
I spent a month on the same Navajo reservation as Gregory Raskin [*Notes From a Navajo Winter*, Fall 1997]. I found parts of his description disconcerting because it seemed at times as though he were looking down on the people he was treating.

I must assume that the perceptions differ because I have been a clinician for 15 years, and he is still in the learning process. I was sad to leave New Mexico. The Indian Health Service, a branch of the U.S. Public Health Service, is medicine as it used to be practiced, as I believe it was meant to be practiced. It is completely patient-care oriented, with emphasis on the word care. Everything about the system is designed for the convenience of the clientele. Every clerk and secretary makes certain the "grandmother" won't wait in line and gets kind, courteous, efficient treatment. Each Navajo has a family practitioner overseeing the totality of his or her care. Sub-specialists are utilized appropriately, and all are represented on-site.

There is no insurance company involved—no denial of treatment, medication, hospitalization, or surgery if the clinician has deemed it appropriate. If a postop or postpartum patient needs a week to recover in-house before the long ride home, there is no utilization review worker to say otherwise. Social workers are amply available to be sure the home stay is safe. Medicines are dispensed directly in the clinic, eliminating middleman markup and another trip for the patient to get it as is the case with the pharmacy system. The full range of preventative and rehabilitative services are available on-site. This is government-run



health care—the entity we all supposedly fear.

As far as the Navajos themselves, I found them to be marvelous patients. The majority are farmers and ranchers, living a busy and physically demanding outdoor existence. They are strong individually and communally, with good self-esteem. The translators pose no problem at all. It turned out that most of the elderly understood me perfectly, but preferred the comfort of speaking in their own language. Compliance was no better or worse than among patients anywhere else.

Because illegal drug use is so rare, there is very little of the crime, violence and secondary diseases related to the drug culture that so burdens our inner cities here. I learned much from their grace, dignity, cohesiveness and natural wisdom. I can't wait to return for another stint of service in March, and am taking with me another Yale medical student. My family only fears that I may not return.

Susan Richman, M.D., HS '79-83
Assistant Clinical Professor
Obstetrics and Gynecology

To the Editor:
Gregory Raskin's *Notes From a Navajo Winter* was terrific because of its common-sense approach to the big questions, especially "How long could I go without a bagel?" (I may be biased in this.) I can confirm that Nepal, at least regarding the Lender's product, is a bagel-free zone.

Murray Lender
Chairman
H. Lenders & Sons
Woodbridge, Conn.

Doctor, see thyself

To the Editor:
I enjoyed reading *Medicine at the Movies* in the Special Report edition of *Yale Medicine* [Fall 1997]. I suggest you add another film to the suggested list for doctors and those in training to view. *The Doctor* with William Hurt tells the story of a physician who is stricken with cancer and has to endure all the indignities that his patients endure in his hospital. The experience changes his perspective and understanding of sick people. I believe all doctors should participate in this vicarious experience.

Joan Gourley
Milford, Conn.

How to reach us

Yale Medicine welcomes news and commentary. Please send letters to the editor and news items to ***Yale Medicine*, P.O. Box 7612, New Haven, CT 06519-0612**, or via electronic mail to **ymm@yale.edu**, and include a daytime telephone number. Submissions may be edited for length, style and content.

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YALE MEDICINE
WINTER/SPRING 1998

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Continuing Medical Education *at Yale*

June 3
Wednesday

11th Annual Lyme Disease Conference **A**
Course Director: Robert Schoen, M.D.
Focus on clinical topics and scientific advances
Mary S. Harkness Auditorium

June 19
Friday

Yale Ophthalmology Spring Symposium: **B**
The Distinguished Alumnus Lecture by Lee Jampol, M.D., Professor & Chairman
Northwestern University Department of Ophthalmology
Course Directors: Craig Sklar, M.D., and Bruce Shields, M.D.
New Haven Lawn Club, New Haven, CT

September 12, 13
Saturday – Sunday

Yale at Mystic: An Ultrasound Review **C**
Course Director: Kenneth J.W. Taylor, M.D., Ph.D.
Furthering acquaintance with the most useful applications
for the latest technical advances in diagnostic ultrasound
Mystic Hilton, Mystic, CT

September 17-20
Thursday – Sunday

22nd Yale Physician Assistant Certification/ Recertification Preparatory Conference **D**
Course Coordinator: Christiane Nockels, P.A.
Mary S. Harkness Auditorium

October 23, 24
Friday – Saturday

Health and Spirituality Conference **E**
Co-sponsors: Albert Schweitzer Institute for the Humanities and
the Program for Humanities in Medicine at Yale
Jane Ellen Hope Building, Room 110

ONGOING

Pain Management Programs **F**
Course Director: Lloyd Saberski, M.D.
Individually tailored tutorials for physicians in the clinical management of pain
Center for Pain Management, 40 Temple St., New Haven, CT

For information, contact the Office of Postgraduate and Continuing Education, Yale University School of Medicine, 333 Cedar St., P.O. Box 208052, New Haven, CT 06520-8052; Tel: (203) 785-4578

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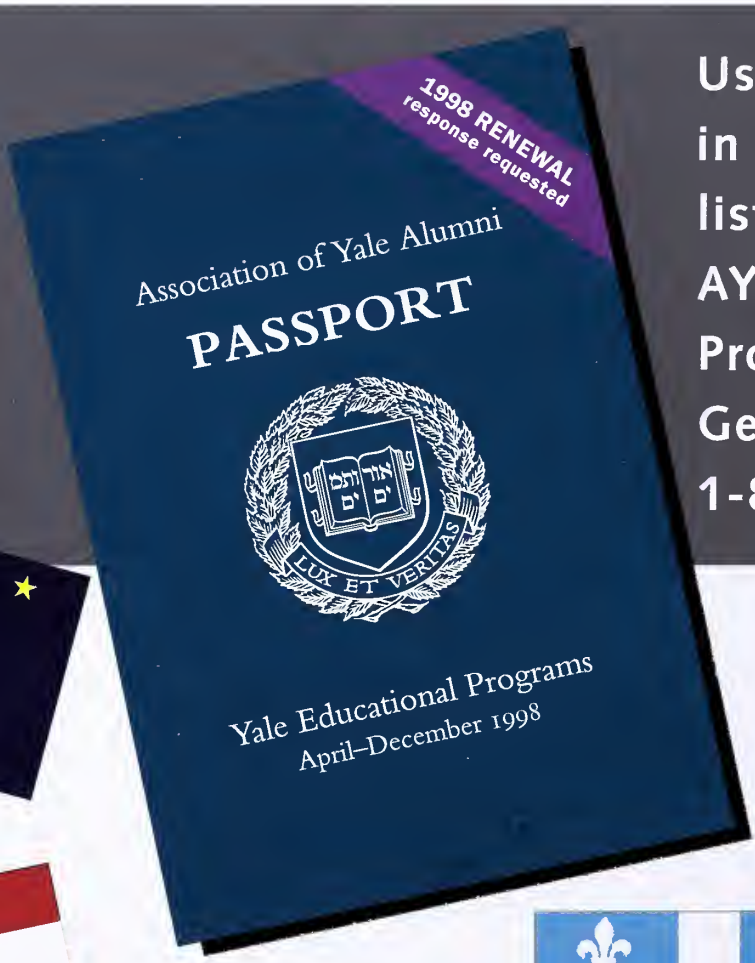

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and Glacier Expedition
July 30-August 11, 1998

Natural Treasures of Costa
A Family Learning Adventu
June 23-July 2, 1998

Exploring the Dalmatian Coast
August 2-14, 1998

Rodin and Quebec City
August 15-21, 1998

Impressions of a Swedish
Summer
August 3-12, 1998

Cruising Russia's Heartland
September 11-27, 1998

Istanbul Seminar
September 19-28, 1998

Yale Medicine

ALUMNI BULLETIN OF THE SCHOOL OF MEDICINE
SUMMER 1998

Inside: *Yale Letter on Aging*

THE FACE OF AIDS

First Lady praises Child Study Center Program

In an April 30 address at Harkness Auditorium during a symposium celebrating the 30th anniversary of the School Development Program, First Lady Hillary Rodham Clinton praised the program's founder, James P. Comer, M.D. Dr. Comer, whose model has been implemented in more than 700 schools across the country, is the Maurice Falk Professor of Child Psychiatry in the Child Study Center. Mrs. Clinton recognized his "lifelong vision, passion and mission to make us understand what education is really all about. Today we celebrate a man who has committed his personal and professional life and the work of this center to fulfilling that vision." In her 20-minute speech, Mrs. Clinton recalled her research on the medical and legal issues surrounding child abuse while she was in law school, and lauded the Child Study Center, in which she was a fellow working with Albert J. Solnit, M.D., and the late Sally Provence, M.D. "The impact of the center's work can be seen in improved test scores and higher self esteem in schools nationwide," said Mrs. Clinton, who wrote about her experience as a center fellow in her recent book, *It Takes a Village.*

ANITA TELLIER

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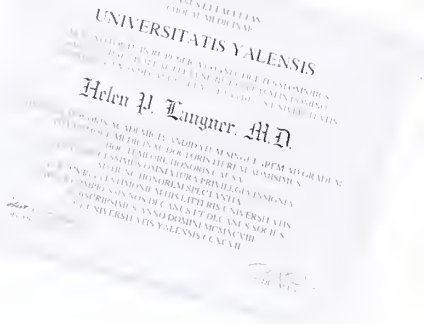

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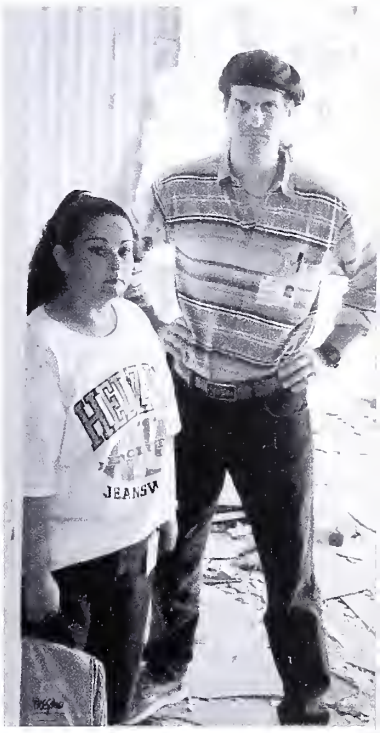

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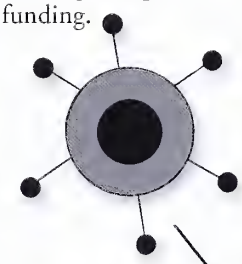
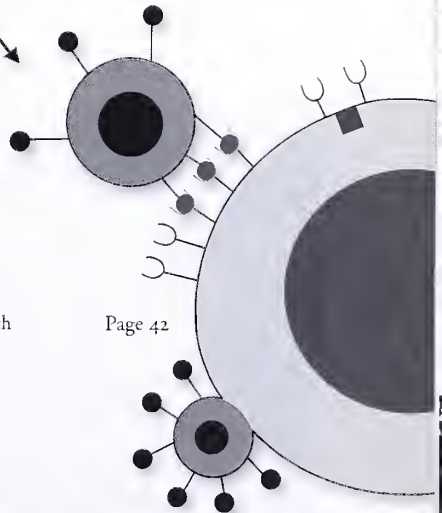
COVER STORY





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A new era in AIDS treatment
People with HIV are living longer as protease and reverse transcriptase inhibitors thwart the onset of AIDS. Despite drug resistance and other complexities, these new agents have changed the way physicians care for their patients. Page 33

Dispatch from the front lines
Caring for people with AIDS helped author Peter Selwyn come to terms with a death in his own family. Page 38

DEPARTMENTS

Solutions to the budget and space crunch. Page 5

For early women in medicine, a different kind of facilities plan. Page 16

Yale Medicine
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Summer 1998
Volume 32, No. 2

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Please recycle

Rule of law, not men

To the Editor:

As a graduate of Yale College but not the medical school, I was pleased to begin receiving *Yale Medicine*. However, drawing upon my Yale education as a major in American history, I have always believed in the American tradition stating that we are a nation of laws, not men.

Thus, I read with interest the article and the quotation attributed to the medical school's new dean in your Fall 1997 issue. As a non-smoking physician, I share Dr. Kessler's view of smoking and the tobacco companies. However, the deals being forced on the tobacco companies are unconstitutional and an attack on the rule of law.

In a recent issue of *The Freeman*, Robert A. Levy makes the case that we can't ignore the constitutional infirmities just because the industry consents to them; that tobacco is not a special case and that other industries should be fearful; that prohibition as favored by Drs. Kessler and Koop would lead to a black market; that in fact cigarette smokers already pay more through the taxes on their cigarettes than the cost for their care; and that Congress should first eliminate all subsidies to tobacco before resorting to a legislated settlement.

I hope that Dean Kessler will encourage those in training to understand that a superb education with free choice and not a paternalistic attitude is the essence of a Yale education.

Robert H. Potts Jr., M.D.
Copper Mountain, Colo.

To tell the truth

To the Editor:

I came across your very nice article on the history of radiology at Yale [*Medicine's new eyes*, Winter/Spring 1998]. I applaud your department, its innovations and your enthusiasm for its capabilities. At the same time, I question the statements you make on attributing "the first X-ray image in the United States" to Yale physicist Arthur W. Wright. Sometimes issues like this are a matter of semantics. Although we attribute the "discovery" of X-rays and the first image to Roentgen, Crookes (and others) actually made X-rays and inadvertently exposed X-ray plates in his laboratory well before Roentgen developed an understanding of what was going on. As you may be aware, Crookes thought the gelatin plates were defective and repeatedly returned them to Ilford, England's largest manufacturer of photographic plates, with a vitriolic note. It took a scientist of Roentgen's caliber to realize what was occurring and to publish an account of his experiments. Hence, we attribute this great discovery to Roentgen.

It is much the same with the first (clinical) X-ray in the United States. After reading a detailed description of Roentgen's discovery of the X-ray in the *New York Sun*, a prominent local man and a member of the Dartmouth scientific society, Howard H. Langell, inspired Frank Austin, an assistant in the Dartmouth physics laboratory, to test a dozen or so Crookes vacuum tubes in the Dartmouth collection to see if any of them would produce X-rays. It was probably on or before the very date you describe, Jan. 27, that Langell and Austin produced images of coins and keys in a wooden box and perhaps even of Austin's hand. They then reported this event to Edwin Frost, a professor of astronomy at Dartmouth.

On Monday, Feb. 3, Edwin's brother, Gilman Frost, M.D., chief of staff at the Mary Hitchcock Memorial Hospital, brought 14-year-old Eddie McCarthy to the physics building at Dartmouth college. Eddie had fallen a week or so before while skating on the Connecticut River and had a clinical diagnosis of a "colles" fracture. Utilizing the tube that Austin had experimented with, the Frost brothers proceeded to produce an X-ray of

The AYAM makes web debut

At the Association of Yale Alumni in Medicine website, you will find information about the activities, goals, and structure of the AYAM and the Yale School of Medicine Alumni Affairs Office. The site contains a brief history of the School of Medicine, the history and goals of the AYAM, AYAM constitution, a listing of the alumni officers, class secretaries, staff, outreach program and events. Visit us at http://www.med.yale.edu/ayam

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McCarthy's wrist showing the fracture. Frost reported this in an article dated Feb. 4 and submitted it to the journal *Science*. Reports in the same issue of *Science* by Drs. Pupin of Columbia and Goodspeed of Pennsylvania described clinical X-rays that were made three and five days later.

If Yale's physicist, Arthur Wright, pre-empted the Dartmouth group, it remains unreported and unsubstantiated, at least in the scientific literature. The Dartmouth group went one step further. The taking of the first clinical X-ray in America was captured by photographer Henry H. Barrett and so remains the first scientific experiment recorded by photographic means.

In a word, from *Vox Clamantis in deserto*, "strong on the 'Lux', weak on the 'Veritas'."

Peter K. Spiegel, M.D.
Professor and Chair
Department of Diagnostic Radiology
Dartmouth-Hitchcock Medical Center
Lebanon, N.H.

You're both right

To the Editor:

Because of my mixed medical heritage (B.M.S. Dartmouth Medical School, M.D. Harvard Medical School, and ophthalmology residency at Yale), I receive the alumni bulletins of all three institutions. I read with great interest your excellent article *Medicine's new eyes*. I was greatly impressed by the claim that Yale physicist Arthur W. Wright made the first X-ray *image* in the United States on Jan. 27, 1896, just one day after an article entitled *The New Photography* appeared in the *New York Sun* newspaper describing Roentgen's discovery of X-rays on November 8, 1895.

In the Winter 1995 issue of *Dartmouth Medicine* an article appeared describing the first *clinical* X-ray in America: of the wrist of Eddie McCarthy, a 14-year-old boy who fell while ice skating on the Connecticut River in Hanover, N.H. This first *clinical* X-ray was taken at Reed Hall at Dartmouth College on Feb. 3, 1896, and reported in an article published in *Science* dated Feb. 4, 1896. Physics professor Edwin Frost (and brother of Dr. Gilman Frost, a professor at Dartmouth Medical School and physician of Eddie McCarthy) wrote: "It was possible yesterday to test the method on a broken arm. After an exposure of 20 minutes, the plate on development showed the fracture in the ulna very distinctively. Comment upon the numerous applications of the new method in the sciences and arts would be superfluous."

Yale's first X-ray *image* combined with Dartmouth's first *clinical* X-ray shows that these two institutions were (and continue to be) on the cutting edge of medical technology. It should also be remembered that Dartmouth and Yale share a common heritage, that of Nathan Smith, founder of Dartmouth Medical School in 1797 and co-founder of Yale Medical School over a decade later.

John D. Bullock, M.D.
Professor and Chair
Department of Ophthalmology
Wright State University School of Medicine
Dayton, Ohio

Class agent syndrome

To the Editor:

A syndrome described in the December 1997 *Atlantic Monthly* attracted my gaze. Now I know what causes my swollen legs: economy class syndrome, interestingly first described by Professor Jennett of Glasgow University! As an American of Scottish descent, I now understand the connection between my ethnic heritage, the legendary gift for thrift and my puffy ankles after a bargain flight.

Another, which I call class agent syndrome, much more pleasant, is often seen in Yale medical alumni class agents after many years on the job. This condition may be experienced all year, depending on correspondence with classmates, but predominates each fall and peaks sharply every five years. Manifestations: frequent memories and thoughts (even dreams) of classmates, living and dead. Enjoyable. Seriously desire to know if other class agents have noted same.

Richard W. Breck, M.D. '45
Wallingford, Conn.

From the Editor

Thanks for the magazines

The magazine you are holding would be a good deal less interesting were it not for a person whose association with Yale began as a lanky freshman in Berkeley College 42 years ago. Many people have helped make *Yale Medicine* a better publication during the last four years, but Robert Feldman, B.A. '60, J.D. '63, is the one who made it possible.

In the spring of 1994, he returned to Yale to oversee the medical school's development, alumni affairs and public information activities. During the months that followed, Bob made it a priority to nurture the *Alumni Bulletin of the School of Medicine* into a lively and varied school magazine, while still making it a better alumni publication through expanded class notes, coverage of alumni activities, and as a forum for alumni communication.

This spring he left New Haven to become associate vice chancellor of Vanderbilt University in Nashville. It's hard to imagine him trading Mory's for the Grand Ole Opry but then again you don't have to. Not only does he remain tried-and-true Yale blue, but, without doubt, he'll take to Tennessee and it will take to him. We wish him good luck and good cheer.

Michael Fitzsousa

Yale spins off five biotech firms

Until a decade ago, Yale's participation in technology transfer, the movement of basic science advances into the commercial marketplace, was negligible. That has changed dramatically (*Yale Medicine*, Fall 1997), and the change delights budget makers, among others. Two years ago, Yale's annual income from royalties and licenses for University-developed projects had grown to $3 million. Yale expects those earnings to soar phenomenally, reaching $38 million for the fiscal year that ended June 30 and placing it among a handful of the universities leading in annual royalty and licensing income. More than three-quarters of the income has come from royalties from the AIDS medication Zerit, developed at Yale. A Yale-developed Lyme disease vaccine is expected to boost royalty income further in the coming years.

There's more good news. The Office of Cooperative Research has announced the formation of five new biotechnology companies based on spin-off technologies from School of Medicine research. Each of the new ventures plans to establish research and development facilities in the New Haven area, creating an anticipated 70 or more new jobs in their first year of operations.

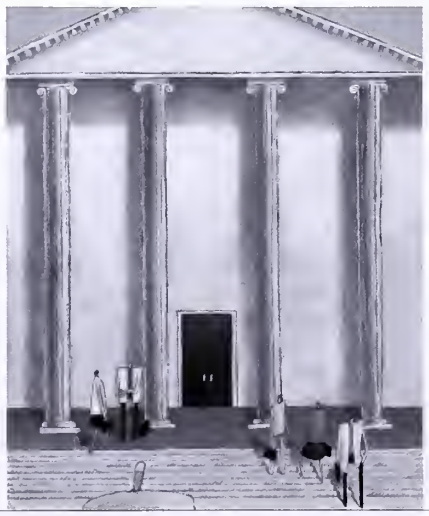
"Yale is taking a more active role in forming new ventures in an effort to make sure the New Haven area reaps economic benefits from the University's research." says Gregory E. Gardiner, Ph.D., director of the Office of Cooperative Research. "Aside from creating new jobs, the five companies are developing drugs and diagnostic techniques that have the potential to significantly benefit human health throughout the world."

The five new companies formed in partnership with Yale are:

- Molecular Staging Inc., which is generating DNA amplification techniques useful for detecting, characterizing and assessing the severity, or stage, of disease. MSI will focus on developing new and more powerful technologies for diagnosing cancer and infectious diseases.
- polyGenomics Inc., which is developing methods for analyzing population genetics to discover new genes using many of the same techniques employed by Molecular Staging. This could help researchers find the causes of complex diseases that involve defects in a number of genes, including psychiatric disorders such as panic disorders and schizophrenia and hypertension-associated kidney failure.
- Transmolecular Sciences Inc., which is relocating to New Haven from the University of Alabama at Birmingham. The company is studying neurotransmitters involved in chronic pain as targets for developing powerful non-narcotic analgesic agents. The firm is also focusing on the diagnosis, imaging and treatment of malignant brain tumors.
- L2 Diagnostics, which was established with School of Medicine investment funds as a spin-off from its own Lyme/Lupus Diagnostics Laboratory. The new diagnostic methods developed by the laboratory will help distinguish patients infected with Lyme disease from those who have been vaccinated. In May, an FDA advisory panel recommended approval of a Yale-developed vaccine.
- Cellular Genomics, which will explore ways in which changing patterns of gene expression affect how a cell looks and behaves. By focusing in on cells of the immune system, the company hopes to find new ways to treat autoimmune diseases such as juvenile-onset diabetes and multiple sclerosis, and to prevent transplant rejection.

Formation of the new companies exceeds the University's goals of spinning off three to four biotech companies each year, according to Jon Soderstrom, Ph.D., associate director of the Office of Cooperative Research.

According to results of a poll released in April, biomedical research and biotechnology industry have the strong support of the vast majority of Connecticut residents. Most would even be willing to pay a surcharge on various health services or increased taxes if the money went to biomedical research. The survey was commissioned by the national biomedical research-advocacy organization Research!America and released by Connecticut United for Research Excellence, Inc. (CURE), coalition supporting biomedical research and education. Among its findings, the poll indicated that 80 percent of the respondents said they are more likely to think a hospital is "good" if they know it is engaged in research and training of medical students and residents.



Budget, space concerns addressed in school's strategic facilities plan

MORGAN KAOLIAN/AEROPIX

MICHAEL MARSLAND

The need for additional research space has been a long-standing concern at the medical school, and faculty, administration and staff are looking forward to a proposed expansion of laboratory facilities. "This is about more than bricks and mortar," says Dean David Kessler, right. "It's about people and ideas, and the creation of an environment for research."

When David A. Kessler, M.D., began speaking with faculty and top administrators in early 1997 before coming to the School of Medicine as dean, he found two issues on everyone's mind: a mounting budget deficit and a critical shortage of space that threatened the school's ability to recruit and retain the best faculty and students. Both problems demanded immediate attention, and, as the new dean soon learned, they were intricately linked.

"Depending on how you calculate, the school had a deficit of $23 million or more for the 1997-98 budget year," Dr. Kessler said in an interview in late June. Flaws in the school's computerized billing system, combined with lower revenues from managed care, had contributed to the deficit. The lack of laboratory space had been recognized since at least 1989, when then-Dean Leon E. Rosenberg, M.D., formed a committee to address the issue, but plans for a new building stalled in the mid-1990s. A second committee, chaired by faculty members Carolyn W. Slayman, Ph.D., and Arthur E. Broadus, M.D., was formed to consider educational and programmatic goals in greater detail before new construction was proposed.

Dean Kessler, with the participation of the school's leadership, set about the task of crafting solutions to both problems, spending much of his first year at Yale quietly analyzing the circumstances that produced them. The result of that process was apparent in two state-of-the-school presentations in late spring and early summer. In a series of meetings with department chairs, senior faculty, administrators and, ultimately, the Yale Corporation, the dean released a detailed account of the school's finances and presented a plan to balance the budget by Jan. 1, 1999, six months earlier than he promised when he took office. Then in June, Dr. Kessler proposed a strategic facilities plan to meet a large portion of the school's space needs. After reviewing the draft proposal at its June 19 meeting, the Yale Corporation approved funds to begin the formal planning process for renovations and new construction.

The centerpiece of the plan is a proposed building at the corner of Congress Avenue and Cedar Street that would provide 139,000 square feet of laboratory space for disease-oriented research. The $160 million complex, one of the largest building projects ever undertaken at Yale, also would house a Magnetic Resonance Center to enable expansion of Yale's cutting-edge capability in imaging, which is driving advanced research in nearly every discipline. Also included is space for offices, animal care, laboratory support and a teaching facility to replace the school's overcrowded and outmoded gross anatomy laboratory in Sterling Hall of Medicine. State-of-the-art teaching laboratories and classroom space are also part of the new construction, which would total 201,000 net square feet.

Still in the earliest stages of development, the plan will require the approval of city planning agencies and in-depth discussion by the medical school, the University and their New Haven partners, including the mayor, Board of Aldermen and the Hill Development Corporation. Once planning is complete, the school will return to the Yale Corporation for approval of construction funding. The project is only possible, Dean Kessler said, if the school secures significant funds from philanthropic sources. A portion of that total already has been committed by foundations and private donors.

According to Dr. Kessler, balancing the budget was and will remain the key to University support. "Getting our fiscal house in order was the first step toward gaining the backing of the Corporation. They asked some hard questions and thanks to the chairs, the deputy deans, the faculty and the administration, we were well-prepared," Dean Kessler said. "The key to this is living up to our responsibility."

Balancing the budget has been an across-the-board effort, with strategic cuts in the coming year's expenses

"More than ever this is an opportunity for us to ensure that Yale creates the environment for collaboration between basic and clinical scientists around disease-oriented research."

Ralph I. Horwitz, M.D.
Chair of Internal Medicine

made by the departments, administrative offices and the Yale Psychiatric Institute, one of the clinical entities hardest hit by managed health care. "It required the entire school coming together," Dr. Kessler said. "The chairs did it, the senior leadership in the faculty did it, and it wasn't without hardship. It took real sacrifice."

Driving the strategic facilities plan is a concise statement of four academic goals for the coming decade that places increased emphasis on the clinical enterprise. The goals are to strengthen disease-related research in the clinical departments, to sustain the high quality of basic science research, to promote research in epidemiology and public health, and to upgrade core facilities needed for biomedical research throughout the University. The plan also calls for capital spending for renovations of $50 million a year for the next 10 years and outlines a process for upgrading and filling in space vacated by the laboratories that would move to the new building. That "backfill" plan ultimately will group together researchers from various departments who share scientific and clinical interests. Renovation of the Laboratory of Epidemiology and Public Health will also continue. Other important priorities include upgrading the space of the Yale Cancer Center in cooperation with Yale-New Haven Hospital, making improvements to the Yale Physicians Building, and expanding the space available for clinical neurosciences.

The Department of Internal Medicine, which faces perhaps the most severe shortage of space, would benefit significantly from the new building, which would house programs in eight areas, according to the facilities plan. However, the building is not envisioned as a departmental structure, Dr. Kessler said, but rather as one organized around program goals, similar to the Boyer Center for Molecular Medicine, which was completed in 1991.

"More than ever this is an opportunity for us to ensure that Yale creates the environment for collaboration between basic and clinical scientists around disease-oriented research," said Ralph I. Horwitz, M.D., chair of Internal Medicine. "It will enable the school to remain at the forefront, and to recruit and retain the world-class physician-scientists needed to pursue this research."

According to Sally E. Shaywitz, M.D., a leading brain researcher and pediatrician who specializes in the study of dyslexia, the Congress Avenue Building's proposed magnetic resonance facility would effectively double the medical school's current capacity to image brain activity. "It means we can enter the next century," said Dr. Shaywitz, who in 1995 with her colleague and husband Bennett A. Shaywitz, M.D., produced the first evidence of gender differences in brain activity. "It means we can do the kind of work that will allow us to understand better how people think and learn and read—and to learn why some very bright people have difficulty learning to read."

Robert H. Gifford, M.D., HS '67, deputy dean for education, said that the teaching component of the proposed building "will make a huge difference for students, in particular during the first two years of medical school." The school's current anatomy laboratory, built in the 1930s to accommodate a class of 50, has been stretched past capacity for decades and now, and is currently used by 130 medical and physician associate students. "We will have an anatomy lab that is state-of-the-art, rather than one of the oldest in the nation." The new building would also consolidate other student teaching facilities now scattered across the campus.

For Dr. Kessler, who would like the see the new building completed in four years, the strategic facilities plan is about "more than bricks and mortar. It is not about a building. It's about people and ideas, and the creation of an environment for research," he said. "By having the clear sense of focus on disease, I think we will see real advances that impact both individuals and the health of the public. Our goal is to advance the scientific basis of the practice of medicine."

He recalled talking about the plan with W. Maxwell Cowan, M.D., Ph.D., vice president and chief scientific officer of the Howard Hughes Medical Institute, when Dr. Cowan visited Yale recently. "We took a walk and I showed him the site where we envision all this happening. I told him it was an ambitious plan, and not without difficulty," Dr. Kessler said. "Max turned to me and said, 'David, this may well be the best investment Yale will ever make.' "

Lab testing may allow earlier cancer diagnosis

If promising research at the Yale Cancer Center is proven effective, a simple blood or tissue test may be able to provide earlier diagnosis of breast cancer than is now possible with mammograms. To pursue this new technology, the Cancer Center last fall established a new specialized laboratory with $500,000 in seed money provided by Los Angeles philanthropist Marcia Israel.

Investigators are developing new tests capable of detecting very small clusters of cells before they become visible on a mammogram. New technologies already make it possible to determine mutations in single cells as well as in genetic material extracted from a very small number of cells. The biological materials obtained through such methods as fine needle aspiration can then be analyzed with great sensitivity and specificity for the genetic alterations that are the hallmark of cancerous cells. New technologies also make it possible to look for mutated cancer molecules in the blood of patients.

"Researchers at the Yale Cancer Center have hopes not only of improving the detection of small cancers, but also of being able to identify women whose breast tissue is about to become cancerous," said Jose Costa, M.D., the Cancer Center deputy director under whose supervision the new laboratory falls. "These are the patients on whom we will ultimately want to test new cancer-preventing therapies."

Worry about Lyme disease may be worse than the illness

Lyme disease was first identified and named by researchers at Yale more than a decade ago. Now, Yale investigators have shown that fear of Lyme disease may in some cases cause more problems than the disease itself. According to a study published in the *Annals of Internal Medicine* in March, anxiety about possibly getting Lyme disease following a deer tick bite can result in over-treatment by doctors and is associated with a high incidence of depression and stress among patients. That worry is often unfounded and may result in harm, especially from overuse of antibiotics.

Lyme disease is caused by bacteria spread through extended feeding on human blood by the tiny deer tick. The tick must be embedded in the flesh for at least 24 hours to spread the bacteria into the host. In the vast majority of cases, an infected bite will cause a bull's eye rash. Lyme disease can cause flu-like symptoms, swelling of the knees and, in very unusual cases, arthritis, facial paralysis and neurological disorders. A single course of antibiotics usually eradicates the disease and even later-stage manifestations normally respond to antibiotic therapy.

According to the Yale study, however, many patients don't believe it, or believe they have the disease when they do not. Out of 209 patients evaluated for this infectious disorder, 60 percent turned out not to have Lyme disease at all. Yet they still made an average of seven visits to the doctor, had four blood tests and underwent 42 days of antibiotic treatment.

High levels of depression (42 percent) and stress (45 percent) were present in those who turned out not to have the disease and more than half reported adverse drug reactions after taking antibiotics. Assistant professor of medicine M. Carrington Reid, M.D., who co-authored the study with clinical professor of medicine Robert T. Schoen, M.D., says, "We're not helping these patients if we simply give them a label of Lyme disease." The study points to the need for better information for patients and physicians about Lyme disease.

Bringing public health education to a changing China

The explosive growth of the economy of the People's Republic of China brings with it many benefits—and a set of daunting new public health challenges. Already closely allied with efforts to improve public health education in China, Yale faculty and student efforts will expand significantly as a result of a five-year, $400,000 grant from The Procter & Gamble Co. The funds will support a collaboration between the Department of Epidemiology and Public Health and Beijing's 10-year-old Union School of Public Health, the nation's first graduate-level public health training program. The main focus of the collaboration will be on strengthening the Union School curriculum in public health law, health economics, environmental health, smoking control and other areas. The grant will also fund summer internships in China for Yale students in public health.

Those students will face a broad range of problems. "Fundamental political and economic changes," says Michael H. Merson, M.D., dean of public health and director of the Yale-Union collaboration, "are presenting China with not only many health risks associated with developing nations—such as infectious and parasitic diseases—but also rising rates of diseases associated with lifestyle changes, including cancer, heart disease and sexually transmitted diseases such as AIDS. In addition, 70 percent of adult men in China smoke, creating a huge need for anti-smoking campaigns organized by public health workers."

Yale first collaborated with Union School in 1996 when University faculty helped develop a public health law curriculum. Part of the new collaboration will involve refining that curriculum and disseminating it to faculties at some 30 other public health schools in China. Procter & Gamble's chairman and chief executive officer, John E. Pepper, is a member of the Yale Corporation, the governing board of the University.

Discovery of how a brain tumor travels may pave way to treatment

Yale researchers have discovered a molecule that speeds the growth and spread of a form of brain cancer that afflicts some 20,000 Americans annually and proves lethal in half of the cases within 18 months. Glioma, as the form of cancerous brain tumors is termed, is particularly resistant to standard treatments such as surgery because its cells zoom through normal brain tissue to other sites where new tumors can grow rapidly. According to a study directed by neurobiologist Susan Hockfield, Ph.D., gliomas move through healthy brain tissue with the help of a tumor-specific protein, which acts like a set of wheels on the cancer cells. The researchers hope that a therapy that blocks the function of the protein molecule, called brain-enriched hyaluronan binding protein (BEHAB), or reduces a tumor cell's ability to generate it, may slow tumor progression.

Dr. Hockfeld's study, which was published in the April 1 issue of *The Journal of Neuroscience*, provides the first clear understanding of how glioma cells invade healthy brain tissue. The work also resulted in a new animal model for the disease that can be used to evaluate future therapies. "One approach to controlling the cancer," says Dr. Hockfield, the new dean of the Graduate School of Arts and Sciences, "would be to block the glioma cells' ability to travel, without harming healthy cells." She notes that BEHAB may prove a prime candidate for this type of therapy because it exists in glioma tumors but not in other kinds of brain tumors or tissue in the body.

SUSAN HOCKFIELD

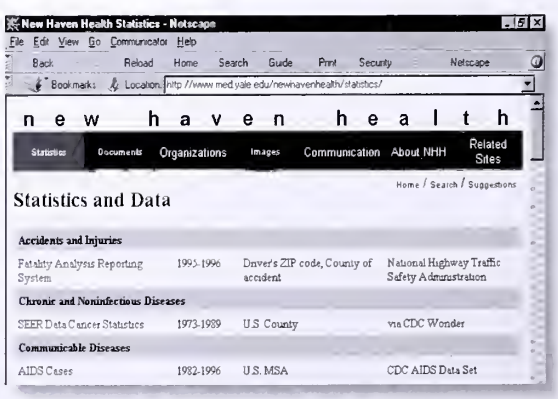
When a fragment of BEHAB protein is expressed in experimental brain tumors (dark mass at upper right), the tumors show a marked increase in their ability to invade the neighboring normal brain tissue (lighter region). The clusters of dark tumor cells are found scattered throughout the normal tissue shortly after they are grafted into the host brain. When the BEHAB protein is not expressed in these tumor cells, they do not invade the normal tissue.

Wider use of medication could prevent many strokes

An irregular heartbeat, or atrial fibrillation, affects some 2.5 million Americans. Clot formation associated with atrial fibrillation is believed to be a contributing factor in about 15 percent of the 740,000 strokes that occur each year in the United States, yet very few of the people who would benefit from a medication to treat atrial fibrillation receive it. According to a study directed by Lawrence M. Brass, M.D., professor of neurology and chief of the neurology service at the VA Connecticut Healthcare System in West Haven, only 38 percent of patients who had atrial fibrillation received warfarin, a blood thinner used to reduce the tendency for blood to form clots. Researchers believe that if more patients took warfarin, tens of thousands of strokes could be prevented, saving thousands of lives each year. "We have a medication that has been shown to be highly effective," says Dr. Brass, "but we have found that the medical community is not getting this therapy to all of the patients who need it." The results of the study appeared in the December issue of *Stroke* and are part of the ongoing efforts to enhance clinical practice in the Center for Outcomes Research and Evaluation at Yale-New Haven Hospital, Dr. Brass says.

A web of New Haven health information

Already an important tool for public health investigators, the World Wide Web now offers a new site for one-stop local research in the field: New Haven Health. The Cushing/Whitney Medical Library received a grant from the National Library of Medicine this past winter "to create a publicly accessible Web site that will function as a central repository for information about public health in the greater New Haven area. The Web site includes vital and health statistics, current and historical public health documents, community organization listings, aids in the search for related non-digital holdings, and historical images. Browsers will find links to related sites and a listserv for the discussion of public health research. Go to <http://www.med.yale.edu/newhavenhealth/>.



Yale physicians link up with Everest expedition

In May, several dozen seasoned climbers set their sites on Everest, the world's highest mountain. As one group labored up the treacherous and often deadly slopes, Yale physicians made medical history in an experiment linking the remote expedition to the clinical resources of a medical center 8,000 miles away.

Vincent Grasso, M.D., a postdoctoral associate in the Department of Surgery, directed care at Everest as colleagues in New Haven monitored the climbers' adjustment to high altitude and thin air. Vest-like biopacks transmitted vital data from the slopes of the 29,028-foot mountain to the base camp at 17,000 feet, relaying the information to Yale by satellite phone and the Internet. A video connection allowed the two groups of physicians to talk face to face as, for example, Dr. Grasso examined a sherpa guide who was experiencing abdominal pain. Taking full advantage of the technology, images from a portable ultrasound unit were transmitted simultaneously allowing Dr. Grasso and the New Haven-based team to rule out major illness.

"This exercise will allow us to get a better understanding of changes in people's bodies as they are going through altitude changes. Hopefully we will begin recognizing predictive patterns," says Peter B. Angood, M.D., assistant professor of surgery and New Haven-based medical director for the expedition. Dr. Angood and other Yale researchers participated in daily videoconferences with the expedition team and scientists at the MIT Media Lab, the U.S. Army, NASA and AT&T. In addition to testing the biopacks, the climbers have installed meteorological devices to transmit weather reports from Everest's slopes and global positioning equipment to measure the mountain's subtle shifts in elevation.

Dr. Ronald Merrell, chairman of surgery and director of the Yale Commercial Space Center, and Dr. Richard Satava, professor of surgery and a leading expert in telemedicine, initiated the Everest expedition's medical experiments.

DEPARTMENT OF SURGERY

Right: **Vincent Grasso and climbing sherpa Ang Sherring talk to physicians at Yale from the base camp at Mt. Everest.**

JOHN CURTIS

Above: **The New Haven team, led by Peter Angood, second from left, listen and watch from a medical school conference room. For detailed maps, photographs and reports from the expedition see <http://yalesurgery.med.yale.edu/CSC/everest.htm> and <http://everest.mountainzone.com/98/> on the World Wide Web.**

"Tobacco Wars" began with a simple question: Why not?

On a Wednesday evening in early April, David Kessler is telling the story of *The Tobacco Wars* to a room full of about 50 people. The account is equal parts public health analysis, investigative journalism and detective story, with a few elements that are decidedly cloak-and-dagger: an informant code-named Cigarette, industry documents leaked in a plain white envelope, and painstaking searches through patents and customs declarations.

The opening chapter takes place in Washington, where as Food and Drug Administration commissioner in 1991, Dr. Kessler asked his staff why the FDA did not regulate tobacco. After all, it was clearly an addictive substance responsible for as many as 400,000 deaths a year in the United States alone. Why not try to prevent illness and death? Because 90 percent of smokers started in their teens, he also saw it as a pediatric health concern. Why not try to prevent young people from starting? The answer was direct, he recalls. " 'Because that's one industry you can't take on. It's too powerful.' "

Seven years later, the conventional wisdom has changed. The tobacco companies have offered to pay $368.5 billion to settle a series of class-action lawsuits (a deal that subsequently fell apart as Congress sought a higher amount and curbs on immunity from future litigation). Dr. Kessler has left Washington to become dean of the School of Medicine, remaining vocal on the issue and advocating, along with former surgeon general C. Everett Koop, for a tough settlement.

Tonight, Dr. Kessler talks about the tobacco wars as a faculty member engaging a class. "How do you look at the problem?" he asks the audience at the Slifka Center for Jewish Life at Yale. "What do you have to show?" From a regulatory standpoint, the problem was to define tobacco as a drug and place it under FDA jurisdiction. What stymied regulators was the definition of a drug as an article other than food that is intended to affect the function or structure of the body.

"It took us two years to think through the question of how to approach that definition. What we concluded, and it was a subtle difference that made all the difference in the world, was that the article was the nicotine," Dr. Kessler says, noting that one of the definition's key words is *intended*. "The physiological effects of nicotine on the central nervous system certainly are sufficient to affect the structure and function of the body. You have to show intent, the manufacturer's intent. How do you go about doing that?"

The search began with industry patents to develop nicotine substitutes and add nicotine to wrappings and filters. Although the industry officials insisted they were not manipulating nicotine, a study of low-tar cigarettes suggested otherwise. The industry said that nicotine was linked to tar. If tar levels were high, nicotine levels would be high, the industry claimed. But the FDA found that one maker's ultralight cigarettes, for example, had more nicotine than the same brand's regular cigarettes. "I would argue that can't happen without some degree of manipulation," Dr. Kessler says.

But a theory is not proof. An important bit of evidence came from a surprising source, a tobacco lobbyist bragging at a Washington reception that the FDA was looking in the wrong places. "What he said was, 'It all begins in the fields,' " Dr. Kessler says. "What he didn't realize was that the person standing next to him would call us the next day."

That information and another tip led the FDA to foreign patents and to Brazil, where an American company was developing genetically engineered tobacco with twice the normal concentration of nicotine. The industry claimed the new tobacco was simply a blending device.

Attention deficit study finds no evidence of overdiagnosis

The number of children being diagnosed and treated for attention deficit/hyperactivity disorder (ADHD) has risen sharply in recent years, and parents and child-health advocates have raised concerns about possible overdiagnosis of the disorder. The Council on Scientific Affairs of the American Medical Association reviewed studies in the field over more than the last two decades and concluded that those worries are unfounded. The council's chair-elect, Myron Genel, M.D., professor of pediatrics and associate dean of government and community affairs at the School of Medicine, says, "The preponderance of evidence is that ADHD is not diagnosed lightly. ADHD is one of the best studied and characterized disorders."

For the council's report, which appeared in the April 8 issue of *The Journal of the American Medical Association* (*JAMA*), studies published from 1975 through March 1997 were reviewed and analyzed. The council found little evidence of widespread overdiagnosis or misdiagnosis of ADHD, or of widespread overprescription of Ritalin, the most commonly prescribed drug for treatment of ADHD.

The council concluded: "Epidemiologic studies using standardized diagnostic criteria suggest that 3 percent to 6 percent of the school-aged population may have

JOHN CURTIS

David Kessler answers questions after speaking at the Slifka Center in April.

"The strongest evidence was yet to come and it focused on industry knowledge of tobacco products," Dr. Kessler says. Documents from the 1960s proved that tobacco officials knew nicotine was addictive. Others from the 1970s proved the tobacco industry was marketing to young people. "Realistically," reads an industry memo, "if our company is to survive and prosper over the long term we must get our share of the youth market."

In 1996, the FDA declared nicotine a drug and placed restrictions on tobacco ads and sales. A year later, the industry struck a deal with 41 state attorneys general who were suing to recover smoking-related health care costs. The industry would agree to pay $368.5 billion over 25 years to settle the claims, but would be immune from future class-action suits. Dr. Kessler and Dr. Koop, a visiting professor of public health at Yale last year, called that deal too weak. Sen. John McCain, an Arizona Republican who chairs the Senate Commerce Committee, proposed tougher restrictions including a $1.10-per-pack price hike to be phased in over five years; a $516 billion payment from the industry; no ban on lawsuits; and additional penalties if companies failed to reduce youth smoking. That proposal, approved by the commerce committee in a 19-1 vote, led the tobacco industry to walk out on the previous settlement.

Dr. Kessler learned of the walkout a few hours before giving his talk at the Slifka Center. "Congress," he tells the audience, "does not have to ask the industry for permission to act." Congressional efforts to craft some type of settlement fell apart, however, leaving states to negotiate individually with the tobacco industry.

He closes his talk with the recollection of the question that was considered naïve. "Everyone at that time said it was a fool's errand," Dr. Kessler says. Tonight, this once-invincible industry is on the defense, hard-pressed even to find candidates who will accept its campaign contributions. In Dr. Kessler's eyes, it was persistence and preparation—as well as imagination—that made the difference. "Sometimes, just sometimes," he says, "you can take on the impossible."

ADHD. The percentage of U.S. youth being treated for ADHD is at most at the lower end of this prevalence range."

A brain structure that keeps confusion at bay

Animals are constantly gathering signals from the surrounding environment, yet somehow they learn to focus on stimuli important to survival and to ignore, or fail to learn to respond to, other stimuli. Otherwise, a survival-threatening confusion could result. A team of investigators, including Yale neuroscientist Jeansok J. Kim, Ph.D., has found a neurological explanation for this phenomenon called blocking, and has identified the brain structure involved in the blocking process. Dr. Kim and colleagues found that when they chemically severed a brain structure called the inferior olive in rabbits, blocking disappeared and the animals responded to redundant and irrelevant stimuli.

"In order to adapt to its environment," says Dr. Kim, an assistant professor of psychology, "an animal must respond selectively to stimuli that reliably predict biologically significant events, such as food availability. In the interest of efficiency and simplicity, animals must avoid forming associations with other stimuli that provide no new information. Blocking appears to circumvent such redundant learning." The study appeared in the journal *Science.*

New Haven's mayor visits medical school

New Haven and Yale University have never had better relations, Mayor John DeStefano told students and faculty during a visit to the medical school March 5. "The University and the city understand their need to grow together," he said at a Medical School Council lunch in the Beaumont Room. "I feel better about understanding each other and supporting each other than I have in my lifetime."

Noting that the largest taxpayers and employers in two neighboring communities are a pharmaceutical company and a medical research company, he cited the importance of the medical school to the region's and the city's economy. "I think that finding a way to grow the medical school towards the central campus of Yale is a good idea."

John DeStefano

Mr. DeStefano said he has plans for developing downtown New Haven and Long Wharf. "I think you're going to see the growth south of Howard Avenue towards Church Street South and the train station," he said. He is also trying to improve transportation by promoting ferry service to Long Island, a fast rail link to New York City and an expanded runway at Tweed-New Haven Airport.

A lack of space, an unwarranted image as crime-ridden, and a disproportionate share of social ills such as poverty have hobbled development in New Haven, he said. Since the 1950s the city has lost residents and businesses to the suburbs. Restrictive zoning laws and the lack of affordable housing in the suburbs and a higher proportion of multi-family dwellings in the city lead to a larger concentration of poor people in the city, he said. Median income, which in 1950 was about the same in the city and its suburbs, has shifted. For every dollar of income in neighboring towns, New Haven has 67 cents. "The fact of

Using art to sharpen observational skills

Medical education took an artistic turn for a group of Yale students this past spring. Professor Irwin M. Braverman, M.D. '55, and museum curator Linda Friedlaender combined their expertise to produce a tutorial using works of art to sharpen the observational skills of aspiring physicians.

In a collaboration between the medical school and the Yale Center for British Art, 56 medical students spent time looking at selected paintings, described them for the group and made thoughtful judgments about what was being communicated visually. Students were assigned a painting and given time to observe and study it—"like a rash that has been framed," says Dr. Braverman, a dermatologist.

The goal of the exercise is to produce more careful observers by training students to decode an object's meaning and to extract useful information. Physicians with superior observational skills ask the questions necessary to diagnose illness without relying excessively on tests, says Dr. Braverman, adding, "Doctors have to be taught to pick up on details that are often overlooked."

MICHAEL MARSLAND

Linda Friedlaender and Irwin Braverman developed a tutorial that uses paintings at the Yale Center for British Art to train students to notice clinical details that are often overlooked. "In the old days, before the advent of modern medical imaging technology, doctors had to rely on the connection between the eyes and the brain," Braverman says. "I hope this tutorial can restore some of those skills."

He came upon the idea last November while thinking of ways to teach his dermatology residents to notice more in the clinic. He discussed the idea with Mrs. Friedlaender, curator of education at the Yale Center for British Art, who had been thinking about the same kind of observational exercise for residents in the Department of Orthopaedics and Rehabilitation, chaired by her husband, Gary E. Friedlaender, M.D.

The students who participated in the tutorial found it to be a significant step in their training. "Like very detailed paintings, the human body is complex," says Leo Kim, a first-year student. "Learning to look at, and really see, all the details of a painting helps in diagnosing patients."

housing segregation and the racial and economic isolation that flows out of that is a real challenge," he said.

On top of its economic woes, the city is unfairly portrayed as a place of crime and that keeps people away, he said. He said that in 1994, Bridgeport had 54 murders, nine of which made the front page of the newspapers. Hartford had 61 murders, with seven making the front page. All but one of New Haven's 34 murders that year were front-page news. "New Haven is the murder capital of the state not because we had the most murders," Mr. DeStefano said, "but because we did the best job of publicizing them."

Since 1990 crime has dropped by nearly 40 percent, Mayor DeStefano said, noting that in early 1998 the city's murder rate was the lowest in generations. "Real growth will occur when we move past perceptions and ignorance," he said.

Child Study Center aids Arkansas town after shootings

The day after four girls and a teacher were shot to death at a middle school in Arkansas, Yale psychologist Steven Marans, Ph.D., was on a plane.

Two boys, ages 11 and 13, were accused of setting off a fire alarm on March 25, then ambushing schoolmates as they ran from the building. As the small city of Jonesboro tried to make sense of the incident, one of nearly a dozen violent outbursts in schools around the nation this past school year, Dr. Marans was summoned as an observer and consultant.

The reason was Yale's Child Development-Community Policing Program, a unique collaboration between mental health professionals at the Child Study Center and New Haven's police department. The CDCP Program, which provides counseling and other support to children who have witnessed violence, has been replicated in four U.S. cities with funding from the U.S. Department of Justice.

"The partnership between mental health and law enforcement in New Haven has given us a unique opportunity to think about violence from many perspectives," says Dr. Marans, who helped launch the program in 1991 with center Director Donald J. Cohen, M.D. '66, and city police leaders. "We have gained an awful lot of experience over the last seven years."

During his two days in Jonesboro, Dr. Marans talked with counselors, parents, teachers and students and attended a meeting of about 500 students and parents. "They have a very arduous task at hand, which is to mourn the loss of life and to mourn their loss of friends and children," says Dr. Marans, the Harris Assistant Professor of Child Psychoanalysis. Those who saw the shootings or lost friends may experience depression, eating and sleeping disorders, a sense of disbelief, psychological numbing and a degree of fearfulness. Children may be more clinging and dependent and needy than they are typically.

The town of 50,000 people is left to wonder why two children would set out to kill other children. "Having the easy availability of guns and inadequate supervision has been a potent and lethal combination. But every human being has anger and feelings of rage at times and longings for attention. Those feelings that are common to all of us do not typically find expression in murdering one another," says Dr. Marans. "We know this behavior is not typical in the majority of children, and our children need to know that as well."

FRANK POOLE

Steven Marans

Exercise science soars on human powered wings

As a physiologist, Ethan Nadel, Ph.D., knows a great deal about what happens to the body during exertion and the causes of fatigue. Even he didn't know just what to expect, however, when he helped to plan a world-record, human-powered flight. In his March 27 lecture, Dr. Nadel, professor of cellular and molecular physiology and of epidemiology and director of the Yale-affiliated John B. Pierce Laboratory, described the challenges planners faced when preparing the pilot 10 years ago for Project Daedalus, a modern day reenactment of the mythical Greek inventor Daedulus' 74-mile passage between the Greek islands of Crete and Santorini. Dr. Nadel selected the pilot team and developed a drink to prevent dehydration and boost the pilot's energy supply during the grueling but ultimately successful flight. His talk inaugurated a new series of campus lectures, along with a new summer research internship program for seven Yale College students, sponsored by Gatorade Inc.

Cardiologists combine to form statewide network

In today's managed care world, consolidation of health care delivery services is the order of the day, including the practices of Yale faculty members. The Yale Cardiology Network, a faculty-practice organization, has merged with CardioNet of Connecticut, LLC, a community-practice group, to form a statewide heart-care network. Its more than 90 university- and community-based physicians, cardiologists and cardiac surgeons also serve parts of Rhode Island and New York. The network, the first of its kind in Connecticut, will operate under the name of the Yale Cardiology Network and will be headed by an executive committee chaired by Barry Zaret, M.D., chief of the section of cardiovascular medicine.

A genetic intervention for children with rare disease

Yale investigators are evaluating a potential therapy for Canavan disease, a rare neurological disorder in children that is usually fatal. Eight children have been cared for at Yale this year as part of a clinical trial to test the safety of the treatment, which uses gene therapy techniques to replace a critical enzyme in the brain.

Children with Canavan disease cannot hold their heads up, have trouble eating and may suffer seizures. Few live past the age of 10. The genetic disease strikes children of all ethnic groups, occurring most frequently among Ashkenazi Jews.

According to Margretta R. Seashore, M.D., the principal investigator in the study, the current phase of the trial will assess its safety. Yale's Human Investigation Committee and its Biosafety Committee are also monitoring the study. A ninth child is undergoing the therapy at Thomas Jefferson University Hospital in Philadelphia. If the procedure proves safe, the FDA may allow researchers to add six more children to the trial.

Although the Phase I trial is focused on the safety of the procedure, researchers are watching for signs of improvement in the children. "It's really too early to know whether we've got some encouraging signs of therapeutic effect," said Maurice J. Mahoney, M.D., a member of the Human Investigation Committee. The only reported side effect among the children has been a high fever that is typical of gene therapies and easily treated, said Dr. Seashore, professor of genetics and pediatrics.

Treatment starts with the insertion of a 2-inch-wide rubber reservoir under the scalp. A slender catheter carries the gene to synthesize aspartoacylase (ASPA), an enzyme missing in Canavan disease, into the ventricle of the brain. Although researchers are still trying to understand the exact mechanism, without ASPA a chemical called N-acetylaspartic acid builds up and myelin, the "white matter" that protects nerves and allows messages to be transmitted to and from the brain, becomes deficient. Researchers hope their therapy will stimulate the brain to produce ASPA and slow down or reverse the progress of the disease.

Parents recognize that the therapy is experimental and may not help their children. "There will either be a benefit or there will be nothing," said Howard Gluckman of Johannesburg, South Africa, who calls his son, Asher, 9, the granddaddy of the group. The youngest child in the group is 19 months. "At least they're not in danger from the procedure."

"It's a first step," said Matthew During, M.D., a visiting professor at the medical school who conducted previous gene therapy trials in New Zealand. "It gives us a level of comfort and confidence in moving forward."

Probing the hazards of autobody work

Walk into an autobody shop and you may be greeted by a curious cocktail of chemical fumes. Posted signs keep customers out of work areas, but painters and repairers must stay in that environment for hours each day. Although most shops take safety precautions, research shows that exposure to chemicals in autobody paint can trigger respiratory ailments.

To determine how exposure to a class of chemicals known as isocyanates causes asthma, researchers at Yale's Occupational and Environmental Medicine Program have launched a study of shops in two Connecticut counties. The study, called the Survey of Painters and Repairers in Autobodies by Yale, or SPRAY, is also directed at finding better ways of protecting workers' health.

Workers in autobody shops are exposed to many potentially harmful materials, such as paints and solvents. Paints often contain isocyanates, which are highly reactive chemicals known to induce respiratory symptoms and asthma. According to Mark R. Cullen, M.D., director of the Occupational and Environmental Medicine Program and the study's principal investigator, isocyanates account for the highest number of reported cases of occupational asthma in the United States and other developed countries. Approximately 5 to 10 percent of workers exposed to isocyanates may be affected nationally.

SPRAY, which is funded by a

YNHH PUBLIC RELATIONS

Focus on fitness

The Yale Conference on Women's Health & Fitness in May brought together some of the nation's leading experts on physical activity, menopause, cancer and nutrition to discuss the latest findings for the treatment of women and the diseases that affect their health. Keynote addresses were given by Stephen Blair, director of epidemiology and clinical applications at the Cooper Institute for Aerobics Research in Dallas and author of the surgeon general's report on physical activity; and Rebecca and Ruthann Lobo, co-authors of *Home Team: of Mothers, Daughters & American Champions*. The Lobos spoke about how they handled Rebecca's success on the basketball court and Ruthann's battle with breast cancer. Pictured at a reception at the Yale Sports Medicine Center are (back row, from left) Larry Matthews, Ph.D., conference co-chair; Rebecca and Ruthann Lobo; and (front row, from left) conference co-chairs Ann Cowlin and Peggy DeZinno.

Yale appeals verdict in Dr. Doe case

In December a New Haven jury awarded $12.2 million to a former medical resident who became HIV-positive after an accidental needle stick in 1988. The resident, known in court documents as "Dr. Doe," sued Yale, alleging that inadequate training and supervision caused the accident. The University is appealing the verdict.

Dr. Doe, then 25, was a first-year resident seven weeks into her internship at Yale-New Haven Hospital when she pricked her right thumb while inserting a line into the artery of a patient with AIDS. Dr. Doe said she had tried the procedure only three times before the accident and that the supervising physician, a third-year resident, failed to monitor the procedure properly.

The University is challenging the jury's verdict in two areas. First, its appeal argues that Connecticut law does not recognize such a claim for educational malpractice. It also argues that the University should not be held liable because, as an employee and resident at Yale-New Haven Hospital, Dr. Doe's exclusive remedy is a workers' compensation claim rather than a civil suit. Dr. Doe is already receiving workers' compensation benefits through the hospital. Both sides in the case expect to file briefs this summer and present arguments later this year.

As of December 1996, 52 health care workers around the country had acquired HIV through occupational transmission, 24 of whom developed AIDS, according to the federal Centers for Disease Control and Prevention (CDC) in Atlanta. Another 111 may have acquired HIV on the job, but the source of transmission hasn't been determined in those cases, according to the CDC.

five-year, $2 million grant from the National Institute for Occupational Safety and Health, provides participating autobody shops with free industrial hygiene evaluations. Yale researchers evaluate the working environments in several shops for isocyanate exposure, make recommendations to reduce their exposure to chemicals, and give workers free respiratory health evaluations.

A "natural" tan to beat the sun

With skin cancer rates soaring, dermatologists have been warning people to protect themselves from the sun, but the popularity of tanning means the advice often goes unheeded. Thanks to a new cosmetic tanning lotion developed by Yale senior research scientist John M. Pawelek, Ph.D., tanners will soon be able to get that sun-soaked look without sitting under the sun or in a tanning booth.

Dr. Pawelek's medical research focuses on therapies for melanoma and other forms of skin cancer. While doing basic research with professor of dermatology Jean Bolognia, M.D., on melanocytes, the pigment cells that color skin and provide protection from the sun, he came upon a method for producing a water soluble form of melanin derived from the aloe vera plant. The extract, which is chemically indistinguishable from natural human melanin, immediately changes the skin's color to a natural-looking tanned hue and has skin cancer-protective qualities similar to real melanin.

In an added bonus, it also has remarkable chameleon-like characteristics that cause it to blend its hue to that of the individual's surrounding skin. To Dr. Pawelek's surprise, following early publicity about the product, he has received a flood of inquiries from people who suffer from vitiligo, a skin disorder causing a progressive loss of pigmentation cells that affects 1 percent of the world's population. San-Mar Laboratories Inc., which licensed the discovery from Yale, will be producing cosmetic products containing it for marketing worldwide before year's end "It may prevent many cases of skin cancer," says Dr. Pawelek "and should bring relief to at least some people with vitiligo."

Confronting violence in the home

Domestic violence is rarely thought of as a public health issue, yet it has a massive impact on the health care system, accounting, for instance, for more than a third of all women seeking emergency treatment from U.S. hospitals. Understanding the phenomenon and seeking ways to reduce its incidence were among the topics explored at the third annual Domestic Violence Seminar Series, held this spring by the Department of Epidemiology and Public Health. The series is part of the Pew Urban Health Program, a research and teaching collaboration among students and faculty from the schools of medicine, public health and nursing.

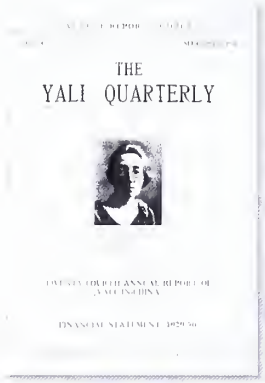
Addressing an audience of Yale and New Haven community members, the three principal speakers focused on different aspects of the issue of domestic violence. Sujata Warrier, Ph.D., director of the New York City Program of the New York State Office for the Prevention of Domestic Violence, spoke about ways to assist victims from a variety of ethnic and social backgrounds. Donna Edward, J.D., executive director of the National Network to End Domestic Violence, discussed new federal legislation aimed at curbing violence against women. Yolanda Haywood, M.D., an associate professor of emergency medicine at George Washington University Medical Center, who treats domestic violence victims, was herself in an abusive relationship. By recounting the struggles she faced in leaving that violent situation, she sought to provide attendees with a clearer understanding of the complex motivations that underlie domestic violence.

Contributors: **Susan Alksnis, Cynthia Atwood, John Curtis, Michael Fitzsousa, Katie Krauss, Helaine Patterson, Karen Peart, Marc Wortman.**

The last barrier

Opening doors to women in medicine required changing many minds and one bathroom.

By Marc Wortman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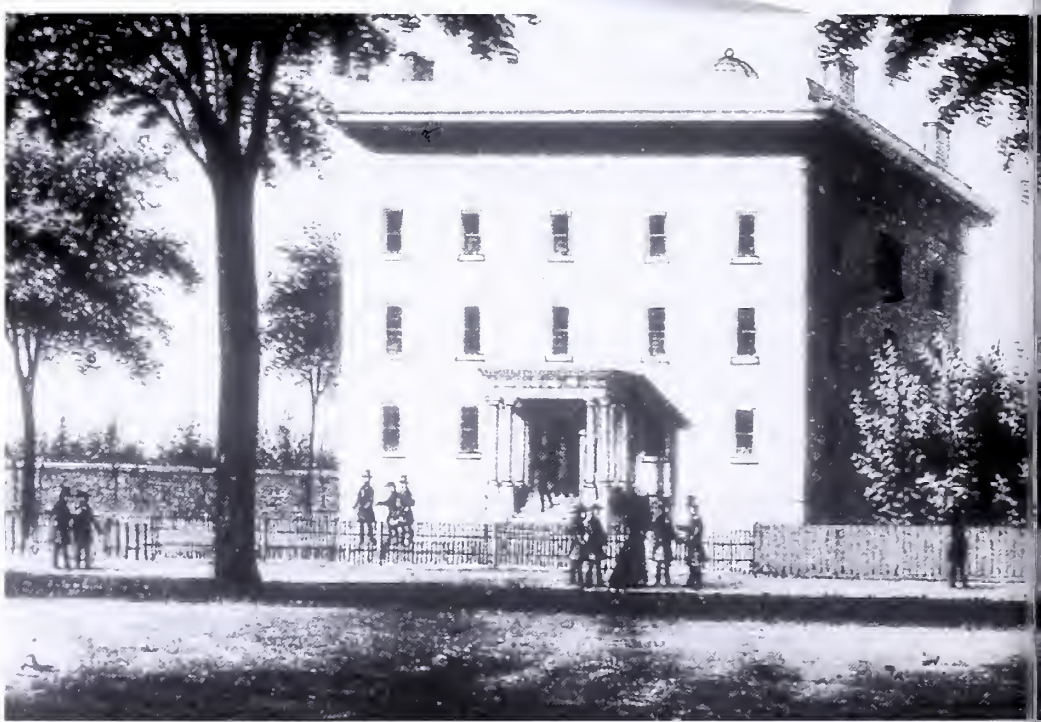


HENRY W. FARNAM

PROFESSOR OF ECONOMICS
YALE UNIVERSITY

43 MILLHOUSE AVENUE
NEW HAVEN, CT

March 31, 1916

President Arthur T. Hadley,
Woodbridge Hall,
Yale University.

My dear Arthur:

Word has reached me informally that the faculty of the Medical School are willing to admit a limited number of women provided they are graduates of a college and provided funds can be raised to put in a suitable lavatory. As the latter condition seems to have been considered a serious one, I write to say that in case the facts are as I understand them I shall be glad to be responsible for meeting the expenses of suitable lavatory arrangements.

Believe me

Yours very sincerely,

Henry W. Farnam

Lack of women's bathrooms at the School of Medicine building at 150 York Street, above, since torn down, would help keep women out until Henry Farnam offered to build one, allowing his daughter and two other women to gain admission in 1916. Mr. Farnam, a Yale economics professor, wrote this letter, top, to Yale president Arthur Hadley offering to provide the funds to build the needed women's bathroom.

After graduating, Dr. Louise Farnam, above left, spent ten years as a medical missionary and practitioner at the Yale-affiliated Yali Hospital in China. When she removed a bad tooth from the mouth of Chinese leader Chiang Kai-shek, she got her picture on the cover of the program's journal. After Louise Farnam and two other women entered in 1916, the next medical school class accepted only one woman, Ella Clay Wakeman, pictured at left with her classmates.

Many factors stymied the arrival of women at the Yale School of Medicine, including societal roles, self-assessment and certainly prejudice among men on the faculty and in the wider University community. By 1916, however, only one thing seemed to stand in the way of women gaining admission: the lack of proper bathroom facilities for women. It would take a father's money and influence and a daughter's determination to overcome that last barrier.

While Johns Hopkins University was founded as a coeducational institution in 1893, most other prestigious Eastern medical schools were slow to welcome female students. According to research on women in medicine that Susan J. Baserga, M.D., Ph.D. '88, pursued as a Yale College undergraduate, Yale would wait nearly a quarter century before admitting women. Harvard held out the longest, until 1945.

By the turn of the century, however, women could study in the Yale Graduate School, and Vassar College graduate Louise Farnam took a Ph.D. in physiological chemistry there in 1916. An exceptional student, she was also intent on studying medicine so that she could travel as a medical missionary to China. "She had incredible fortitude," says Dr. Baserga, herself now an assistant professor of therapeutic radiology and genetics. "She was very religious and was driven by her faith. Fortunately, she also had a philanthropist father." Louise Farnam came from a family with close ties to Yale, going back to the early 1700s and continuing with her father, Henry Farnam. Farnam *père* was a Yale graduate, a professor of economics, a New Haven and Yale benefactor, and a member of the board overseeing New Haven Hospital.

When his eldest daughter announced her intention to study medicine at what, until then, had been an all-male medical school, the medical school informed her that an insurmountable barrier prevented her enrollment. There was no women's bathroom in the school, which was then housed in a building, since torn down, at 150 York Street. Whether the issue of the bathroom was a genuine obstacle to the presence of women in the school—or a last ditch effort to keep them out—isn't clear from the historical record, according to Dr. Baserga.

Marc Wortman is a freelance writer.

Susan J. Baserga

Apparently some behind the scenes wrangling did ensue and in a letter of March 31, 1916, to then-Yale president Arthur Hadley, Professor Farnam, recognizing the matter of the lack of facilities was "considered a serious one," offered to pay for "suitable lavatory arrangements." President Hadley agreed, and, in the next term, Louise Farnam and two other women, Helen May Scoville and Lillian Lydia Nye, became the first women admitted to the School of Medicine. Dr. Farnam graduated in 1920, winning the Campbell Gold Prize for the highest rank in examinations. After further training at Johns Hopkins, she spent the next ten years at the new medical school and hospital established by the Yale-China Association, Yali, in Changsha.

The year following Dr. Farnam's admission to Yale saw only one woman, Ella Clay Wakeman, in the class. Female graduates of the era were well aware of the story behind the school's lone women's bathroom, which was quickly dubbed the *Louise Farnam Memorial.*

Women continued to be admitted to the School of Medicine after those first classes in numbers kept deliberately small by the school. Other than during World War II, until the 1960s no class counted more than 10 percent women among its members. Helen P. Langner, M.D., who graduated in 1922, was the school's oldest alumna when she died last December at age 105 (See *A life of engagement*).

Louise Farnam would be pleased with her legacy. Today, the right of women to enter the School of Medicine without prejudice is beyond challenge. In fact, this year's graduating class was the first ever to arrive at Yale with more women than men among its members. "Physicians like Dr. Farnam and Dr. Langner helped pave the way for many younger women," says Merle Waxman, M.A., associate dean and director of the Office of Women in Medicine. "I think they and their contemporaries took great pride in that."

A *life* of engagement

Helen Langner entered medicine 80 years ago, as the doors of the profession were first opening to women. She made good use of her 1922 Yale degree.

By John Curtis

When Helen P. Langner, M.D. '22, died last December at age 105, one of her many friends observed that the least remarkable thing about her was her age. "I think she was bewildered by the accolades, the things that people said about her," said Helen Trainor, a nurse-psychotherapist who trained and worked with Dr. Langner from 1983 until her death. "Her answer was, 'If you live long enough you get recognition, whether you deserve it or not.' "

Dr. Langner's life spanned nearly all of the 20th century and was filled with accomplishments that had nothing to do with her years but everything to do with her times. She was the fourth woman to graduate from the Yale School of Medicine. She marched in one of the first women's suffrage rallies. She was an early practitioner in the emerging field of child psychiatry. And at Yale medical school reunions and other ceremonial events, she was honored and celebrated as the school's oldest alumna.

She died just a few months before she was to receive her second medical diploma from Yale as an honorary member of the Class of 1998, the first Yale medical class to enter with more women than men. Dr. Langner was inducted with the class four years ago at the White Coat Ceremony welcoming students to the profession of medicine.

Who was this frail centenarian who radiated not only wisdom, but common sense and calm? Friends and colleagues remember a slight, white-haired woman who believed having good reasons for living was the key to longevity, and who kept her mind active even as her body came to rely on canes, walkers and finally a wheelchair. She continued working until she was well into her 90s. Invitations to meetings and reunions at Yale often came with offers, which she rejected, of a car and driver to collect her and take her home. She preferred walking from her house on Shipyard Lane in nearby Milford, Conn., to the center of town, where she could take the bus to New Haven. She routinely walked the three-quarters of a mile from her white two-story house overlooking the harbor to Milford Hospital and the city health department, where she began a second career at the age of 78. "To see her there was to feel all was right with the world … as long as she was in it," said Alan Jepson, Milford's city clerk.

John Curtis is a staff writer.

GUSTAVE LANGNER

As a medical student, Helen Langner, in white hat, second from left, became close friends with Ella Wakeman, right, who had entered the School of Medicine a year earlier, and Ella's brothers Maurice and Edward. The woman at the left is unidentified.

Left: **Helen Langner, Yale's oldest living graduate until her death last December at age 105, witnessed a century of dramatic change in medicine but held fast to old-fashioned common sense. She told friends the key to longevity was to have a reason for living.**

EARLY OBSTACLES

Dr. Langner marched in an early suffrage rally, but no one recalls her expressing anger or bitterness at the obstacles she faced as a woman in medicine. She believed hard work would see her through. "The first hurdle was finding a medical school that would accept you," said Susan J. Baserga, M.D., Ph.D. '88, who has written about the history of women in medicine (See *Gallery*) and who knew Dr. Langner. "The problem after that was getting a residency because there weren't too many programs that accepted women."

Her path to a career in psychiatry began during World War I when she had an administrative job at St. Luke's Hospital in New York City. She'd gone to New York a few years earlier to attend Hunter College, which, unlike colleges in Connecticut, accepted women. After graduation in 1914 she taught high school biology, work that didn't satisfy her, before moving on to the hospital. She considered a career in nursing, but her father urged her to apply to the Yale medical school, which had begun to accept women.

For the next four years she lived at the home in Milford where she'd grown up, the first and only daughter of a baker and his wife, and big sister to five brothers. Every morning she caught an early train from Milford to

New Haven, walked from Union Station to her classes, and then returned home in the afternoon to study late into the night. In the little time she had for recreation, she sailed on Long Island Sound or listened to operas like *The Magic Flute* and *Die Fledermaus*. When she came home to visit during her undergraduate days in New York, her mother, who also loved opera, would slip her an extra dollar so she could attend a performance, her brother Gustave Langner remembered.

Although she was the only woman in her medical school class, friends say she felt supported by her fellow students, particularly Edward and Maurice Wakeman, twin brothers whose father was a physician and whose sister, Ella, had entered the school the year before. Maurice died while doing research in Africa, but Dr. Langner maintained her friendship with Edward and Ella. From medical school Dr. Langner went to a residency at Wards Island, a state mental hospital in New York City.

It was made clear to Dr. Langner in her first job after her residency, setting up child guidance clinics around the country, that a man was preferred. Fine, she said. She offered to start the clinics, then step aside if a man came along. After a few months in Richmond, Va., she went to a privately funded clinic in Indianapolis, where she stayed two years until the stock market crashed and funding ran out.

She took over as director of undergraduate health services at Vassar College when her predecessor took a maternity leave. Although Dr. Langner never married, she was a strong advocate not only for women in medicine, but also for women who combined family and profession. Dr. Langner told Merle Waxman, director of the medical school's Office for Women in Medicine, that she was very excited about the increasing numbers of women entering the field. "She greatly admired women who devoted their careers to science and to medicine, Ms. Waxman says. "She was a strong supporter of the concept of an Office for Women in Medicine here, and was an important friend of the office."

After 10 years at Vassar, her interest in psychiatry led her to New York City, a private practice and an appointment at The New York Hospital-Cornell Medical Center. She opened her office the month Japan attacked Pearl Harbor. She also moved into the family home overlooking the harbor at Milford and commuted to New York by train. Friends wonder if child psychiatry appealed to Dr. Langner because of her role as the older sister who had a hand in raising her five brothers. Even as a centenarian, friends say, she drew children to her because she listened to them. "Kids won't go near people they sense aren't receptive," says Ms. Trainor. "They seem to be able to pick out the people who are warm and safe and approachable. She was very approachable."

GUSTAVE LANGNER

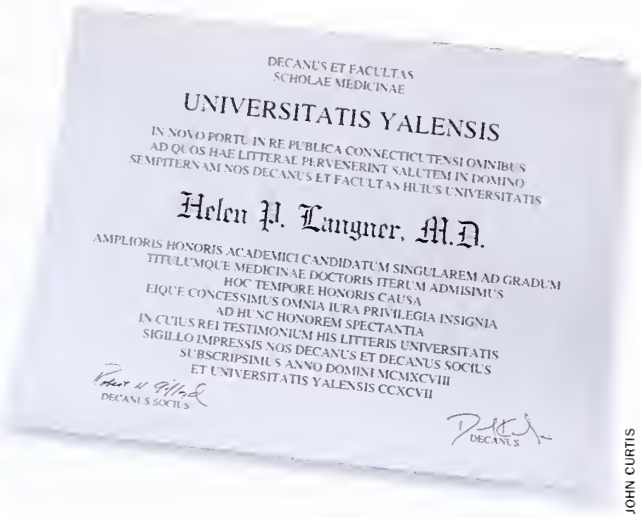
After graduation from medical school in 1922, Dr. Langner trained in psychiatry in New York City, then worked to establish child guidance clinics around the United States before becoming director of health services at Vassar College. This undated portrait of Helen Langner was taken during her days in New York City, when she had her own psychiatric practice and worked at Cornell-New York Medical Center.

Ms. Trainor recalls how Dr. Langner helped a 5-year-old boy, the son of friends, who had been diagnosed as hyperactive. Dr. Langner saw the boy not as a patient, but as a guest in her home. She encouraged curiosity in children, and like all children who visited her, the boy was allowed to explore the house. Dr. Langner concluded that he had too long an attention span to be hyperactive. "In her inimitable way," Ms. Trainor says, "she did not say the diagnosis was wrong. She just suggested that this was a situation that could be remedied by setting certain limits."

A Milford woman took her 10-year-old son to Dr. Langner for counseling about 25 years ago. "He was daydreaming, off in another world," says the woman. The boy also had slight difficulties with hand-eye coordination. "She played games with him and learned about his abilities and weaknesses." Dr. Langner, she says, played to the boy's strengths with advice to take up "big muscle" activities such as swimming and running. "We had to know his limitations so we didn't push him into things he shouldn't be pushed into," the boy's mother says.

While she was gentle and flexible, she could also be quite firm. "I sat behind a screen one time at Wards Island when she was discharging a patient," her brother said, recalling an incident that occurred more than half a century ago. "She laid it into the husband who was going to take his wife home and told him what he was going to have to do so she wouldn't have to come back to the hospital. He was very meek and mild, 'Yes, Doctor. Yes, Doctor. I will, Doctor.' I was grinning ear to ear behind the screen."

MICHAEL FITZSOUSA



JOHN CURTIS

In 1994, Dr. Langner entered medical school for the second time, joining the Class of 1998 as an honorary member at age 102 during the traditional White Coat Ceremony. She did not live long enough to attend commencement but her brother Gustave accepted her honorary degree at a memorial service in February.

Dr. Langner closed the chapter on her second career at Milford's hospital and health department at the age of 98. During the preceding two decades she had accepted no payment for her work, and it was only with difficulty that George Kraus, M.D., M.P.H. '51, director of Milford's health department, convinced her to let him pay her licensing fees and professional dues.

"She saw people with problems who could not afford private psychiatric care," Dr. Kraus said, adding that she was particularly helpful with elderly patients. "She would tell them that she was a psychiatrist who came to examine them. But they regarded her as a friend and a helper. As a result we were able to elicit information that we could otherwise not get."

Even after her second retirement, she tried to keep up with medical practices by reading medical journals and attending conferences and reunions. "I would bring a case to her and the next time I saw her she would have found an article in a journal that pertained to that particular case," recalled Ms. Trainor, for whom Dr. Langner was a mentor. "She would have read it, given it to me to read and then we would discuss that particular article."

In her hometown Dr. Langner became an ardent preservationist, campaigning to save historic buildings and the harbor and sound where she'd sailed in her youth. "Every time they were going to demolish an old building in Milford that had historical significance," said Nicholas P. Spinelli, M.D. '44, "there she was. She always had a petition: 'You will not destroy this place.' "

Dr. Langner was renowned as the oldest resident of Milford and the only survivor of her medical school class. Newspapers often carried stories about her and Cable News Network featured her in a report about centenarians. Although her longevity brought a degree of celebrity, it was her vibrant, active mind that drew people to her. "I suddenly was aware of this little old lady in the back of the room at reunions," recalled Dr. Spinelli, the medical school's former director of alumni affairs, who remembers meeting Dr. Langner about 15 years ago. "She was 90 going on 25. You would talk to her and you thought she was a college student planning to go to medical school next year, she was so enthusiastic."

And while she never liked to be fussed over, about 80 friends, relatives and colleagues gathered at the First United Church of Christ in Milford in early February to remember her. Youngest brother Gustave, 94, accepted the honorary degree that would have come to his sister in May. Speaking at the memorial service, Deputy Dean Robert H. Gifford, HS '67, said that her contribution to education was profound. "She became an inspiration to hundreds of medical students, particularly women." YM

PETER CASOLINO

In 1997 Dr. Langner returned to Yale for her 75th reunion. She was the only surviving member of the Class of 1922. "The company and conversation of my alumni is always pleasant and enlightening," she wrote in her class report. "After a long, wonderful day, I return home with all my memories to recuperate."

Factoring in *gender*

Yale research on women's health, bolstered by a landmark $6.5 million grant, draws together scientists from many disciplines.

By Michael Fitzsousa

Carolyn Mazure directs the newly established Ethel F. Donaghue Women's Health Investigator Program at Yale.

Until 1993, when Congress passed legislation changing the way clinical trials are conducted, it was possible to bring a drug or device to market without including women in its evaluation. For many years, it was the rule, rather than the exception, to exclude women from the studies that are required to prove the safety and effectiveness of new treatments.

Two seemingly reasonable ideas in particular contributed to this gap in data. One was that women of child-bearing age should not be exposed to experimental risk. The other was that the hormonal changes associated with the reproductive cycle would add a level of complexity to trials that would be unmanageable. Yet excluding women has left major areas of human health unexplored, says Carolyn M. Mazure, Ph.D., a professor of psychiatry who heads the research arm of the Women's Health Program at Yale. "It is essential to study women," she says, "because the treatments and procedures developed on men may not always be appropriate for women." And while cyclic variation does bring complexity to many research questions, scientific methods have evolved to better handle that complexity. In fact, since enactment of the 1993 legislation, the inclusion of women in trials must be carefully considered when federal dollars are used.

Just how far has the issue evolved during the past decade? At Yale, one indication came in February with the announcement of a $6.5 million grant for women's health research. The five-year award from The Patrick and Catherine Weldon Donaghue Medical Research Foundation of West Hartford, Conn., will support interdisciplinary research that advances knowledge in women's health. One of the most exciting aspects of the new program is its potential to bring together researchers from a wide range of scientific fields, each with a unique perspective on how gender may factor into disease processes and health. "We don't want people to think that women's health must be a separate area of research," says Dr. Mazure, who directs the Ethel F. Donaghue Women's Health Investigator Program at Yale, the new entity created by the grant. "Instead, the hope is that more and more investigators will think about gender in the research they are actively pursuing, and think more about research collaborations to answer relevant questions."

ROBERT LISAK

Dr. Mazure with members of the Donaghue Program staff, from left: Data manager Paul Falzer, Ph.D., research assistant Beth Ruff and program coordinator Mona Gregg.

AN EVOLUTION

The Donaghue funding was announced at a press conference in Yale's Medical Historical Library, a balconied room with a 50-foot ceiling, leather sofas, reading tables, a massive stone fireplace and books lining every square foot of wall space. "This is the perfect setting for this special event," Dean David A. Kessler, M.D., told the group. "Research has always been central to the school's academic mission. That commitment will continue to be at the very core of all we do here in the future." The Donaghue support, he added, provides the opportunity to expand that commitment "while building on an already exemplary program in women's health."

In addition to its research component, the Women's Health Program at Yale has developed new models for patient care and the training of physicians, and in 1996 was designated by the U.S. Public Health Service as one of the first six Centers of Excellence for women's health nationally. According to Director Janet B. Henrich, M.D., advances in women's health overall will depend to a large extent on good science. "We want to add to the knowledge base," she says, "with the ultimate goal of improving care for women. The goal is to integrate these elegant findings from the laboratory into practice."

During late winter and spring, Donaghue program staff sent out requests for applications to researchers

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Michael Fitzsousa is the editor of *Yale Medicine*.

ROBERT LISAK

around the medical school, University and at each of the Yale-affiliated hospitals. In total, 81 applications were submitted by investigators in 15 medical school departments and other corners of Yale including the School of Nursing, departments of chemistry, sociology and psychology, the Institute for Social and Policy Studies and the John B. Pierce Laboratory. "If we were able to fund all of them," says Dr. Mazure, "we would need $10 million." Among the topics: the influence of sex-related hormones in a variety of disorders including cardiovascular disease and osteoporosis, the molecular mechanisms of breast, cervical and ovarian cancer, gender differences in surgical recovery, HIV risk behavior in women, the relationship between health and employment in women, the relationship of breast cancer to environmental exposure variables, and the biological basis for a variety of psychiatric conditions that women experience at a higher rates than men, such as depression, eating disorders and post-traumatic stress disorder following abuse. The program's scientific review committee was to meet in July, with the first awards expected in August. Subsequent requests for research applications will go out each year to encourage new work.

"It is essential to study women, because the treatments and procedures developed on men may not always be appropriate for women."

THREE PILOT PROJECTS

Even before the Donaghue program was announced in February, women's health research at Yale was off and running, supported by modest startup grants during the 1997-98 academic year. Three of those projects, co-sponsored by the Department of Diagnostic Radiology, the Claude D. Pepper Older Americans Independence Center and the Yale Liver Center, illustrate the kinds of research topics Dr. Mazure and her colleagues hope to shed light on.

Diagnostic radiologist Liane E. Philpotts, M.D., saw a difficult clinical problem affecting breast cancer patients and has used the women's health funding to look for a solution to improve diagnosis and quality of life. Because the disease often spreads to the axillary nodes (glands in the armpit), patients usually have the nodes removed surgically as a precaution. The complications of surgery include swelling, significant pain and decreased range of motion. Dr. Philpotts is evaluating how well magnetic resonance imaging may be able to show the spread of cancer cells to the nodes. "If we can say they look fine, maybe we won't have to take them out in the future," she says. "To the patient, it could make a fairly big difference in terms of comfort and morbidity."

Another researcher who received program support is endocrinologist Karl L. Insogna, M.D., who studies the underlying mechanisms of osteoporosis. This weakening of the skeleton, more common among women than men, occurs at a rate three to four times faster after menopause than in younger women. Hormone replacement therapy has been proven to slow and even halt the damage. Because estrogen therapy is known to carry health risks as well as benefits, the search is under way for more specific agents that might interfere with bone breakdown.

For the last several years, Dr. Insogna and colleagues have been working to explain the mechanism by which bone loss occurs. Starting with the knowledge that parathyroid hormone (PTH) regulates bone breakdown and the metabolism of calcium, they looked for clues to how estrogen is involved in that process. Last year they identified a molecule produced by osteoblasts, the cells that form bone tissue, that appears to play an important role. Interleuken-6 (IL-6), says Dr. Insogna, is required in order for parathyroid hormone to break down bone. With support from the Women's Health Program, he and his colleagues published data correlating high blood levels of IL-6 with higher rates of bone breakdown in women with disturbances in parathyroid function and are chasing down new leads that may one day improve treatment.

Allen E. Bale, M.D., associate professor of genetics, is searching for genes associated with hereditary breast cancer. He has developed automated technology for determining the DNA sequence of BRCA1 and BRCA2, two genes that are frequently altered in families with breast cancer. In analyzing a large series of breast cancer kindreds, he found that a significant number lacked mutations in these genes, and he is searching for new genes that may underlie the disease.

One possible candidate is the gene for Cowden syndrome, a rare disorder associated with breast, thyroid and skin cancer. Dr. Bale thinks that mild mutations in the Cowden syndrome gene might cause breast cancer alone without thyroid or skin disease. "Beside the Cowden gene, there must be other genes we haven't yet discovered," says Dr. Bale. "We're continuing to look for them so we can offer diagnostic testing and early detection of breast cancer to more families."

A SHORT HISTORY

Women's health came into focus at Yale in the early 1990s, as more women entered the faculty and as Yale practitioners in internal medicine, obstetrics and gynecology, and other specialties began discussing the need for a streamlined clinical service where women could receive care in a more coordinated fashion. At about the same time, the issue of women's health was coming sharply into focus in Washington. The General Accounting Office issued a detailed report in 1990 documenting the disparity between women and men as subjects in federally funded clinical research. The same year, the National Institutes of Health created the Office of Research on Women's Health, followed in 1991 by the establishment of the Office of Women's Health at the U.S. Public Health Service. Meanwhile, the NIH was launching the Women's Health Initiative, a long-term study of more than 100,000 women that will seek to document the causes of disease and premature death in women from all social and economic groups.

Dr. Kessler, who was the Food and Drug Administration commissioner from 1990 to 1997, recalls asking his staff in the early '90s, " 'Should we have required women to be included in the clinical trials?' Some of the agency's best reviewers said no, that the pharmacokinetics and pharmacodynamics of the drugs worked the same in men as in women," Dr. Kessler recalls. "But later, as more studies were done, they started looking at the data and saying it really did make a difference." Perhaps the most influential piece of legislation relevant to women's health is contained in the NIH Revitalization Act of 1993, which requires that an appropriate number of women be included in clinical trials that are federally funded. One of the people who shepherded the act through Congress was Ruth J. Katz, J.D., M.P.H., now the School of Medicine's associate dean for administration. As counsel to the U.S. House of Representatives subcommittee on health and the environment, she organized the hearings for the act and helped write the legislation that President Clinton signed into law. When she arrived at Yale last July, one of the first projects she was given was to help pull together the agreement that became the basis for the Donaghue Foundation grant.

The Donaghue research initiative is a key component of a highly active Yale program that drew the attention of Health and Human Services Secretary Donna Shalala, who named it one of the first six Centers of Excellence in Women's Health. This spring, the designation and funding were renewed for a second 18-month period, allowing the faculty here to focus in greater depth on issues concerning patient care and physician education as well as research.

JOHN CURTIS

Ruth Katz and Raymond Andrews talk before the press conference announcing the establishment of the Ethel F. Donaghue Women's Health Investigator Program at Yale. Mr. Andrews is a trustee of the Patrick and Catherine Weldon Donaghue Medical Research Foundation, which is providing $6.5 million in funding.

In its first incarnation as the Women's Health Initiative at Yale, the program provided a one-stop service catering to women throughout New Haven and Fairfield counties. Led by Dr. Henrich and Florence Comite, M.D. '76, HS '76-78, it also brought together a diverse group at the medical center who were focused on women's health issues and who began discussing the framework for a broader program. Gerard N. Burrow, M.D. '58, then the medical school dean and now a special advisor to President Levin for health affairs, saw a need to combine the clinical progress with advances in education and research. "The exclusion of women was so ingrained," he recalls of his own research training in the 1950s, "that even as students working in the lab, we were told not to include female mice." But over the last several decades that attitude has changed, and not only in the lab. Yale established the Office of Women in Medicine in 1975 and began actively recruiting women to the faculty and student body. Four years ago, the medical school enrolled more women than men in its entering class for the first time in its history. "The last 20 years," says Merle Waxman, M.A., associate dean and director of the Office of Women in Medicine, "has seen the dissolution of many of the barriers that hindered the entry of women into some of the specialties." As a result, says Dr. Henrich, more women are in a position to pur-

PETER CASOLINO

Janet Henrich leads the Women's Health Program at Yale and teaches an undergraduate course in women's health at Yale College.

sue research that is relevant to women, which may in part explain the groundswell of interest that bubbled to the surface in 1990.

According to Dr. Henrich, who spent 18 months at the NIH working with the Office of Research on Women's Health, one of the major challenges in delivering care to women stems from a division that dates back 75 years or more. "There's a fragmentation that has developed more around women than around men, with both internal medicine and obstetrics and gynecology providing primary care," she says. "What this has done is separate reproductive and non-reproductive issues in a way that became institutionalized early in the century." This schism produces gaps in care due to a lack of communication, Dr. Henrich says. "There's been a lot of talk about developing a women's health specialty," she adds. "I have a strong bias against that because I think it would only lead to greater fragmentation of care. We need the expertise of diverse specialties."

In early 1996, the Yale activities were reorganized as the Women's Health Program at Yale, with Dr. Henrich as its leader. She and many of her medical school and hospital colleagues have spent long hours hashing out new methods for organizing women's care. A committee chaired by OB/GYN associate professor Ervin E. Jones, M.D., Ph.D., and assistant clinical professor of psychiatry Robert M. Rohrbaugh, M.D., is developing a proposal for a required medical school clerkship in women's health that would draw from the departments of Internal Medicine, Obstetrics and Gynecology, and Psychiatry. Similar plans are being considered for residency training. "The idea," says Dr. Henrich, "is to have the internal medicine residents learn more about reproductive issues and the OB/GYN residents better prepared to recognize and treat hypertension, diabetes and thyroid disease. The goal is to increase the knowledge base."

That seems to be happening at Yale over a relatively short period of time. Lawrence S. Cohen, M.D., HS '58-65, a cardiology professor and special advisor to the dean, was among those involved in the school's early discussions of women health and served on the committee appointed by Dean Burrow in 1992. "They've more than exceeded the expectations in a very short period of time. Women's health is off to a great start." The true test of the research program's success, says director Mazure, will be seen in the clinical setting several years down the road. "Politically, a lot has happened to move this all forward," she says, "but the science has changed, too. Everybody knows that with most diseases, there isn't just one factor that influences onset or treatment outcome—rather there are many factors. Now we have tools to understand multiple variables in health outcomes." What will be the practical value of this investment in research? "There's the promise of very significant transfer of this knowledge to clinicians and to the community," says Dr. Mazure. "This initial funding will help us generate a lot of new research that can change both the health and health care of women." YM

The Program for Humanities in Medicine

1998-1999 LECTURE SERIES

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SEPTEMBER 24
Medicine, Ethics & the Third Reich
John J. Michalczyk, Ph.D.
Professor of Fine Arts & Films
Boston College

OCTOBER 8
AIDS & the Poetry of Healing
Rafael Campo, M.D.
Associate Professor of Medicine
Harvard Medical School

OCTOBER 22
The Artists' Vision: An Ophthalmologist Looks at Art
Vincent A. deLuise, M.D.
Clinical Assistant Professor of Ophthalmology
Yale University School of Medicine

NOVEMBER 5
Freud's Dream Theory—One Hundred Years Later
Harry Fiss, Ph.D.
Professor or Psychology
University of Hartford

NOVEMBER 19
Call For The Doctor: A History of Country Blues Piano
M. David Tilson, M.D.
Professor of Surgery
Columbia University School of Medicine

DECEMBER 3
"Bellevue": Machinations of an Urban Hospital
Mark Siegel, M.D.
Clinical Professor of Internal Medicine
New York University Medical Center

DECEMBER 10
The Human Encounters in Medicine
The McGovern Lecture
John Stone, M.D.
Professor of Cardiology
Emory University School of Medicine

DECEMBER 17
Covert Communication in Clinics, Classrooms, Corporations & Courtrooms
The Bayer Lecture
Robert Rosenthal, Ph.D.
Edgar Pierce Professor of Psychology
Harvard Medical School

JANUARY 7
Conflict In Classical Arabic Medicine
Dimitri Gutas, Ph.D.
Professor of Arabic Languages & Literature
Yale University

JANUARY 21
From Quarantine to Condoms: HIV Control in Cuba*
Helena Hansen, MS
M.D./Ph.D. Candidate
Yale University School of Medicine

JANUARY 28
My Brother, Madness & Survival: Memoir
Jay Neugeboren, Ph.D.
Professor of English/Writer in Residence
University of Massachusetts

FEBRUARY 4
Hygeia Revisited: Lessons to Comfort
Michael Berman, M.D.
Clinical Professor of Obstetrics & Gynecology
Yale University School of Medicine

FEBRUARY 11
Young Cushing: The Right Stuff
Robert M. Crowell, M.D.
Professor of Neurosurgery
University of Massachusetts Medical School

FEBRUARY 25
Match Day: Stories of Adoption & Reunion
Morris A. Wessel, M.D.
Clinical Professor Emeritus of Pediatrics
Yale University School of Medicine

Diana K.R. Jowdy, MA
Ph.D. Candidate
American Culture
University of Michigan

MARCH 4
Cultural Competence? Immigrant Patients American Doctors
The Robert Penn Warren Lecture
Anne Fadiman, BA
Editor of *The American Scholar*

MARCH 18
Eye of Doctors: Enhancing Observational Skills With Fine Arts
Irwin M. Braverman, M.D.
Professor of Dermatology
Yale University School of Medicine

APRIL 1
Meeting the Challenge of Alternative Medicine
Joseph J. Jacobs M.D., MBA
Former Director
Office of Alternative Medicine at NIH

APRIL 15
When a Patient Wants to Die
Charles F. McKhann, M.D.
Professor of Surgery
Yale University School of Medicine

APRIL 29
Forty Years of Medical Education at Yale
Howard Levitin, M.D.
Professor of Internal Medicine
Yale University School of Medicine

MAY 6
Carlo Levi, MD & the Italian Anti-Fascist Movement
Harvey Mandell, M.D.
Retired Internist

David Ward, Ph.D.
Associate Professor of Italian
Wellesley College

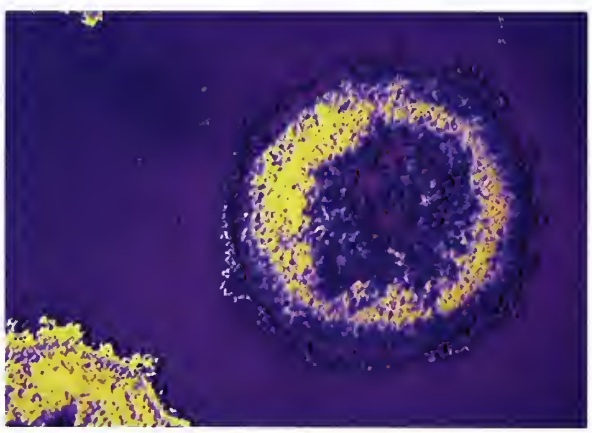
MAY 13
A Surprise
Jacques Pépin, MA
Master Chef, Columnist, Author, Teacher
PBS-TV Host

Note: *Lectures marked by an asterisk (*) are co-sponsored by the Office of Multiclutural Affairs.*

A *path* for *prevention*

With better treatments for HIV infection and increasing hope for a cure, are we becoming complacent about the spread of AIDS? Not if the architects of Yale's new interdisciplinary research center have a say in the matter.

By John Curtis



Above: **Human immunodeficiency virus, seen through the electron microscope, has infected 30.6 million people worldwide over the last two decades, and caused 11.7 million deaths.**

Right: **Maria Martinez, an outreach worker, and Scott Wilson, an anthropologist, walk through abandoned buildings, crack houses and shooting galleries to make contacts and observe the social interactions of people using drugs. They hope to learn enough about behavior in high-risk drug sites to devise measures to prevent HIV infection.**

In a vacant apartment building in Hartford's Charter Oak neighborhood, within walking distance of Connecticut's state capitol and several of the world's largest insurance companies, anthropologist D. Scott Wilson, Ph.D., points the toe of his boot at a spent syringe. The last person to use it has bent the needle to prevent its re-use and the possibility of infection with HIV. "You see this a lot, which is a very good thing," says Dr. Wilson, an AIDS prevention researcher working on a Yale-affiliated research project. Also strewn amid the glass and rubbish are small plastic bottles that once contained bleach or water and were part of needle-cleaning kits that Dr. Wilson and his colleague, outreach worker Maria Martinez, hand out on the streets.

They are one of two teams that roam abandoned buildings, crack houses and shooting galleries in Hartford, with the aim of learning the rules that govern behavior there. Ultimately they hope to persuade drug users to adapt those rules to include HIV prevention methods. Their work is one of four projects under the umbrella of Yale's Center for Interdisciplinary Research on AIDS, or CIRA. Established last September with a $10.8 million grant from the National Institute of Mental Health and the National Institute on Drug Abuse, CIRA is a four-year effort centered in the Department

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John Curtis is a staff writer.

"Preventing infection," Michael Merson says, "is still better than any cure."

of Epidemiology and Public Health, an accredited school of public health. Its goal is to change risky behaviors and stem the spread of AIDS. Yale's CIRA joins centers at UCLA, Columbia University, the Medical College of Wisconsin and the University of California at San Francisco as the fifth federally funded AIDS prevention center in the country. While most of CIRA's research will take place in Connecticut, the center is expected to develop prevention strategies that can be applied throughout the country and world.

"There is still a potential for the epidemic to spread even more dramatically than it has already in some populations," says CIRA Director Michael H. Merson, M.D. "In many ways the worst is still to come."

The former head of the World Health Organization's Geneva-based Global Programme on AIDS, Dr. Merson became Yale's first dean of public health in 1995. Since his return to the United States, he has sounded a persistent warning that advances in the treatment of HIV, while a great step forward, carry with them the risk of complacency.

Around the world, an estimated 30.6 million people live with AIDS or HIV infection, most of whom probably have no idea they are infected. Since the epidemic began, 11.7 million people have died of AIDS, according to UNAIDS, the worldwide AIDS program of the United Nations. The bulk of the world's cases are in sub-Saharan Africa, where an estimated 20.8 million people have been infected. Every day, UNAIDS reports, 16,000 people become infected with HIV. More than 90 percent of those new infections occur in developing countries.

In Africa, the hardest-hit continent, AIDS travels predominantly through heterosexual contact. In Botswana last year, 43 percent of pregnant women tested in one urban center were HIV-positive. One in five adults in Zimbabwe are believed to be HIV-positive.

China, Asia's largest country, is facing two epidemics, one among drug users in the southwestern part of the country and another among heterosexuals along the coast where prostitution is re-emerging. In Thailand, there is evidence of a drop in new infections, thanks to prevention efforts that promote condom use, discourage visits to sex workers and offer young women opportunities other than commercial sex.

Although doctors have vastly better weapons to fight it, including new anti-viral treatments developed at Yale (See *Hunting down HIV*), AIDS remains a deadly disease. In the United States, 820,000 people were living with HIV or AIDS as of the end of 1997, according to UNAIDS. According to the organization's *Report on the Global HIV/AIDS Epidemic,* released in June at an international conference in Geneva, an estimated 410,000 people have died of AIDS in the United States. For most of the 1990s, acquired immune deficiency syndrome was the leading killer of people between 25 and 44. Now, with the first effective therapies in place, AIDS has dropped to second place, below accidents. But the path of the infection has shifted as well. "The epidemic in the United States had been confined historically to gay men. It's becoming more and more

Among young people, a sense of immortality

Although young people are acutely aware of the risks of HIV infection, most believe it won't happen to them, according to a survey of 12- to 34-year-olds conducted by CIRA researchers. That attitude prevails even though 20 percent of them have lost a friend or acquaintance to AIDS.

While only slightly more than half of the young people surveyed used condoms, almost 90 percent said they were not at risk of HIV infection. The survey, released in December by Yale and the MTV music television network, queried 770 people on their attitudes toward sex, health and AIDS.

"This study tells us that, despite the information that's out there, young people have not internalized the dangers of AIDS, drugs, alcohol and other health-related risks," says Michael H. Merson, M.D., dean of public health and director of CIRA.

The study found that 45 percent of unmarried respondents have engaged in sex one or more times without using condoms. Of those unmarried respondents fewer than half use condoms when they have sex with a new person and 23 percent fail to use birth control. Yet 63 percent of the total survey cited condoms and safe sex as ways to prevent AIDS. Fifty-three percent of respondents used a condom the last time they had sex.

Although only 2 percent of whites considered themselves at risk for the virus, 16 percent of Hispanics and 11 percent of African Americans said they were vulnerable to HIV infection.

ROBERT LISAK

Researchers at six of Yale's graduate and professional schools have joined forces under the umbrella of CIRA to find ways to limit the spread of AIDS. Headed by Michael Merson, left, a physician whose life's work has been in public health, and Peter Salovey, right, a psychologist, CIRA brings together 55 researchers in disciplines ranging from medicine to anthropology to law to management science.

an epidemic of injecting drug users and their sex partners," Dr. Merson says. The net effect, he says, will be more and more heterosexual transmission.

A FOCUS ON BEHAVIOR

Avoiding AIDS is as simple, and complicated, as avoiding risky behaviors. In the United States, blood screening has virtually eliminated transfusions as a factor in the spread of HIV. Except among infants born to HIV-infected mothers—an increasingly rare occurrence in the United States due to the use of antiviral drugs by pregnant women—transmission has become a function of behavior, occurring through unprotected sex or needle sharing. Yet for those at most risk of contracting AIDS, preventing HIV infection often takes a back seat to daily survival—finding a place to sleep, getting a meal or procuring drugs.

CIRA's four initial projects are designed to help people who appear to be most vulnerable to HIV infection—the inner-city poor, adolescents and drug users. The anthropologists and outreach workers in Hartford hope to devise prevention measures for high-risk drug use sites. A team of psychologists is developing messages

MARY BERRIDGE

Among those most vulnerable to HIV infection are injecting drug users, adolescents, minorities—and women. Susan, 28, and her daughter, Anna, were diagnosed HIV-positive in 1994. She believes she was infected by a former boyfriend in 1988. With her daughter and husband, Roy, Susan posed for this photograph from the book *A Positive Life* [1997, Running Press, Philadelphia]. The collection of interviews by River Huston and photographs by Mary Berridge, who holds a masters degree in fine arts from Yale, tells the stories of women with HIV.

to change risky sexual behavior and evaluating which approaches are most likely to succeed. Another team is looking for ways to prevent both pregnancy and sexually transmitted disease in teenagers. The fourth team is studying needle exchange programs to determine whether their benefits, such as reduced risk of infection and increased access to treatment, travel beyond the immediate participants.

Ellen Stover, Ph.D., director of the division of mental disorders, behavioral research and AIDS at the NIMH in Bethesda, Md., says that CIRA stands out because of its focus on drug users and adolescents. "It's unique and it's where the direction of research is going," she said. "In the AIDS area, we have always encouraged behavioral scientists to work with public health experts and infectious disease experts."

INVOLVING THE COMMUNITY

The CIRA team includes psychologists, epidemiologists, anthropologists, lawyers, molecular virologists, ethicists, a management expert and physicians. "To really understand how we're going to prevent HIV, you have to look at it from various perspectives," he says. CIRA has created a community advisory committee whose members include community leaders who also serve on an executive committee that advises the center on policy and research priorities. Dominick Maldonado, an AIDS education coordinator for the City of New Haven, is chairman of CIRA's community advisory committee. "In the past," he says, "research was done and those of us in the community felt like guinea pigs." This time things are different. Mr. Maldonado and Matthew F. Lopes, M.P.H. '77, a member of the Mayor's Task Force on AIDS and member of CIRA's executive committee, see a real effort to involve local groups. "We hope that we will come up with some interesting and novel ways of prevention that will be demonstrated to a wider population," says Mr. Lopes, director of the AIDS division at the city health department, "not just in New Haven, but around the country."

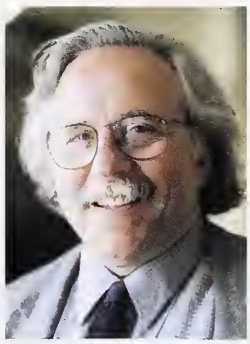
Statistics compiled by Connecticut's health depart-

A new era in AIDS treatment

In the 17 years he's been treating people with AIDS, never has Gerald H. Friedland, M.D., been more optimistic. New therapies such as protease and reverse transcriptase inhibitors are thwarting the onset of full-blown AIDS in HIV-infected people, slowing the progress of the disease and offering patients more hope than ever before.

Those therapies, however, have changed the way doctors care for people with AIDS and shifted treatment strategies to outpatient and community settings. "Because there are fewer deaths and because people are living longer, in some ways the clinical burden of care, the resources needed to produce care, have increased," says Dr. Friedland, director of the Yale AIDS Program since 1991. "The benefit of these therapies is very dependent upon all the clinical systems that have been put in place to care for people with HIV disease. It's not just writing a prescription and that's it. You need a whole system of care to help people benefit."

Dr. Friedland first encountered AIDS at Montefiore Hospital in the Bronx in 1981, when he saw injecting drug users manifesting the symptoms of an illness then believed to afflict only gay men. At Montefiore he brought not just physicians and nurses into the care of AIDS patients, but social workers, mental health workers, clergy and others. That same multidisciplinary approach is at work at the Yale program, which opened in 1983 and was the first clinic dedicated to AIDS in the state. In addition to clinical care for HIV-positive patients the program offers counseling, testing and outreach programs and does prevention work in city schools. There's also a community health care van carrying counselors and outreach workers into New Haven's neighborhoods. Physicians and other research staff are performing clinical trials of new anti-retroviral therapies and studying the interactions of anti-retroviral agents and methadone in substance abuse programs.



JOHN CURTIS

Gerald H. Friedland

"This is a wonderful time in the history of the AIDS epidemic in the United States," says Dr. Friedland, professor of medicine and epidemiology. "There are potent and effective therapies. They are very complicated and difficult but their benefit is unquestioned at this point in preserving and prolonging life. However, difficulties in providing therapies to all who can benefit from them remain, as does their still unknown durability. This is a time for intensified therapeutic effort, not relaxation."

Odds for children at risk for AIDS begin to improve

One of the mysteries of HIV is why it doesn't surface in all the children born to infected mothers. Even at its worst, notes Warren A. Andiman, M.D., professor of pediatrics and epidemiology, it only struck about 20 percent of children of HIV-positive mothers. Prevention programs and use of AZT have reduced the figure in New Haven from between 16 and 18 percent to about 2 percent.

A related riddle is why some strains of the virus found in the mother emerge in the child and others don't. "Is there a pattern to the kind of strain that a baby gets from among the strains that the mother has? Is there a selective process that goes on which determines whether a certain kind of virus is being transmitted from the mother to the baby?" Dr. Andiman asks. "It will be useful to learn something about how rapidly the virus changes. It would give us a sense of when an intervention might still be worthwhile. You would want to provide therapy before the virus becomes very virulent."

Dr. Andiman directs the pediatric AIDS program at Yale-New Haven Hospital and is studying the virus to find ways to prevent and treat infection. His research led him to participate in an international study evaluating Caesarean section as a means of protecting newborns from infection. Many infections occur during passage through the birth canal.

A current laboratory-based study explores how biological characteristics of the virus affect clinical outcomes. Are there specific behaviors of the virus that determine whether an infected child suffers a rapid progression of disease or becomes a long-term survivor? If so, can less virulent strains of the virus be isolated and used in vaccines? Or can different viruses with useful traits be combined into a single vaccine?

The 75 HIV-infected children in the AIDS program are part of a long-term observational study to determine their survival and to find out what opportunistic diseases emerge. "These kids are followed primarily to provide clinical care. At the same time we have very careful observation of the history of the disease. The primary reason for seeing them is to take care of them, not because we're doing the study," he says.

Children with AIDS suffer learning disabilities, problems with motor functions and cognitive skills, cognitive retardation, fungal infections of the esophagus and various viral and bacterial infections. The problem becomes one of managing the disease, far more difficult in children than adults. "The medicines taste nasty. The pills are very big. There are side effects," says Dr. Andiman. "We have a lot of kids in their early teenage years who were infected when they were infants, with many medical problems. Most of them are not robust children." But he adds, "It has truly turned into a chronic disease. If children don't succumb to the disease in the first three years of life, they really become long-term survivors."

CIRA's four projects


ROBERT LISAK

Michael Merson

When Public Health Dean Michael Merson began discussing AIDS prevention with colleagues at Yale several years ago, it occurred to him that prevention research had to follow the path of the epidemic. A disease that had already mobilized the gay community, AIDS was becoming an ever-increasing threat to the poor, minorities, women and injecting drug users. The four projects that ultimately became the focus of the Center for Interdisciplinary Research on AIDS are concentrating on those at-risk groups.

CIRA stands out for its interdisciplinary approach, bringing together physicians, psychologists, anthropologists, lawyers, statisticians and others to work toward the common goal of preventing AIDS. "If you really want to have effective prevention measures," Dr. Merson says, "you need the skills of all those people."

Message framing

Convincing the most vulnerable to avoid risky sexual activity is the task of Peter Salovey, Ph.D., a Yale psychologist who with colleague John D. Mayer developed the theory of emotional intelligence popularized in a recent book by author Daniel Goleman.

"Clearly our traditional AIDS messages aren't reaching certain people," says Dr. Salovey, professor of psychology and of epidemiology and public health. "The field has done a lot of work on delivering educational messages to people about HIV and safer sex, but they have not paid attention to the nature of those messages."

Dr. Salovey, who is also the co-director of CIRA, is conducting a study based on prospect theory, which proposes that both negative- and positive-framed messages can work in different situations. For example, Dr. Salovey theorizes that accentuating the negative works best for detection behavior: *If you don't get a blood test, you won't find out you are sick and get the treatment you need.* Positive messages, he believes, will work best for prevention behaviors: *Wear a condom and you'll stay healthy.*

His study, which comprises three experiments, will compare the effects of four videos about detection measures, including HIV-testing, and prevention behaviors, such as condom use. Each experiment will follow about 500 poor Latina and African-American women recruited at community health centers in New Haven to determine whether positive- or negative-framed videos work best and whether participants take HIV tests, abstain from risky sex or use condoms as a result.

High-risk drug sites

Anthropologists and outreach workers in Hartford want to find out whether there are rules of conduct in places where people use drugs—crack houses, shooting galleries and abandoned buildings. "Can we make use of the fact that there are rules to establish other rules for AIDS prevention?" asks Margaret R. Weeks, Ph.D., associate director of the Institute for Community Research and director of this project. The Hispanic Health Council in Hartford is also working on the project. The institute and the council are each providing an anthropologist and an outreach worker to probe drug networks in the city. Could people who control drug sites distribute clean needles or discourage needle sharing? The research will take place over three years at 16 sites where people use drugs. "Typically we go with them to the site to see how they are using drugs and what goes on there," says D. Scott Wilson, Ph.D., one of the anthropologists working on the study.

Benefits of needle exchange

A related project will track the spread of benefits from needle exchange programs. Studies have shown that needle exchanges slow the spread of HIV and hepatitis B, draw drug users into treatment programs and serve as a vehicle to disseminate information about AIDS. The researchers want to determine how deeply those benefits penetrate into communities of drug users.

"We already know the people who use the exchange benefit from it," says

ment show increased rates of heterosexual infection and infection through intravenous drug use. Injecting drug users made up 51 percent of the 9,941 AIDS cases reported in Connecticut as of the end of May. That percentage is twice the national average. Men having sex with men constituted 24 percent of the cases and heterosexual intercourse was the mode of transmission in 15 percent, according to the state Department of Public Health.

Since 1990 white males have dropped from 48 percent to 38 percent of the state's AIDS cases among men. African Americans account for 38 percent of the AIDS cases in men, an increase from 35 percent reported in 1990. Of females with AIDS, 47 percent are African American, fewer than the 51 percent reported in 1990, but up from the 1994 rate of 44 percent. Hispanic women make up 25 percent of the state's women with AIDS.

"This is increasingly a disease of minority popula-

Yale Letter on Aging

YALE UNIVERSITY SCHOOL OF MEDICINE | SECTION OF GERIATRICS

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The Road Less Traveled

Not every 80-year-old is at risk behind the wheel. How can we fine-tune driving skills—and predict who may have a problem?

For many Americans, the automobile is a symbol of independence and an essential link with the outside world. Yet as people age, driving can become hazardous for them and others. Richard A. Marottoli, M.D., M.P.H., and Emily D. Richardson, Ph.D., are developing ways to assess and improve driving skills in older persons at risk of having accidents.

In earlier studies of predictors of driving difficulty, they demonstrated that people who have foot problems, don't walk regularly and perform poorly on tests of visual attention are at higher risk of having crashes or moving violations.

Driving impairment is a special concern because of its impact on others. "There are safety implications not just for the driver, but also potentially for the general public," says Dr. Marottoli, associate professor of medicine at Yale and senior research associate at the VA Connecticut Healthcare System. "In general, older people do a very good job of knowing when to stop and when to cut back on their driving. It requires some creativity to come up with strategies people can use to maintain their mobility if they have to stop driving."

In a study funded by the NIH, the researchers are trying to determine whether improving physical abilities will help prolong safe driving among older persons. Dr. Marottoli is also refining predictors so physicians can use them to identify candidates for more detailed testing. Dr. Richardson, an associate research scientist in medicine, is studying ways to improve visual attention, by training participants to respond to stimuli on a computer screen. "If we can improve visual attention, does that translate into improved driving performance?" she asks. She hopes the training will improve poor driving habits such as changing lanes without first checking left and right.

"The goal of our research," says Dr. Richardson, "is to identify and correct factors that contribute to driving problems so that older persons, can, if possible, continue to drive safely."

Predictors of driving difficulty include foot problems, infrequent walking and poor performance on tests of visual attention.

For Older Patients, Attention to the Many Facets of Good Health

We hope you'll enjoy this inaugural issue of the *Yale Letter on Aging*, a new publication launched by the School of Medicine to provide up-to-date information about health care for older patients. As are many geriatricians, I am frequently asked, "What exactly is geriatrics?" This question is perhaps best illustrated by an example. If an 80-year-old man tells his cardiologist that he's been having chest pain, the cardiologist will attempt to diagnose the cause of the pain, then prescribe the appropriate treatments. Before deciding how to pursue the causes of the chest pain, the geriatrician will consider the man's other health problems and factors such as family support, socioeconomic constraints and psychological issues. In other words, the geriatrician is concerned with a patient's overall functioning and well-being, as well as the diagnosis and treatment of individual diseases.

Older adults often have multiple chronic diseases and experience difficulty with one or more activities of daily life. Rather than working alone, therefore, as do most other physicians, geriatricians often use an interdisciplinary approach, working with a coordinated team of nurses, social workers, physical therapists, occupational therapists and others.

By Mary E. Tinetti, M.D.

A second question I am frequently asked is, "Why is interest in geriatrics increasing?" The answer is simple—the baby boomers. Now well into middle age, baby boomers are caring for their increasingly frail parents while facing their own aging. This increased awareness of, and interest in, aging has coincided with an emerging understanding of the management and prevention of many of the diseases, impairments and disabilities faced by older persons. Problems such as falling, chronic pain, urinary incontinence and sleeplessness, which only a decade ago were considered inevitable parts of aging, are now readily diagnosable and preventable. While much remains to be learned, geriatricians, through the benefits of research and training, are increasingly equipped to help older persons age successfully.

Mary E. Tinetti, M.D., is Chief of the Section of Geriatrics at Yale University School of Medicine and Yale-New Haven Hospital.

INSIDE

Back in the Swing

A broken hip, says the conventional wisdom, is the start of a downward spiral. But new research on elder disability holds clues to reversing that trend.

Eating well, keeping in shape and remaining mentally active are factors that help older people recover basic activities of daily living such as walking, bathing, dressing and getting out of bed. In a 1997 study of people who had lost such abilities due to illness or accident, Thomas M. Gill, M.D., found that 28 percent regained independent functions over two years. "There is a misperception that once older people become disabled it's a ticket to a nursing home," says Dr. Gill, assistant professor of medicine.

Although age played a decisive role in predicting exactly who would recover, Dr. Gill identified other important factors in the study, the first to attempt to identify factors other than age. Dr. Gill and colleagues looked into diet, physical condition and cognitive function, and found that only 5 percent of those over age 85 recovered independence, but 28 percent of those between 72 and 85 years learned to bathe, walk and perform other functions on their own again.

Now Dr. Gill, with support from the NIH-funded Yale Pepper Center, is working on a prevention plan that focuses on muscle strength, balance and gait training, the use of adaptive devices and removal of environmental hazards. He plans to study 160 older persons, half of whom will be enrolled in a preventive care program. Researchers will assess participants' balance, strength, range of motion, ability to walk and ability to move from sitting to standing. "If someone takes longer than 10 seconds to walk 10 feet forward and 10 feet back at a rapid pace," says Dr. Gill, "that places them at much greater risk for becoming disabled. This simple walking test is one of the best markers of frailty."

Another study will follow 500 to 600 older persons living in the New Haven area for two years to determine why people become disabled. Initial evaluations will assess participants' risks for becoming disabled. "Some people at low risk become disabled and some people at high risk do not," Dr. Gill says. "We have gained a lot of knowledge in terms of what puts older persons at risk of becoming disabled. Now we need to figure out why they become disabled."

Older people who remain active are most likely to recover from injury and illness.

Teaching Geriatrics

Physicians-in-training learn to look for details that make a difference in the care of older patients.

Margaret A. Drickamer, M.D., says she knows her teaching has reached students when they call for advice on treating older patients. "Those questions wouldn't even have gotten asked before the geriatrics rotation," she says of the queries she receives from interns who have gone on to other rotations or clinics. Those questions, in turn, mean a more sensitive approach to caring for the multiple problems of older persons. "Taking care of a 90-year-old is different from taking care of a 40-year-old, whether you're an ophthalmologist or a dietician," says Dr. Drickamer, an associate professor of medicine who teaches geriatrics and ethics and heads the geriatrics unit at the VA Connecticut Healthcare System.

Because geriatric cases so often involve several problems occurring at once, they require an approach that inverts the conventional medical wisdom of seeking out the unifying cause for all the ailments. Instead, geriatricians must look at the symptoms, sometimes treating them independently of their underlying cause. "In geriatrics we try to find out what is threatening the patient's equilibrium and what the contributing causes are," Dr. Drickamer says. "Which of those can we alter?"

In their geriatric rotations residents and medical students, Dr. Drickamer says, learn two facets of caring for older persons. First, physicians must focus on the problems, such as falling, cognitive decline or inability to perform certain activities of daily living. The next

Physicians-in-training need to look beyond symptoms, says Margaret Drickamer, right. "Rather than focusing on illness or disease, they need to find out what's bothering their patient."

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Keeping Older Patients Healthy in the Hospital

An independent, 78-year-old woman enters the hospital for treatment of angina. The treatment is successful but on the second day of her stay she becomes delirious. By the fourth day she is incontinent. By the ninth day she can no longer walk or care for herself. Her decline is largely due to complications of care such as prolonged bed rest and side effects from medication.

"Our goal is to improve hospital care for older patients," says Sharon K. Inouye, M.D., M.P.H., associate professor of medicine, who in 1995 launched Elder Life, an interdisciplinary program designed to prevent physical and mental decline among older hospital patients. The program relies on a staff that includes Elder Life specialists, geriatric nurse specialists, a geriatric chaplain, geriatricians, rehabilitation specialists, dieticians and pharmacists.

Two years after the program began, Dr. Inouye and her colleagues reported that patients in the Elder Life program were less likely to be re-hospitalized or to enter a nursing home and more likely to maintain functional abilities. Last October Yale-New Haven Hospital's board approved Elder Life as a permanent program. The program serves about 800 older people a year.

At Yale-New Haven Hospital, Elder Life volunteers spend time with patients and help them with meals and questions.

At the heart of the program are about 40 volunteers who chat and walk with patients, assist at meal time, and help them get answers to their questions. Patients can refer to an orientation board in their rooms listing the names of their doctors, nurses and volunteers. Also noted is a schedule of the day's activities. "They really have a sense of what's going to happen that day," says Leslie Hurst, M.S., an Elder Life specialist who coordinates activities for patients. "It's very reassuring to people."

Facts About Aging

- A child born in 1900 could expect to live 47 years. A child born in 1997 has a life expectancy of 76.2 years.
- Every 15 seconds a baby boomer in this country turns 50.
- One of the fastest growing segments of the older population is the 100-plus age group. The number of centenarians has increased 16-fold since 1940, from 3,700 to 61,000 today.
- The 13 percent of the population that is 65 or older accounts for 44 percent of all days spent in a hospital, 40 percent of all visits to physicians and a third of the nation's health care expenditures.
- Effective strategies against many disorders common to older persons, such as dementia, urinary incontinence, osteoporosis and falls, could yield huge financial savings while enhancing well-being.

Would the Patient Rather be at Home? Not Always.

Older patients must often choose between the security of a hospital and the comforts of home, when it comes to treatment of acute illnesses. Most want treatment at the place that offers the best chance of survival, according to a recent study by Terri L. Fried, M.D., and colleagues. Dr. Fried, assistant professor of medicine, found that if survivability is ensured, slightly more than half of the older people she studied prefer hospital treatment.

Although preference for location should play a role in treatment decisions, "it's often at the bottom of the list in terms of deciding factors," says Dr. Fried. The availability of services and the potential outcomes rank as the highest priority when patients consider where they want to receive treatment. Next on the list of factors are patients' perceptions about the process of care. Their social support, religious beliefs, self-reliance and past experiences with illness help shape those perceptions. Some people prefer being at home with friends and family at hand, while others choose the hospital so they won't be a burden on loved ones. Patients tend to feel, however, that treatment at home can only be a "low-intensity service," which is not necessarily true, given the increased availability of technology in the home, Dr. Fried says. She believes physicians need to determine what patients "want in terms of both the process of care and its outcomes. We've got to ask."

In her research, Terri Fried found that older patients like both the security of hospitals and the familiarity of home care.

PROFILE

Nanne Scholhamer, Case Manager

A simple observation about older persons leads to a new model of care.

Nanne Scholhamer helps families care for older relatives—and themselves.

In the early 1980s Nanne Scholhamer, M.S.W., saw a pattern in some of the families who came into the Emergency Department at Yale-New Haven Hospital. "It was a worn-out family saying: 'We can't do this any more. We have been up three nights with Mom, who is incontinent, agitated and not sleeping,'" says Ms. Scholhamer, a social worker and case manager. Ms. Scholhamer cared for older patients in nursing homes before starting her career at Yale-New Haven Hospital almost two decades ago. Working in the Emergency Department, she saw the opportunity to help older patients and their caregivers by organizing their care around a formal program in geriatrics. Along with Leo M. Cooney, M.D., Andrea Schaffner, M.D., and Ronald L. Miller, M.D., Ms. Scholhamer helped establish what is today the Dorothy Adler Geriatric Assessment Center, the hospital's outpatient facility for older persons.

"What we proposed to do was find a preventive approach to treating older persons rather than reacting to situations," says Ms. Scholhamer. Many of the people who come to the Adler Center need help for dementia and its symptoms. The center staff also helps persons and families address financial, legal and behavioral issues related to aging, and to plan for the management of care.

An essential element of treatment, says Ms. Scholhamer, is the acknowledgement that the psychological and physical problems that afflict some older persons also affect their families. "We often identify depression in the caregiver," she says. "How do you juggle a full-time career and three teenagers and a husband and your mom? How do you form a division of labor with your siblings so you are not the anointed one, the only one providing care?"

As a case manager, Ms. Scholhamer assesses patients' mental faculties, determines how well they function and interviews family members to identify problems. Can patients cook their own meals? Can he or she move from a chair to a bed? Ms. Scholhamer presents her evaluation to a physician, and together they craft a plan of care that often includes referrals to social service agencies. "What happens between visits to the Adler Center is that the case manager is in very close contact with the family at home," she says. "What we have come to learn and to realize is that one of the most important things is educating and supporting the caregiving system."

Briefly Noted

Sharon K. Inouye, M.D., M.P.H., associate professor of medicine, was presented the 1998 Otsuka/American Geriatrics Society (AGS) Outstanding Scientific Achievement for Clinical Investigation Award by the AGS at its annual meeting in May in New York. Dr. Inouye was recognized for her achievements in clinical research, addressing the health care problems of older adults as a physician investigator who is actively involved in direct patient care.

Thomas M. Gill, M.D., has been named to the editorial board of the Journal of the American Geriatrics Society. Dr. Gill, an assistant professor of medicine, began his three-year term on the board July 1. He has also recently been named a Robert Wood Johnson scholar, a Paul Beeson faculty scholar in aging, and an NIH academic awardee.

Terri L. Fried, M.D., has received two grants to support a project called A Longitudinal Study of Communication and Preferences in End-of-Life Care. This study of older patients, their families and physicians will examine communication about prognosis and treatment alternatives as well as the treatment preferences of patient and family regarding end-of-life care. Dr. Fried received the VA Health Services Research Career Development Award and a grant from the Paul Beeson Physician Faculty Scholars in Aging Research Program.

Mary E. Tinetti, M.D. and **Terri L. Fried,** M.D., are among the authors of When the Patient Cannot Come to the Doctor: A Medical House Calls Program, published recently in the *Journal of the American Geriatric Society*. This paper describes patients in the medical house calls program and the medical problems that could be handled in the home and those that required transfer to the hospital.

Strengthening the Weakest Links

The leg bone—like all the others—is connected to quality of life.

The classroom is an inpatient corridor at the VA Connecticut Healthcare System campus in West Haven, a few miles from the Yale School of Medicine.

Leo M. Cooney Jr., M.D., has asked an 80 year-old patient to walk up and down the hallway. The older man is helping to train a group of 10 residents, interns, nursing students and physicians who observe his balance and gait.

"There are a couple of things to notice," says Dr. Cooney, the Humana Professor of Medicine. "He is always leading with his right leg and following with his left, but the more he walks, the less time he is spending on his right leg." Later, after a bedside examination, Dr. Cooney speculates that a nerve root problem in the patient's back is causing his limp.

The examination is typical of Dr. Cooney's approach to musculoskeletal problems in older patients. "My focus is on why a person is having problems getting in and out of bed, walking, brushing their teeth, combing their hair, using their upper and lower extremities." These are among what are called activities of daily living, ADLs in the jargon of geriatric medicine. Treating older persons is often a battle to maintain ADLs in order to maintain the patient's independence. "If you can't get out of a bed or chair by yourself then it's very difficult to be by yourself all day long."

Dr. Cooney focuses on the functions of the bones, muscles and joints that drive the body's movements. Understanding those purely mechanical issues may suggest solutions to more general problems and have a far-reaching impact on the quality of life. "The real issue is not whether they need a walker or a cane or a crutch," Dr. Cooney says. "It's whether they can get by without another person being there all the time."

He begins his examinations at bedside. In this case he has asked the patient at the VA a series of questions about his ability to move and whether he gets dizzy when he stands up. Then he watches for clues to what's wrong. "You watch them try to get off the chair. You watch them get off the bed. You watch them walk," says Dr. Cooney, who is chief of the Section of General Internal Medicine and director of care coordination and the Continuing Care Unit at Yale-New Haven Hospital.

Therapy, he says, varies with the patient and the ailment. "The key challenge is not what therapeutic models you're going to use. It's to identify the larger causes of the patient's dysfunction." In this case therapy is, to a large degree, in the patient's hands. He will have to adhere to a regimen of physical therapy, adjust to using a wheelchair and adapt his home to accommodate his lack of mobility. "Sometimes we can fix things," says Dr. Cooney. "Probably 90 percent of the time things are not fixable. They are things that need to be identified so we can make plans for the family or the patient to help care for him or herself."

Leo Cooney looks to the bones and muscles for clues to dysfunction.

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step is to select the appropriate in- or outpatient treatment for the patient.

Geriatricians work as part of a team that includes physicians, social workers, clinical fellows, and nurse practitioners. Many people in those areas are seeking training in geriatrics, Dr. Drickamer says. "I think they realize that once in practice, they will need to know how to take care of a geriatric population," she says.

For physicians, training begins in medical school, where third-year students study geriatrics during their outpatient rotation. As seniors they may take an elective in geriatrics. In their first and third years, residents have a four-week geriatric rotation. Yale also offers a geriatric fellowship that starts with a year of clinical geriatrics followed by up to two years of geriatrics research.

"We teach people how to take care of people in different settings—nursing homes, subacute care settings, homes, hospices," Dr. Drickamer says. "Rather than focusing on an illness or a disease, they need to find out what's bothering their patient, what's putting that patient at risk and finding causes for that."

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Basement stairs, multiple medications and slippery baths all increase the risk of a fall.

Before the Fall

Common-sense approach can help prevent this most common of injuries and preserve an older person's independence.

Each year in the United States, more than a third of older persons fall. One in 10 of those falls causes a serious injury. But even if no injuries result, a fall can damage an older person's confidence in his or her ability to function.

"Quite often it can be the beginning of loss of functional independence," says Mary E. Tinetti, M.D., professor of medicine and Epidemiology and Public Health. "People who have had a fall are much more likely to come to the emergency room, to be admitted to the hospital, or to use nursing homes or home services." Like all geriatricians, Dr. Tinetti's goal is to keep older persons as independent as possible. For the past eight years she has studied why and how falls occur, and has developed a protocol of simple measures that have been found to reduce falls by 30 percent.

Fall prevention starts with an inventory of risk factors in the home, including the presence of stairs, throw rugs and step stools. Dr. Tinetti assesses the patient's hearing, balance, gait, blood pressure and list of medications. Individual treatment plans may include a removal of environmental hazards and a change in medications. Physical therapists teach patients how to do exercises at home that improve balance, strength and walking.

The team also recommends simple and inexpensive measures to prevent falls. For example, an older person whose washing machine is in the basement is encouraged to bundle dirty clothes in a bag and throw it down the stairs. Clean laundry should be placed in small piles and moved up the stairs step by step. Home improvements include placing grab bars in strategic locations such as the bathroom and eliminating glare by removing direct lighting.

"We wanted to select things that people can do pretty readily and inexpensively," Dr. Tinetti says.

Peter Salovey

Margaret Weeks

Robert Heimer

Jeannette Ickovics

JOHN CURTIS (4)

Robert Heimer, Ph.D., associate professor of epidemiology. "There's no question about that. The question is, 'Is this benefit available only to people who come and exchange needles directly?' " Using color-banded syringes that will be distributed to 150 injecting drug users in Hartford, 150 in Oakland and 240 in Chicago, they'll track usage patterns over four years. They plan to follow a total of 5 million needles from index participants in exchanges to a second level of drug users who don't participate but know people who do. They will continue to track the needles to see whether they penetrate a third level of drug users who neither use the exchange directly nor know anyone who does.

Dr. Heimer and Edward H. Kaplan, Ph.D., professor of management sciences and of public health, previously concluded that New Haven's needle exchange program reduced the rate of new infections by a third. In one of the first federally funded studies of needle exchanges, they logged when and where needles were distributed, who received them, when and where they were returned and who returned them. They then checked the used syringes for HIV. They found that a needle's street life dropped from about two weeks to a few days and that usage dropped from an average of eight to 12 times per needle to between one and five times. The study also showed lower percentages of syringes with blood from HIV-infected people and hepatitis B-infected people. Dr. Heimer's research has shown that the virus can survive in a syringe for up to a month, depending on how much blood is in the syringe and how much of the virus is present in the blood.

"What is left to do," he says, "is to determine who benefits and who doesn't from needle exchange programs, to determine where operations can be improved to maximize their impact, and to create enhanced needle exchange programs that target people who are at highest risk."

Pregnancy and disease

Jeannette R. Ickovics, Ph.D., is examining how adolescent relationships bear on pregnancy, risky sexual behavior and sexually transmitted diseases. Her study focuses on 600 girls ranging in age from 14 to 19, half of whom will be pregnant. "I think the question, particularly for adolescents, is whether or not pregnancy is by choice, by chance or by coercion," says Dr. Ickovics, assistant professor of epidemiology and psychology. "The very behavior that put them at risk for pregnancy—unprotected intercourse—also puts them at risk for sexually transmitted diseases."

She plans to recruit the subjects of her study at hospitals or health centers in Hartford, Bridgeport and New Haven. Dr. Ickovics said she will ask how many sexual partners they've had, how often they have sex and whether the sex was protected.

"Past behavior is the best predictor for future behavior," Dr. Ickovics says. The study will follow the teens over two years to determine whether those who are pregnant become pregnant again and whether others become pregnant for the first time.

"We certainly hope to use the information to develop interventions that will limit and reduce the risk of adolescent women for both pregnancy and sexually transmitted diseases."

tions," says Gerald H. Friedland, M.D., who directs the Yale AIDS Program, a treatment center for people with AIDS. He has been tracking the disease since the early 1980s, when as a physician at Montefiore Hospital in the Bronx, he was among the first to notice it among drug users. "The epidemic in New Haven and the entire Northeast has been an epidemic of vulnerable populations. That is increasingly the character of the epidemic nationally."

As HIV spreads through a marginalized population, Dr. Merson finds a disturbing lack of political will to implement proven prevention strategies. Politicians won't support needle exchange programs for fear of being perceived as soft on drugs (See *Politics 1; science 0*). The teaching of safe sex in schools raises social and religious objections. All this, Dr. Merson notes, while television news anchors open their broadcasts with speculation about oral sex in the Oval Office. "Good public

health policy is based on science. Unfortunately, when it comes to AIDS, science has too often been ignored," he says, adding that AIDS never surfaced as an issue in the 1996 presidential campaign. "It was the leading cause of death in our young people and neither candidate wanted to talk about it."

With those concerns in mind early in his tenure at Yale, Dr. Merson began discussing AIDS with colleagues in various disciplines. Yale had already been at the forefront of treatment programs with the Yale AIDS Program, and Yale researchers had conducted one of the first federally funded studies to evaluate the efficacy of needle exchange programs as an AIDS prevention measure, but Dr. Merson felt even more could be done. He found enthusiasm for an AIDS prevention project among his colleagues, but also some doubts that the federal government would fund another AIDS center. Dr. Merson persisted, got an encouraging response to his initial proposal from the NIMH, and submitted a plan. Last September Yale President Richard C. Levin announced the $10.8 million grant from the NIMH and NIDA. The funding will keep CIRA going for about four years, but those involved foresee a life beyond that. "Our vision for the center was that we would continue to have 15 to 20 domestic and international projects associated with it in one way or another, for a decade or more," Dr. Merson said. "I would hope we could serve as an international resource in HIV prevention." Among the projects envisioned are training in prevention research for scientists, developing research capabilities at community-based organizations and analyzing policies that relate to HIV prevention.

Adults and children estimated to be living with AIDS

SOURCE: UNAIDS JUNE 1998 GLOBAL REPORT; FIGURES AS OF END OF 1997

CIRA combines the efforts of more than 55 researchers from six Yale schools and departments as well as two Hartford-based partners, the Institute for Community Research and the Hispanic Health Council. Activities are centered around four major research projects and three "cores," organizational units that support the work. One core handles administrative chores, another compiles the data collected and the third explores legal and ethical issues. Researchers are also working on 13 projects affiliated with CIRA, including studies of drug abuse among children and high-risk behavior of drug users infected with HIV.

Keeping everything organized falls to Caroline Roan, associate director of the center. She is in charge of setting up CIRA's infrastructure. "When I started, I was working on a laptop sitting on the floor," she says. She relies on e-mail and telephones to keep people in touch, but also schedules regular committee meetings, brown bag lunches and evening seminars.

JOHN RANARD

Drug use in Eastern Europe has led to a rapid increase in the incidence of HIV infection since the breakup of the Soviet Union. Most cases are found among drug users and their sex partners. CIRA is about to begin a five-year, $2 million program to bring Russian scientists to New Haven for training in HIV prevention research.

SHARING IDEAS

The interdisciplinary nature of the project becomes apparent at an evening seminar in mid-February. As Peter Salovey, Ph.D., a psychologist who is co-director of CIRA and director of the project on framing persuasive messages, is explaining how to get the message out on risky sex, needles, condom use and HIV testing, Edward H. Kaplan, Ph.D., a management sciences expert who led the study of New Haven's needle exchange program, picks up a piece of chalk and begins to apply mathematical modeling to Dr. Salovey's theories. The topic is the not-always-logical thought process behind risky sexual behavior. Wearing a condom will produce a fairly certain result, says Dr. Kaplan. Not wearing a condom offers two possible results—getting infected or not getting infected. He charts the possibilities on a blackboard and begins writing formulas. "It could be perfectly rational for people not to use condoms if risk is perceived as small," Dr. Kaplan concludes.

At a CIRA conference in late May, Alvin Novick, M.D., professor of ecology and evolutionary biology and director of the center's law, policy and ethics core, leads a discussion on surveillance of AIDS cases and HIV infections. He poses a rhetorical question: Does the public health benefit of tracking cases of HIV infection outweigh individual rights to privacy?

Some states report only cases of AIDS, while others report cases of HIV infection. Fear of having their names on a list of those infected with HIV has made people reluctant to get tested for the virus. There are valid scientific reasons to compile such a list, Dr. Novick says, but equally compelling privacy issues. "You want to count people who are infected. They're all going to need health care. They're all potentially infectious to others," he adds. "You could mandate the testing of everyone and then you'd have perfect surveillance. We would have to ask eventually whether it was the least invasive."

At CIRA's first brown bag lunch in February, another ethical question surfaces. The topic is informed consent. How do researchers secure the cooperation of people they're studying, explain what they're doing and spell out their rights? "They have to know the purpose of what you are doing," says Robert J. Levine, M.D., HS '63, professor of medicine and co-director of the law, policy and ethics core, who leads the discussion. "They have to understand the risks. They have to understand the benefits. They have to know the alternatives." The discussion turns to another question. Can researchers

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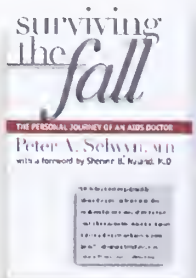
EXCERPT

Dispatch from the front lines

In his new book, Yale physician Peter Selwyn describes the early days of the epidemic.



Fresh out of Harvard Medical School in 1981, Peter A. Selwyn, M.D., began his career at the Montefiore Medical Center in the Bronx. As an intern he saw the AIDS epidemic run rampant through a community already challenged by poverty and drug addiction. In *Surviving the Fall: The Personal Journey of an AIDS Doctor*, published this spring by Yale University Press, Dr. Selwyn describes his experiences, the people he treated and how their lives, and deaths, helped him confront grief in his own life.

Dr. Selwyn, associate professor of medicine and of epidemiology and public health, came to Yale in 1992 as associate director of the Yale AIDS Program. He is the medical director of Leeway, a 30-bed skilled nursing facility for AIDS patients, many of whom are in the late stages of the disease. The center, which opened in October 1995, recently received state health department approval to add 10 beds, which will be geared to the special needs of patients with HIV and co-existing mental illness.

Dr. Selwyn recently received a faculty scholar's award from the Project on Death in America of the Open Society Institute, which is intended to enhance end-of-life care, teaching and research at Yale-New Haven Hospital and Yale School of Medicine.

I have become an "AIDS doctor," an outcome I never could have anticipated when I graduated from medical school in 1981. I have been involved in the care of more than a thousand patients with HIV infection, and for almost ten years these have been my only patients. I have been fundamentally changed by this experience, and my history is now indelibly linked with the faces and histories of my patients, especially the many hundreds who have died. This story is their story, and mine.

The beginning of the AIDS epidemic in the Bronx in the early 1980s was a time without recent precedent, a time when a fatal blood-borne disease spread, without warning and with grim efficiency through an unsuspecting and vulnerable population. This same insidious pattern was unfolding in Harlem, Brooklyn, and many other poor, inner-city communities in the United States and around the world. In these communities AIDS was affecting poor, minority populations, primarily intravenous drug users, their sexual partners, and children, in addition to gay men. I have long felt that this history and these stories need to be told, to help honor and take notice of all the uncelebrated men, women, and children who lived and died with this unforgiving plague. Statistics have been described as human beings with the tears washed off. In this narrative, I have tried to restore some humanity to the statistics.

This book describes both the first wave of the AIDS epidemic in the Bronx and the gradual process by which I also became aware of my own unfinished business. Absorbed in the pain and losses of my patients and their families, I slowly began to acknowledge the grief that I had carried unknowingly for decades following the sudden death—and apparent suicide—of my father when I was an infant.

Surrounded by dying young parents, I slowly came to understand, for the first time in my life, what it meant to have a father, and to be one. This process of awakening led me to come to terms with my personal history, along with the stigma and the family secrets that it had engendered, and finally, with my own role as a son, as a husband, as a father to two young children, and as a physician. It was, for me, a journey of healing in the midst of the epidemic, a reclaiming of life in the midst of death.

• • • • •

I remember Nelson most vividly, less because we shared the same birthday than for the gentle sweetness of his soul. In our population of methadone program patients, in which the patients with the most extreme personality disorders seemed to require the most attention, Nelson stood out in his sincerity, thoughtfulness, and calm. Unlike many other patients, he had an emotional maturity that enabled him to talk about his fears, concerns, and feelings about the disease without taking refuge in further drug use or other escapes. Sometimes, working with our patient population, it was easy to become overwhelmed with this sea of neediness, and with the feeling that no matter what you did, it would never be enough. Nelson was not like that, and as a result he tended to draw staff to him in a way that made it clear that they were getting as much emotional support and positive energy from him as they were giving in return.

His wife, Marilinda, who accompanied him to all of his medical visits, was also gentle, composed, and a model of grace under pressure. Their only child, Manuel, was 12, and it was clear that his parents had been successful thus far in protecting him from the overriding influence of the street, in their neighborhood not far from Yankee Stadium, south of the Cross-Bronx Expressway. This close-knit family of father, mother, and only child stirred something in me that I did not identify consciously at the time. It was an image of the ideal family that I had never experienced, or had experienced only too briefly before it was erased from my memory.

Nelson was the first patient for whom I wrote a prescription for AZT, the first

week that the drug became available, in spring 1987. I remember carefully writing the words on the prescription, foreseeing that this would be the first of thousands of such prescriptions that I would write. Nelson and I had both been anticipating the arrival of AZT, and indeed for everyone involved in the epidemic at the time this was a momentous event: it represented, for the first time,the possibility that this virus could be treated. Everything that we had done up to then was supportive care. With the advent of AZT, we were at last fighting back at the virus itself, however crudely or ineffectively.

Both of us knew, at the moment I handed him the prescription, that this would probably not be enough to keep him alive much longer, that this was probably going to be, for him, too little too late. Yet for both of us, at that same moment, AIDS suddenly lost a little bit of its terror and mystery.

After doing well on AZT for about six months, Nelson started to fail, first losing weight, then starting to lose his balance and coordination, and then becoming more apathetic and withdrawn. One day, he had a seizure in the clinic and was rushed to the North Central Bronx Hospital emergency room, where a CAT scan revealed a large circular lesion in one of the frontal lobes of his brain. This was likely either cerebral toxoplasmosis or lymphoma but the diagnosis could be made only be performing a brain biopsy. At that time, it was virtually impossible to find surgical consult- ants at our hospital who were willing to perform procedures on AIDS patients, and this case was no exception. In addition, both Nelson and his wife had decided that if he were to become sick again, they would not want further aggressive treatment if the quality of his life would be unlikely to improve. We treated him empirically for a week with medication that would be effective against toxoplasmosis, if that were in fact his diagnosis, but he showed no improvement. His mental status continued to decline, and he began to slip in and out of consciousness.

The last time I saw him, I sat by his bedside and took his hand. He opened his eyes, smiled weakly, said, "Thank you for being here," and squeezed my hand briefly. Marilinda, who had been sitting nearby, began to cry softly. I talked with her a little while and then watched as she gave him a sponge bath. I had never been to a baptism, but there was something sacred about the way she washed his body with such long, methodical, and loving movements; it seemed as if she knew that this would be the last time she would touch his living body, and that she wanted to linger over it all the more. He died in his sleep that night.

A few months before his final illness, Nelson had told me that he had one unfulfilled wish: to return to Puerto Rico and ride his motorcycle again. He had an old Harley-Davidson, which he had restored from parts and kept stored in a friend's garage on the island. He giggled as he conjured up the image of himself, already beginning to look a little emaciated, racing over hills and around steep mountain bends near his family's home in the central coffee-growing region of Maricao. Not being certain that he could tolerate such a trip, but realizing that it was important for him to go regardless, we arranged for Nelson to have enough medication for several weeks, and local medical backup if he needed it. He sent me a postcard and returned several weeks later, bronzed from the sun and laughing, saying matter-of-factly that there was nothing else he had left to do. (I remember thinking at the time how wonderful it must be to have that feeling.) It was soon after that trip that he began to descend rapidly into his final illness.

I went to Nelson's funeral one rainy evening, at a small funeral parlor in East Harlem. He was lying in an open coffin in a room with red velour walls and dark wooden chairs. I approached the casket, stood and bowed my head for a moment and saw that they had done a nice job preparing him. He was wearing a pressed dark brown suit, hair neatly combed, hands clasped in front holding a rosary. I wondered, as I always do in such situations, where he really was at the moment, and wished him well wherever he was. I turned away from the casket, saw Marilinda, gave her a hug, and then noticed his parents, whom I had briefly met in the hospital. Nelson's father, misty-eyed, pressed my hands clumsily between his and said in Spanish, "Thank you, we will never forget what you did for our son." These words, spoken to me from a father about his son, touching on death, and remembrance, and love, moved me greatly and reaffirmed for me as I walked out into the night that I had chosen the work I needed to do. I still did not realize how close to home these words would come in my own life, how much they would touch my long-dormant feelings about the loss of my father and his memory. Words from a father about his son, spoken in gratitude to another man's son who had grown up without his father. As I watched this family confront the loss of its father, husband, and son—seeing Nelson's life reflected in relation to his survivors—it stirred something in me that was both numb and painful, something which would eventually lead me back to my childhood history.

GEORGE RUHE

Yale physician Peter Selwyn examines a patient at Leeway, a skilled nursing facility in New Haven for people with AIDS, where he is medical director.

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guarantee confidentiality to drug users who have reason to fear the law? What obligations do they have to report illegal activities to authorities? "These are not the sorts of issues that have clear answers," says Dr. Levine, chairman of the medical school's Human Investigation Committee. He and others note that CIRA is covered by a federal certificate that guarantees interview subjects confidentiality.

During an interview in her Hartford office, Margaret R. Weeks, Ph.D., associate director of the Institute for Community Research and director of CIRA's study of high-risk drug sites, says researchers are required to report child abuse. They will also act in life-threatening situations, such as overdosing. "Often it's a judgment call out in the field," she says. Outreach workers will also make referrals for drug users who seek treatment and will offer health kits. "The benefits of understanding these places, in order to protect health for the public good, justifies our research. If we go in there to intervene, either to impose the law upon them or impose something else upon them, we undo our ability to do research."

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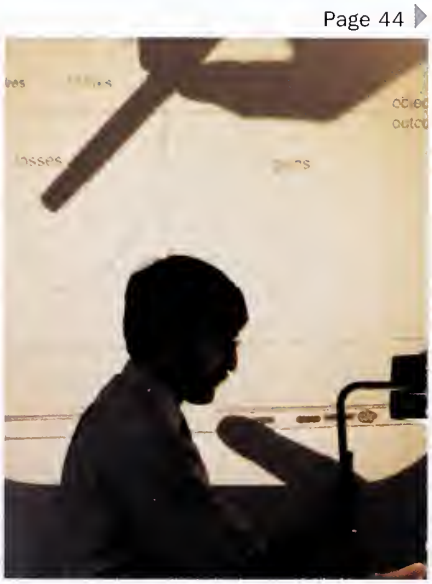


JOHN CURTIS

Peter Salovey describes prospect theory during a presentation at a CIRA meeting.

Mobile health unit extends AIDS care

In 1993, an 18-foot van loaded with clinicians, social workers, counselors and outreach workers began winding its way down New Haven's streets to offer medical services, HIV testing and counseling and referrals to substance abuse programs. The van, since replaced by a 36-foot model with two exam rooms, a counseling room and a waiting area, is linked to the city's needle exchange program. Funded by a $3 million grant from the National Institute on Drug Abuse, the health care van's operation is a collaboration among the medical school, the City of New Haven, Yale-New Haven Hospital and the Hospital of St. Raphael, and several community health centers. Although it operates in conjunction with the city's needle exchange program, it has separate funding.

"We traveled everywhere the needle exchange went," says Frederick L. Altice, M.D., HS '87, director of the van project. "I realized this would be an important method to provide medical care and prevention services to drug users." It also provides medical care to people who are homeless and lack medical insurance, providing acute care and referrals to community-based health care providers. In its first three years of operation the van treated more than 1,800 people, many of whom had HIV/AIDS.

Prison program offers opportunities for prevention

One of the ironies of the criminal justice system is that it brings many people into contact with regu-lar health care for the first time in their lives, says Frederick L. Altice, M.D., HS '87, assistant professor of medicine and a CIRA-affiliated researcher. Because they're under constant penal surveillance, they can also be placed under close medical watch.

"It's an important opportunity to detect disease and to initiate treatment," says Dr. Altice, who has served in recent years as a consultant to Connecticut's Department of Corrections, treating inmates with AIDS. "For those who are at risk for HIV and are still negative, it's a place where HIV risk reduction interventions should be introduced, in order to decrease their risk for getting HIV at a later time."

Cases of AIDS, he says, can be found in prisons at a significantly higher rate than in the general population. "The war on drugs has basically instituted widespread mandatory sentences on drug users and it is drug users who are at risk for HIV," he says. "It's the behavior that's occurring just before people come in to prison that is the riskiest. It is unprotected sex and sharing of injection equipment."

Nationwide, according to Bureau of Justice statistics, AIDS cases were six times more prevalent in the prison population than in the general population. At the end of 1995, there were 5,099 confirmed AIDS cases in prisons, and AIDS was the cause of 34 percent of all inmate deaths. Unfortunately, most cases of HIV go undetected within the prison system, Dr. Altice says.

Dr. Altice has developed programs that link HIV-infected inmates to community health care when they leave prison. "The most basic and difficult problems

PETER CASOLINO

A 36-foot health care van, dedicated in 1996, follows a route through New Haven to provide medical care, HIV testing and counseling and referrals to substance abuse programs.

such as stable housing and food," Dr. Altice says, "are things that destabilize our patients when they return to the community. Stable housing remains one of the most crucial and unavailable unmet needs. The best we can do is get them into a shelter. Sometimes you have to put a Band-Aid on one wound while you're dealing with other wounds, such as accessing drug treatment and medical care."

Nursing research improves care locally and around the world

Yale AIDS researchers from the School of Nursing can be found interviewing sex workers in Thai brothels and drug users in Poland, conducting clinical trials to prevent gynecologic complications in New Haven women infected with HIV, and teaching AIDS treatment and prevention to nurses in China and Vietnam.

"What became apparent from the earliest days of the epidemic," says Ann Williams, M.S.N. '81, "was that nursing care made a huge difference. In the beginning—and it's still true for most of the world—exquisite nursing care was all we had to offer people with HIV. Now, with the promise of long-term survival on the horizon for many, our focus is shifting from acute symptom management to interventions directed at the problems raised by living with a chronic condition."

Professor Williams is principle investigator for the School of Nursing-based GRACE project, or Gynecologic Regimens Addressing Candida Events. GRACE was funded by the National Institute for Nursing Research to examine the efficacy of three nursing interventions to prevent Candida vaginitis, a common and distressing problem for women with AIDS. "Now that the study is complete," she says, "we are turning our attention to new challenges such as strategies to improve medication adherence and screening for anal cancer. Neither of these issues were on our radar screen earlier, when our goal was limited to helping people feel better and live as long as possible."

Professor Williams, who also serves as an advisor for School of Medicine students, was pleased that the dissertation research for the nursing school's first doctoral graduate, Wantana Limkulpong, D.N.Sc. '98, was a study of safer-sex practices among commercial sex workers in Thailand. Ms. Limkulpong discovered that although knowledge levels were high, financial pressures and lack of self-confidence prevented many women from initiating condom use. Limkulpong is returning to a faculty post at Mahidol University in Bangkok, where she will continue her research.

The Nursing School's global reach is extended by its collaborations with the Yale-China Association. Under one such project, Jane Burgess, director of the YSN-based Connecticut AIDS Education and Training Center, traveled to Hunan Province in May. In a program supported by the World AIDS Foundation, Ms. Burgess and Professor Williams, along with Nancy Angoff, M.P.H. '81, M.D. '90, are conducting a series of workshops to prepare Chinese nurses to respond to the growing threat of an HIV epidemic in the world's most populous country. In association with the workshops, Professor Williams and Dr. Angoff will study HIV seroprevalence in a storefront STD clinic in Changsha. Although HIV testing is not widely available, a skyrocketing incidence of anogenital HPV infections and genital ulcer disease suggests that the risk is extremely high.

Closer to home, Professor Williams and Dr. Angoff are looking at strategies to improve patient-provider communication about end of life care and advance directives. The range of AIDS nursing research under way at the School of Nursing illustrates the global challenge posed by this epidemic and the importance of strong interdisciplinary collaborations.

For college students, a focus on safer sex

JOHN CURTIS

Sally Rinaldi

Every fall incoming freshmen can expect invitations to one of 36 safer-sex workshops held during their first week of school. Also offered at cultural houses, fraternities and sororities, the workshops are led by 27 peer educators who talk about the risks of unprotected sex, which include sexually transmitted diseases and pregnancy. Overseeing the program is Sally Rinaldi, R.N., M.P.H. '82, who coordinates health education programs for Yale University Health Services.

"Mostly we talk about why students need this information, why it is important," Ms. Rinaldi says. "You may not need it today, but you might need it down the road. Even if you feel you don't need the information for yourself you might need it for your roommate or your friends." She relies on health advocates among graduate students to inform their peers, who are more scattered in housing.

Every year, health educators hand out about 40,000 condoms to graduate and undergraduate students. Undergraduates can get them from freshmen counselors or peer educators. On Valentine's Day the program gives away safe sex kits which include condoms, lubricant, information on how to use them and information on abstinence.

"We always include information about abstinence," says Ms. Rinaldi. "There are people who are sexually active and people who plan to abstain. It's not always the same for everyone."

Hunting down HIV

Yale research produced two of the current crop of AIDS drugs and a promising new line of inquiry. It may take a virus to kill a virus, if genetic approach is proven effective.

By John Curtis

JOHN CURTIS (2)

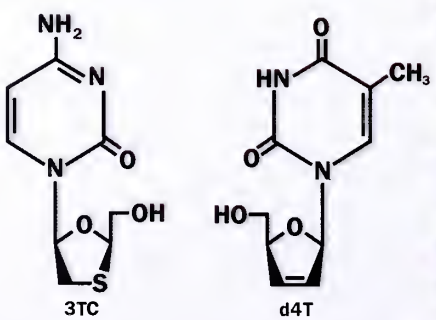
William Prusoff and his late collaborator, Tai-Shun Lin, discovered that d4T, although it was a poor anticancer agent, could slow the production of HIV.

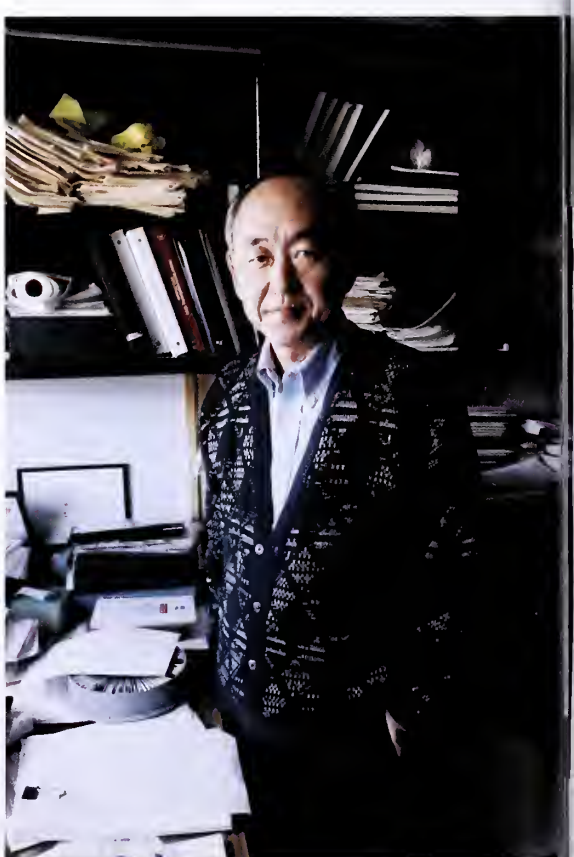
It is perhaps testimony to HIV's resilience and versatility that physicians celebrate drugs that do no more than slow the virus's progress in the human body. HIV hides and mutates in order to dodge the medications sent to stop it. And while these agents are limited in their therapeutic value, so far they have provided the only hope in the treatment of AIDS.

Researchers at Yale have played key roles in developing two of these compounds, the reverse transcriptase inhibitor d4T, known commercially as Zerit, and 3TC, known as Epivir. Both are key ingredients of the so-called drug cocktail that has fundamentally changed the nature of AIDS therapy during the past three years. They not only inhibit the reverse transcriptase enzyme, but more importantly, by terminal incorporation into the growing proviral DNA, a precursor to the virus, they prevent the reproduction of the virus. These compounds are frequently combined with other inhibitors which inhibit the viral enzyme protease, whose activity is essential for the formation of an infectious virus.

In addition to contributing to traditional, small-molecule pharmaceutical development, Yale scientists are exploring new avenues in the fight against AIDS, in particular the potential of biological agents to effect a cure. One novel approach has resulted in a genetically engineered virus that attacks and kills HIV-infected cells in culture while leaving other cells unharmed. Whether it will do so in humans, or even animals, remains to be evaluated.

William Prusoff, Ph.D., professor emeritus of pharmacology, has spent a 45-year career at Yale investigating potential antiviral and anticancer compounds, part of the traditional, small-molecule approach. In the late 1950s he synthesized idoxurine, an analog of thymidine, which





Yung-Chi (Tommy) Cheng's laboratory looks for ways to reduce the toxicity of drugs that work against AIDS. He found that 3TC could reduce side effects when used in combination with AZT.

was the first antiviral compound approved by the FDA for therapy in humans. It was used to treat herpes infection of the eye. Dr. Prusoff and his long-time collaborator, the late Tai-Shun Lin, Ph.D., discovered in the 1980s that a thymidine analog, reported in scientific literature as a poor anticancer agent, was very effective in slowing the production of HIV. This compound is known as d4T or stavudine. How does d4T work? "It gets incorporated into the growing viral DNA chain and synthesis of proviral DNA is stopped," Dr. Prusoff says. HIV's mechanism for reproducing is simply turned off.

Bristol-Myers Squibb developed the drug under the trade name Zerit and brought it to market in 1994. Almost single-handedly, d4T has boosted Yale's annual patent royalty income nearly tenfold, to $34 million for the year ending June 30. [AZT, the first medication shown to slow the progress of HIV, was created by a Burroughs Wellcome team led by Yale alumnus David W. Barry, M.D. '69, HS '69-72. (*Yale Medicine*, Fall 1997)]

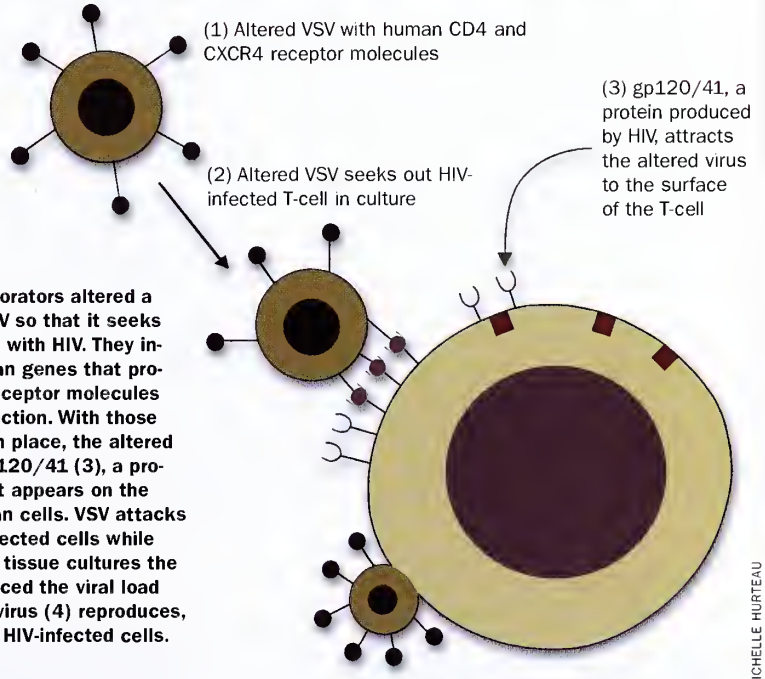
"They are very potent in decreasing the viral load in the bloodstream," says Dr. Prusoff, referring to the limitations of the currently available anti-viral medications, "but you don't really eliminate the viral load in the cell where the virus is hiding. This is critical for an eventual cure."

The combination approach

Two hurdles in AIDS pharmacology are toxicity and drug resistance. As with cancer chemotherapy, AIDS medications can make people very sick. For example, d4T can cause peripheral neuropathy, tingling, numbness and pain in the extremities; ddI can cause lethal pancreatitis; and AZT is toxic to the bone marrow and can cause anemia, headaches and nausea. In addition, HIV often mutates when challenged by a single therapeutic agent, creating drug-resistant strains of the virus that foil treatment. By prescribing AIDS drugs in combinations, the physician can reduce individual dosages and minimize both side effects and the potential for resistance. "There are dozens of different combinations," Dr. Prusoff says. "Resistance develops to all of those compounds." Resistance to d4T has been found with laboratory strains of HIV, but mutant forms resistant to d4T have not been observed in patients being treated with d4T, Prusoff says.

JOHN CURTIS

John Rose converted a cattle virus into a hunter and destroyer of HIV-infected human T-cells in culture.



SUZAN SHUTAN & MICHELLE HURTEAU

Stalking HIV

John Rose and his collaborators altered a cattle virus known as VSV so that it seeks out human cells infected with HIV. They inserted into VSV the human genes that produce CD4 and CXCR4, receptor molecules where HIV begins its infection. With those receptor molecules (1) in place, the altered virus, (2), is drawn to gp120/41 (3), a protein produced by HIV that appears on the surface of infected human cells. VSV attacks and destroys only HIV-infected cells while ignoring healthy cells. In tissue cultures the engineered VSV has reduced the viral load by 10,000-fold. The new virus (4) reproduces, going on to attack other HIV-infected cells.

Yung-Chi (Tommy) Cheng, Ph.D., the Henry Bronson Professor of Pharmacology, has worked on a parallel course to Dr. Prusoff. While Dr. Prusoff found drugs that work against AIDS, Dr. Cheng has sought ways to reduce their toxicity. Long-term usage, Dr. Cheng says, leads to a decline in the mitochondrial DNA of certain organs, affecting their ability to function properly. After a month or two of use, anti-retroviral agents such as AZT, ddI and DDC can cause problems in nerves, the pancreas, muscles and the liver.

"If we know the mechanism for the toxicity, we may be able to prevent the toxicity by either making a new compound or by combination with other drugs," says Dr. Cheng, whose laboratory team studies the behaviors of virus-specific proteins in order to exploit them. "The next question is, 'Can we find a drug that will be active against the virus but will have no toxicity to the mitochondrial DNA?' "

That drug turned out to be 3TC, a compound that has positive and negative forms that mirror one another. Originally synthesized by a Canadian researcher and identified as an antiviral agent, samples were sent to Dr. Cheng for study of its toxicity. He found that 3TC's negative form reduced side effects when used in combination with AZT. The combination increases 3TC's efficiency at inhibiting reverse transcriptase, an enzyme HIV uses to reproduce its genetic material. Dr. Cheng identified 3TC as an agent that would be less toxic to mitochondrial DNA than DDC, ddI or d4T.

"We are increasing the antiviral effects, decreasing the side effects. This may be a key mechanism of the combination protocol against HIV," he says. "In the meantime we also discovered the same compound is active against the hepatitis B virus. The results were very promising." So far, 3TC has been approved for HIV treatment and is in clinical trials for use against hepatitis B.

Search and destroy

A new approach to AIDS may grow out of work led by John K. Rose, Ph.D., professor of pathology and cell biology. The agent he developed, based on a common virus found in cattle, has killed HIV-infected cells in culture. Scientists in the Rose lab are trying to develop a form of the engineered virus that will work against SIV, the simian form of HIV, for use in animal trials. If it is proven safe and effective in animals, human trials could follow.

Dr. Rose's discovery was the result of efforts to determine how viruses are constructed. "Once we know that, it becomes possible to change the components," he says. The strategy was to trick HIV-infected cells into binding with another virus that would destroy them. He exploited the affinity between an HIV protein and its human targets—molecules on the surface of T-cells that allow HIV to enter and infect them. Infection begins when the HIV protein, gp120/41, is drawn to the receptor molecule CD4 and the co-receptor molecule CXCR4. "What we did was to reverse that process," Dr. Rose says.

Dr. Rose deleted glycoprotein genes from the cattle virus known as vesicular stomatitis virus (VSV) and replaced them with the human genes that produce CD4 and CXCR4. With gp120/41 on human cell surfaces as its prey, the receptor-laden virus becomes a hunter drawn to HIV-infected cells like a magnet. "It doesn't completely eliminate HIV," Dr. Rose says. "It reduces the viral load 10,000-fold in tissue culture cells. In the best of all possible worlds it might prevent people from progressing to AIDS."

He also sees the possibility of developing an AIDS vaccine, using recombinant VSV as a vaccine vector. "You can create a live virus vaccine, which might express protein from a virus that you want to immunize against." Dr. Rose's group has already shown that VSV vectors expressing influenza virus proteins can protect against influenza.

"The ideal situation," says Dr. Prusoff, "would be to develop a vaccine to prevent infection and at the same time find drugs which not only decrease the virus in the blood stream, but also get in to the hiding places of the virus in the various parts of the body. Eventually the source of the virus will be killed and you prevent new infections from taking place."

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ON THE STREET

"Outreach workers. Kits and condoms," shouts Dr. Wilson, one of the anthropologists studying drug sites, as he and Ms. Martinez climb the stairs of an abandoned building back in Hartford's Charter Oak neighborhood. Before leaving their office, they stuff their pockets and shoulder bags with condoms and kits that include small vials of bleach and water for cleaning needles. They also carry flashlights to help them find their way through abandoned buildings and avoid needles, feces and debris.

The condoms and bleaching kits serve two functions. They provide an opportunity for outreach workers to introduce themselves to drug users. But as an AIDS prevention tool, bleaching has a mixed record. It requires filling the syringe with bleach and holding the bleach inside for 30 seconds, then repeating the process three times. After bleaching, the needle should be rinsed with water. If done correctly, the procedure disinfects the needle and syringe, but some addicts don't hold the bleach inside for the required 30 seconds. Although they're not always used properly, Dr. Wilson believes there is a benefit to distributing the kits. "If anyone's using them at all," he says, "it's better than no one using them."

What researchers and, indeed, the entire CIRA project are up against becomes clear on Irving Street in Hartford's Upper Albany neighborhood. On a busy street corner between a police substation and a community health center the signs of drugs are all about. "Got a

Two teams, each with an anthropologist and an outreach worker, are studying the rules that govern drug use in abandoned buildings and other sites in Hartford. They hope to slow the spread of HIV by convincing drug users not to share needles. Maria Martinez, Glenn Scott, Scott Wilson and Stephen Cabral visit an abandoned building in the Charter Oak neighborhood.

JOHN CURTIS (4)

kit? Got a couple of rubbers?" two men ask as they approach anthropologist Stephen Cabral, Ph.D., and his colleague, outreach worker Glenn Scott. Both work at the Hispanic Health Council and are working on the high-risk drug sites project in Hartford. A moment later, a stocky man of medium height walks by. "I got what you need! " he says, assuming strangers have come to the neighborhood for only one thing. He doesn't miss a beat when he learns he has offered drugs to outreach workers. He smiles, shrugs his shoulders and turns down their offer of free condoms. He lingers to tell them that the last time he took them his girlfriend accused him of cheating. Meanwhile Mr. Scott talks with Jeffrey, a tall, skinny man on his way to a Chinese takeout restaurant. Jeffrey has been in and out of drug treatment programs and laments some of the losses in his life, particularly a once-fine wardrobe. "I know what I'm doing is wrong," says Jeffrey. "I've got to find something to replace it with."

Down a side street Dr. Cabral and Mr. Scott wait outside a garage. Inside are two men who a few minutes earlier approached them on the street to ask for bleaching kits. One of the men comes out, and, embarrassed, says he and the other man are only using the garage to relieve themselves. After they have gone, Dr. Cabral and Mr. Scott look around to find the floor littered with pastel-colored glassine envelopes that once contained heroin. Before leaving, Mr. Scott places a fresh bleaching kit on top of some broken furniture in the hope that someone will use it.

The kit remains as a symbol of CIRA's goal—evaluating and implementing prevention measures that will stop the spread of AIDS. "Hopefully," says Dr. Merson, "we can make a real difference in the nation in how we deal with this disease." YM

Politics 1; science 0

Evidence of the political nature of AIDS prevention became apparent in April. The Clinton administration acknowledged what research has long established; needle exchange programs reduce the spread of HIV infection, serve as a conduit into treatment programs and don't encourage drug abuse. Yet despite the scientific evidence, the federal government would not fund needle exchanges, officials decided.

"It's politics rather than science driving policy," Dr. Merson said. "It's but another example of why this epidemic continues to grow and be as serious as it is."

Clinton Endorses Needle Exchanges But Not Funding

By Amy Goldstein
Washington Post Staff Writer

The Clinton administration declared yesterday that needle exchange programs can help curb the AIDS epidemic without fostering the use of illegal drugs, but refuse[illegible] allow federal mon[illegible] spen[illegible]

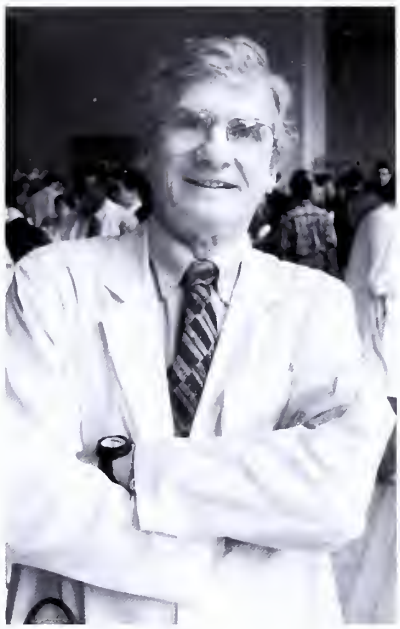
Robert Heimer, Ph.D., whose 1990 study with Edward H. Kaplan, Ph.D., found that needle exchanges reduced HIV infection by 30 percent, also decried the decision. "It is quite clear from the scientific evidence that needle exchanges can slow the transmission of HIV and other infectious diseases as well as serve as a conduit for getting people into substance abuse treatment," Dr. Heimer said. "The foolishness has gone on long enough. When politics goes ahead of public health everybody suffers."

Laws governing syringes and needle exchanges vary from state to state. Eight states prohibit dispensing syringes without a prescription and another 10 place restrictions on the sale of syringes without a prescription. In all but a few states, laws barring drug paraphernalia make possession of needles a crime. The 110 needle exchanges operating in the United States do so under a variety of legal conditions. Six states and the District of Columbia have created exemptions to paraphernalia laws to allow needle exchanges. Other states tolerate them and in some states the needle exchanges operate illegally. None of them receive federal funding.

Medical school creates new deputy dean position for education

Robert H. Gifford, M.D., H.S. '67, who has served as associate dean for medical education and student affairs for the past 12 years, became the School of Medicine's first deputy dean for education on July 1.

The appointment was announced by Dean David A. Kessler, M.D., who said the new position stresses the importance of education among the school's three core missions. Deputy dean positions for research and patient care were created in 1995. "There should be no doubt that the teaching and educational mission of the school is certainly on a par with both clinical affairs and scientific affairs," Dean Kessler said. "Nor is there doubt in anyone's mind that Bob Gifford is the person to move that mission forward."



PETER CASOLINO

Robert Gifford

Dr. Gifford, who is delaying his retirement for a second time, will serve in the new position for a year. During that year he will establish a framework for the post while a nationwide search is conducted for a successor. He will also set and prioritize goals and evaluate the school's needs in the area of education. Dr. Gifford's previous responsibilities, education and student affairs, will be divided under the new plan and an internal search has already been launched to fill the associate dean position.

Dr. Gifford had planned to retire in June 1997 to begin a new career as a biology teacher in an inner-city school district. Dr. Kessler, however, asked him to remain during the 1997-98 academic year to ease the transition to a new administration. This spring Dr. Gifford decided to stay on for one more year as deputy dean.

He received his medical degree from Tufts University School of Medicine in 1961. He interned at Boston City Hospital and was a senior assistant resident at Yale-New Haven Hospital from 1966 to 1967. In 1969, he was appointed assistant professor of medicine at Yale. Three years later he was appointed associate professor of clinical medicine and in 1976 became a professor of medicine. In 1985 he was named associate dean for education and student affairs.

Neurobiologist selected to lead graduate school

Susan Hockfield, Ph.D., professor of neurobiology at the School of Medicine, has been appointed dean of the Graduate School of Arts and Sciences, Yale President Richard C. Levin has announced.

The Graduate School of Arts and Sciences is the largest of Yale's 11 graduate and professional schools. As dean, Dr. Hockfield will oversee academic and administrative policies for the school and its 2,300 students. She succeeds Thomas Appelquist, the Eugene Higgins Professor of Physics, who returned to his teaching and research responsibilities on July 1.

Dr. Hockfield served as director of graduate studies for the section of neurobiology from 1986 to 1994, and has been involved with improving graduate training in the biological and biomedical sciences throughout her tenure at Yale. She has served on the executive committee of the graduate school and on a committee to improve linkages among the biomedical sciences. She has also had a role in the development of the new Biological and Biomedical Sciences Graduate Program, a collaboration among most of the biological science departments of the University.

Dr. Hockfield, who joined Yale as an assistant professor in 1985, said, "I am deeply honored to be entrusted with the challenge of guiding one of the world's finest graduate schools. Yale awarded the nation's first doctoral degree more than a century ago, and I am eager to work with our gifted students and dedicated faculty toward more 'firsts' for graduate education at Yale."

MICHAEL MARSLAND

Susan Hockfield

FACULTY NOTES

Vincent T. DeVita Jr., M.D., director of the Yale Cancer Center and professor of internal medicine (oncology) and of epidemiology and public health, has been awarded the Commendatore Order of Merit of the Republic of Italy. The medal, a high honor bestowed by the Italian government, was presented at a ceremony in March at the Yale Club in New York. Dr. DeVita received the award for his significant contributions to the treatment and cure of cancer in Italy, the United States and throughout the world. Dr. DeVita also was named to serve on the Scientific Advisory Council of the Doris Duke Clinical Scientist Award Program of the Doris Duke Charitable Foundation. The newly-established program is designed to fill a gap in funding young investigators for clinical research in cancer, heart disease and AIDS. Dr. DeVita is one of two nationally known cancer experts who have been invited to sit on the council.

Robert M. Donaldson Jr., M.D., David Paige Smith Emeritus Professor of Medicine, was honored in April when the VA Connecticut Healthcare System West Haven Campus named the new education center in his honor for his contribution to education in the service of patients.

John A. Elefteriades, M.D., professor and chief of cardiothoracic surgery, was elected a founding director of the Heritage Foundation, which subsumes the former New York, Connecticut and New Jersey Chapters of the American Heart Association. He is the only surgeon on the board. Dr. Elefteriades also delivered an honorary address on the *Perspectives of the Thoracic Aorta from the Yale Center for Thoracic Aortic Disease* in Tokyo in February at the joint meeting of the Asian Cardiovascular Society and the Japanese Society for Cardiovascular Surgery.

The American Association for the Advancement of Science (AAAS) elected as fellows in the Section of Medical Sciences, **Myron Genel**, M.D., associate dean for government and community affairs and professor of pediatrics/pediatric endocrinology; **Martin E. Gordon**, M.D. '46, clinical professor of medicine; and **Karl L. Insogna**, M.D., associate professor of internal medicine (endocrinology); and in the Section of Biological Sciences, **Walter F. Boron**, M.D., chair and professor of cellular and molecular physiology. The presentation was made at the AAAS annual meeting in February in Philadelphia.

Among the speakers at the Philadelphia meeting were **Keith A. Joiner**, M.D., professor of internal medicine (infectious disease), cell biology, and epidemiology and public health; **Gregory E. McCarthy**, M.D., M.P.H., associate professor of neurosurgery and neurology; and **Richard M. Satava**, M.D., professor of surgery (general).

Peter M. Glazer, M.D., associate professor of therapeutic radiology, received the Michael Fry Young Investigator award at the annual meeting of the Radiation Research Society in April. This is the most prestigious award made by the society.

Sharon K. Inouye, M.D., M.P.H., associate professor of medicine, was presented the 1998 Otsuka/American Geriatrics Society (AGS) Outstanding Scientific Achievement for Clinical Investigation Award by the AGS at their annual meeting in May in New York. Dr. Inouye was recognized for her achievements in clinical research addressing health care problems of older adults as a physician investigator who is actively involved in direct patient care.

Michael Kashgarian, M.D., professor of pathology and biology, received the James Colangelo Achievement Award by the National Kidney Foundation of Connecticut in May. The award recognizes medical professionals who have substantially improved the quality of life for renal or urologic patients. Dr. Kashgarian is editor-in-chief of *Yale Medicine*.

Michael Kashgarian

PETER CASOLINO

Fourteenth Dean Gerard Burrow, his face reflected by portrait glass, stands before his likeness at the unveiling ceremony.

Moment of reflection

In a ceremony Feb. 11 in the Beaumont Room University officials unveiled a portrait of Gerard N. Burrow, M.D., '58, H.S. '66, who stepped down last year after five years as dean of the School of Medicine. New Haven artist Steven R. DiGiovanni painted the portrait. Dr. Burrow met the artist at the Creative Arts Workshop where the former dean does metal sculpture. During their sessions, Mr. DiGiovanni set up a mirror so Dr. Burrow could watch him paint. Addressing the crowd that gathered in the Beaumont Room for the unveiling, University Provost Alison F. Richard, Ph.D., said: "Thanks to the artist and to the subject I think people will pause and say, 'He looks like a really wonderful person,' and they'll be right." Added current Dean David A. Kessler, M.D.: "As the 14th dean of Yale School of Medicine, Dean Burrow personified a tradition of excellence with a degree of great and distinguished service that we all can admire."

Daniel M. Koenigsberg, M.D., associate clinical professor in the Child Study Center, was promoted to vice chairman of psychiatry at the Hospital of St. Raphael, where he is also section chief of the hospital's child and adolescent psychiatry division.

Robert G. LaCamera, M.D., clinical professor of pediatrics and pediatric nurse practitioner program (primary care), was presented the second annual Children's Health and Wellbeing Award by ConnectiCare Inc. Dr. LaCamera, who retired from private practice last year as a New Haven pediatrician devoted to caring for children with disabilities. He has also been the medical director of the Easter Seal-Goodwill Industries Rehabilitation Center in New Haven since 1956.

Richard P. Lifton, M.D., Ph.D., professor of medicine, genetics and molecular biophysics and biochemistry, has been named this year's recipient of the Homer Smith Award of the American Society of Nephrology for his laboratory's research into the molecular genetics of hypertension and kidney disease. The award, the society's highest scientific prize, was announced this month and will be presented at the society's annual meeting in Philadelphia in October. Dr. Lifton received his M.D. degree from Stanford University in 1982 and received his Ph.D. there in 1986. He joined the Yale faculty in 1993 as an assistant professor of medicine and genetics. His laboratory uses genetic approaches to identify inherited causes of hypertension, renal and cardiovascular disease. To date the group has identified the molecular basis of a dozen such diseases, which have provided important insight into disease causation, diagnosis and treatment.

ROBERT LISAK

Richard Lifton, right, works at a gene loader in his laboratory with Chris Bositis, a former student.

Bruce McClennan, M.D., professor of diagnostic radiology, was elected secretary of the American Roentgen Ray Society at the society's 98th annual scientific and education meeting in San Francisco in April. Dr. McClennan began his five-year term April 30. The American Roentgen Ray Society was founded in 1900 and is dedicated to the goal of educating radiologists and to the advancement of medicine through radiology and its allied sciences.

The Yale Cancer Center has inaugurated a revolutionary bone marrow transplantation procedure between partially mismatched, related donors. **Joseph P. McGuirk**, D.O., associate research scientist in internal medicine (oncology), has been named assistant director for Allogeneic Bone Marrow and Stem Cell Transplantation at the Yale Cancer Center.

Ira Mellman, Ph.D., professor of cell biology and immunology and director of the Program in Biological and Biomedical Sciences, has been awarded the Newton-Abraham Visiting Professorship in Medical, Biological and Chemical Sciences at the University of Oxford for the 1998-1999 academic year. Dr. Mellman plans to travel to England several times to deliver a series of public and scientific lectures at the Sir William Dunn School of Pathology. Previous recipients of the professorship include James D. Watson, Ph.D.

Victor J. Navarro, M.D., assistant professor of medicine, was honored in April by the American Liver Foundation for his contributions to the work of its Connecticut chapter.

Kyle D. Pruett, M.D., clinical professor of child psychiatry at the Yale Child Study Center and the School of Nursing, has been named president of Zero to Three, a national nonprofit organization of pediatricians and child development specialists who share new knowledge about children's early development with parents, policy

Portrait of a pioneer

A portrait recently added to the walls of the School of Medicine honors Dorothy M. Horstmann, M.D., Sc.D., the John Rodman Paul Professor Emeritus of Epidemiology and Pediatrics. In 1961 she was the first woman named as a professor and eight years later was named to the endowed professorship. The portrait is a color photograph, taken by James C. Niederman, M.D., H.S. '50, clinical professor of epidemiology, that has been printed on linen rather than photographic paper. The framed portrait hangs near the Beaumont Room on the second floor of the Sterling Hall of Medicine. Dr. Horstmann came to Yale in 1942 as the Commonwealth Fund Fellow in preventive medicine. She worked with Dr. Paul, for whom her endowed chair was named. In 1944 she returned to the University of California at San Francisco, where she pursued her medical studies, and joined the Yale faculty in 1945. She played a major role in developing and evaluating vaccines for poliomyelitis and German measles.

JOHN CURTIS

One less car on the road

For the past four years Raymond Aten, Ph.D., a research scientist in obstetrics and gynecology, has commuted to work from his home in Hamden on a bicycle. The state of Connecticut recently named him Commuter of the Month for his example. "It's sort of an ideal commute," Dr. Aten says of his four-mile, 15-minute trip from the Whitneyville section of Hamden. "I can make it in about the same time as someone driving." Dressed in shorts, T-shirt, helmet and goggles equipped with a rear-view mirror, Dr. Aten carries in his saddlebags a change of clothes, paperwork, a spare inner tube, reflective gear for night driving and a laptop computer. He rides his bicycle to work year-round, regardless of the weather. "It's one less car on the road," says Dr. Aten, who is president of the Connecticut Bicycle Coalition.

makers and other professionals. Dr. Pruett is nationally known for his work with traumatized children and for research on how fathers influence their young children's development. Dr. Pruett says the issues of quality medical and day care will be a primary focus of his work for Zero to Three, which is under the auspices of the National Center for Infants, Toddlers and Families.

Carolyn W. Slayman, Ph.D., Sterling Professor of Genetics and Cellular and Molecular Physiology and deputy dean for academic and scientific affairs, has been appointed to a 15 member panel that will analyze the peer-review system at the National Institutes of Health. The system includes study sections which evaluate and score most grant applications submitted by researchers at colleges and universities. Recommendations from the panel are expected to be made within a year.

Howard M. Spiro, M.D., director of the Program for Humanities in Medicine and professor of internal medicine (digestive diseases), was among noted speakers at a March 2 convocation in Vienna marking the 60th anniversary of the dismissal of Jewish faculty members from the Vienna Medical School. In his address, *The Silence of Words*, Dr. Spiro said, "the things that we avoid and don't talk about are the matters that mean the most to us. The shame that has no vent in words makes other organs weep." According to Dr. Spiro, current officials of the University of Vienna are attempting to recover information that has either been hidden or destroyed and trying to locate former faculty who were interned and exiled. "There is a new generation that has taken over," says Dr. Spiro, "and they are not afraid to look into these atrocities."

David C. Ward, Ph.D., professor of genetics and molecular biophysics and biochemistry, was one of three Yale researchers inducted into the National Academy of Sciences in April. Dr. Ward has developed techniques called fluorescence in situ hybridization, known as FISH, that are widely used to analyze human chromosomes as well as to detect infectious, genetic and cancerous diseases. Among his accomplishments is the complete genetic mapping of chromosome 12, which contains genes implicated in a variety of diseases, including diabetes and several forms of cancer. Dr. Ward received his Ph.D. degree from Rockefeller University in 1969 and was a Leukemia Society of America Fellow 1969-1971 at Imperial Cancer Research Fund, London. He joined the Yale faculty in 1971. The National Academy of Sciences, a private organization of scientists and engineers dedicated to the furtherance of science for the general welfare, was established in 1863.

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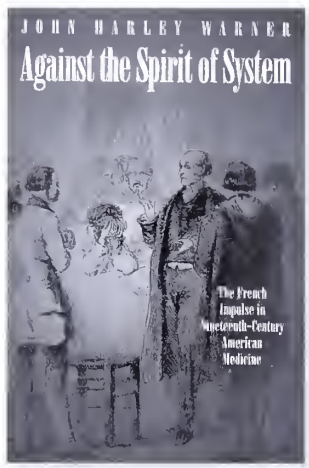
John C. Baldwin, M.D., former professor and chief of cardiothoracic surgery at Yale, has been named dean of Dartmouth Medical School and vice president for health affairs, effective July 1. Dr. Baldwin is the DeBakey-Bard professor and chair of the Department of Surgery at Baylor College of Medicine and chief of Surgical Services at the Methodist Hospital in Houston.

NEW YORK ACADEMY OF SCIENCES

Dean David A. Kessler, M.D., right, was the keynote speaker at the spring meeting of the New York Academy of Medicine. His topic was *The Tobacco Wars*, chronicling the FDA's efforts to regulate tobacco (See *Scope*, page 10). The previous year's speaker was former Surgeon General C. Everett Koop. Left, Academy President Jeremiah A. Barondess, M.D., thanks Dr. Kessler at the podium.



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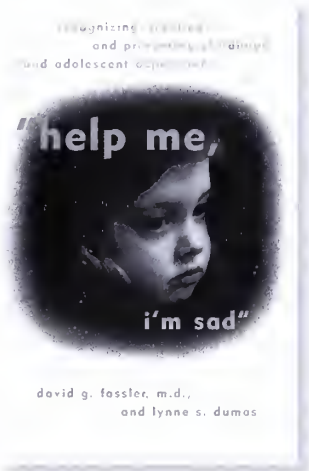

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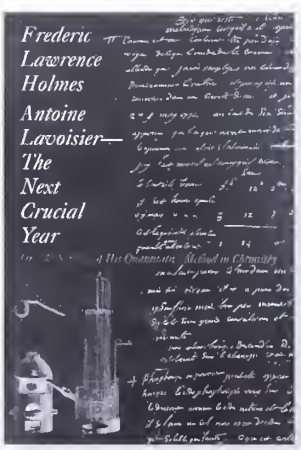

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Surviving the Fall: The Personal Journey of an AIDS Doctor by Peter A. Selwyn, M.D., associate professor of medicine in the AIDS Program, Yale University Press 1998.

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New associate dean leads medical school's advancement program

Jane E. Reynolds, Ed.M., who established a national reputation as dean of admission at Amherst College over the past nine years, has been appointed associate dean at the School of Medicine. She will oversee the school's program in institutional advancement with responsibility for development, alumni affairs and publications.

"I cannot imagine having anyone more effective and more experienced on our team," Dean David A. Kessler, M.D., said in announcing her appointment. "I am thrilled she decided to come to Yale."

Ms. Reynolds holds an Ed.M. degree from Harvard in administration, planning and social policy, and a B.A. from the College of the Holy Cross. Over the past 20 years, she has held increasingly responsible positions at Harvard, Trinity College, Tufts University and Amherst, where she led the admissions program from 1989 to 1998. According to Dr. Kessler, whom she met at Amherst when he received an honorary degree from his alma mater, "She helped diversify the student body at Amherst and encouraged an international approach to recruitment."

The next several months will be a period of assessment and action, Ms. Reynolds said. As this issue of *Yale Medicine* went to press, medical school administrators were pleased to hear that the Yale Corporation had given preliminary approval for a strategic facilities plan for the School of Medicine. The centerpiece of the plan is a proposal for a new Congress Avenue Building providing modern laboratory space for disease-specific research, a state-of-the-art anatomy laboratory and histology labs, and core facility space for expanded capability in magnetic resonance imaging. (See *Scope.*)

Other likely fund-raising goals, Ms. Reynolds said, will be to increase the amount of financial aid available to students, and to establish additional endowed chairs to mark the University's 300th anniversary in 2001.

Dean Kessler said her background in admissions and the reputation she has established nationally and internationally, will serve her well in her Yale role. "She is one of the most respected figures in the admissions world and we're lucky to have her here," he said.

Ms. Reynolds, who says she was drawn to Yale "by David Kessler's intellectual energy and his vision for the school," is eager to apply that experience. "The most kindred talents are being a spokesperson for an institution, being able to understand what makes an institution tick, and getting out to the appropriate constituency to tell that story," she says. "You have to be able to relate to a wide variety of publics to achieve the goal."

In her new position, Ms. Reynolds will work closely with **Charles J. Pagnam**, who became the University's vice president for development on Jan. 1. Mr. Pagnam, one of seven officers of the university, began his career in development in 1977, when he joined The Campaign for Yale. Mr. Pagnam assumed increasing responsibilities over the subsequent two decades and in 1995 became director of development for the University. He played a pivotal role in the "... and for Yale" campaign, which raised $1.7 billion over a five-year period ending June 30, 1997. He succeeds Terry Holcombe, who retired at the end of last year.

Jane Reynolds

Although the University is in strong financial shape, Mr. Pagnam said it needs to raise about $200 million every year. "We still have to raise significant money to continue the project of refurbishing the facilities," he said, adding that another top priority is financial aid for students.

He is aware of the medical school's financial needs as well, he says, and plans to work out a dynamic development strategy with Ms. Reynolds. Part of his job is to coordinate fund-raising efforts among the college and Yale's 11 graduate and professional schools.

As a Hamden native and current resident of North Haven, Mr. Pagnam also takes an active interest in New Haven affairs. "It is to our benefit to have a very healthy city," he says. "It's not a matter of remembering what New Haven was like. It's more what New Haven can be. It's a small community that cares about itself."

Just what the doctor ordered

With *The Rx Files*, the second-year class writes a prescription for (kind) humiliation and high honors.

No cow was too sacred for the Class of 2000, as it lampooned deans, beloved faculty members and lowly first-year students with equal relish in the second-year show, *The Rx Files*. Not even the lunchtime food vendors on Cedar Street were spared their barbs.

The plot followed the exploits of fictional FBI agents Mulder and Scully from *The Rx Files* as they tracked down a missing collection of brains (The Cushing Brain Tumor Registry) and made bizarre discoveries about the faculty and student body. First-year students, the agents reported, lack reproductive organs. Anatomy professors are weird.

As always, being satirized was the highest tribute. From its opening moments, the show set its sights on Robert H. Gifford, M.D., HS '67, who has served for more than a decade as associate dean of medical education and student affairs. "Dr. Gifford, you will be sorely missed. (We think this time he might really mean it.)," the program read, referring to what had been his second expected retirement at the end of the school year. As it happens, he didn't. (See *Faculty news*.)

Other faculty members, including William Stewart, Frank Bia, John Rizzolo and Emil Boulpeap, joined in a videotaped spoof of the comic film *The Full Monty*. The professors tried out for a dance team to raise money to balance the medical school's budget. Dean Kessler and Dr. Gifford gave thumbs up or down on the wannabe dancers, later portrayed on stage by students.

The cast pounced on the English pronunciation of Pietro De Camilli, the recently appointed chair of the Department of Cell Biology, who was born in Italy. "What are you saying? Is it GTP or GDP?" asked student


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1) **Students take on infectious disease—the administrative section, that is, while performing *Master of the Bugs*, from the second act of *The Rx Files*.** 2) **John Abraham portrays Robert Gifford and Darren Lish portrays David Kessler in a musical number from the second-year-show.** 3) **Alison Gruen plays a game show hostess in a gentle parody spoofing Arthur Crovatto's anatomy instruction.** 4) **The real David Kessler dances à la Michael Flatley in a segment titled *Deans of the Dance*.** 5) **Not even the food vendors on Cedar Street escaped ribbing from the cast of *The Rx Files*, who poked fun while singing *No Greasy, No Oily* with apologies to Bobby McFerrin.**

Natalie Holt, playing agent Scully. But even she has trouble with medical jargon from native speakers of English. "I can't take it any more!" she screams during a scene set at a faculty tea in the Beaumont Room. "I haven't understood a single word anybody has said here tonight!"

A scene on Cedar Street poked fun while it paid tribute to the vendors who offer food at lunchtime from their mobile stands. The cast sang *No Greasy, No Oily* to the tune of *Don't Worry, Be Happy*:

Bean curd make your mouth a water?
You get two pieces for a quarter.
No greasy. No oily.
The yaki soba on my right
Eat it, you get a parasite.
No greasy. No oily.

After Dr. Gifford, Dr. Kessler was the target of countless gags and one-liners on his work to regulate tobacco as commissioner of the Food and Drug Administration. Student Darren Lish, portraying Dr. Kessler on stage, leaned back in his chair and lit a cigarette.

Dr. Kessler appeared as himself in one of the show's final scenes, impersonating bare-chested prancer Michael Flatley in a parody of the traveling extravaganza *Lord of the Dance*. With 22 dancers clad in black and step-dancing around them Dr. Kessler swirled director of admissions Lynne M. Wootton around the stage in a number called *Deans of the Dance*.

The show's finale had the entire Class of 2000, dressed in their white jackets, taking the stage and singing *Do You Hear the Beepers Ring?* to the tune of *Do You Hear the People Sing?*" from the musical *Les Miserables*:

Do you hear the beepers ring loud in the middle of the night?
It is the music of a people who are turning wrong to right
For the students on the wards there is a redness in their eyes
Before the longest call will end and the sun will rise.

Linda Maxwell, who produced the show with Lalisa Anderson, called it one of the most memorable experiences of medical school. It is a last chance for second-year students to get to know each other before they split up into teams for their third-year hospital rotations. "We saw people really come out of their shells," Ms. Maxwell said. "People really put their hearts into it."

STUDENT NOTES

The Medical Student Council elected new officers in April: For president, **Sharon Chekijian**, A.B., Smith College; for vice president, **Jen Chow**, B.S., B.A., University of Arizona; and for treasurer, **Rockman Ferrigno**, B.A., Fairfield University. The three first-year students delivered speeches at the April 1 meeting prior to the election.

Joanne Band, was awarded the 1997 Paul H. D'Amour Founder's Fellowship by Big Y Foods Inc. The award honors the most academically outstanding graduate student in Big Y's marketing area and includes a $1,000 stipend.

Two students received awards for creative writing and community service at a faculty/student tea in the Beaumont Room on May 5. **Maie Rahman St. John**, a sixth-year student in the M.D./Ph.D. program received the Lerner Award and $250 for her poem about her travels around the world as a child. The late Marguerite Rush Lerner, a professor of clinical dermatology who also wrote children's stories, established the Lerner Award. **Caroline Harada**, a first-year student, accepted the Novartis Pharmaceuticals Corp. Award on behalf of COVS, the Committee on Volunteer Services, which she chairs. The annual award, a complete 10-volume set of the Netter Atlas, recognizes community service by students. The COVS coordinates volunteer efforts by students in public health, nursing and medicine.

JOHN CURTIS

Award-winning students Maie Rahman St. John and Caroline Harada with Deputy Dean Robert Gifford.

Match Day reveals a trend toward generalism

Cheers and applause erupted a few minutes before noon as the stack of envelopes made its way from the registrar's office into the mailroom in Edward S. Harkness Hall. Inside were residency assignments, keys to the futures of a throng of waiting fourth-year students.

As part of the National Residency Matching Program, medical students all around the United States learned of their placements simultaneously on March 18. According to Deputy Dean for Education Robert H. Gifford, M.D., 60 percent of the Yale students received their first choice of residency and 80 percent got one of their top three choices. Registrar Cynthia A. Andrien said only six of the 104 seniors didn't participate in this year's match. Three chose not to participate and three are entering the military, she said.

How important was the match? "Residency determines where you train, how you train, who trains you and what opportunities are available to you," said Joseph Skowron, who placed in orthopaedics at Harvard.

Placements this year reflected a trend at Yale away from the most highly specialized programs and toward residencies in internal medicine and pediatrics. Forty percent of this year's seniors went into three-year medicine programs, up from 22 percent last year. Pediatrics drew 17 percent of the current graduating class, up from 8 percent last year.

"I do think there's a recognition on the part of students that there's more and more of a need for people in the primary care specialties," Dr. Gifford said. "Some of the highly specialized areas are overpopulated. Managed care is using them less and using primary care doctors more."

As noon struck, the waiting students cheered, hugged and otherwise released the tension and anxiety of the morning. Victoria A. Catenacci was thrilled to be staying at Yale in internal medicine. "I like the program. I like the people. I'm very happy here," she said. Said Childsy Robinson before opening her letter: "I'm very excited. I've been telling myself over and over that I can be happy anywhere." She got her first choice: pediatrics at Stanford.

Top: **Tobias Lee and Sheela Magge peer in their mailboxes for the letters that will spell their future for the next two or three years.**

Middle: **Victoria Catenacci smiles to learn she has been accepted at Yale, where she wanted to study internal medicine.**

Right: **Scott Porter hugs a friend as they get the news of their assignments.**

1998 residency placements for Yale medical students

The Office of Student Affairs has provided the following list, which outlines the results of the National Resident Matching Program for Yale's medical school graduates.

CALIFORNIA

LAC-USC Medical Center
Gregory Chin, *surgery, otolaryngology*

San Diego Naval Base
Helen Chun, *internal medicine*

Stanford Health Services
Chrysalyne Delling, *medicine*
Mark Homicz, *surgery*
Kent Huston, *internal medicine*
Michelle Parker, *emergency medicine*
Childsy Robinson, *pediatrics*

UCLA Medical Center
Matthew Bui, *urology*

University of California (Davis) Medical Center, Sacramento
Kevin Daly, *emergency medicine*

University of California - San Diego
Mark Homicz, *otolaryngology*
Jessica Kingston, *obstetrics and gynecology*

University of California - San Francisco
Te Ning Chang, *plastic surgery*
Karen Earle, *internal medicine*
Peter Hunt, *internal medicine*
Lisa Lipschitz, *obstetrics and gynecology*
Sushrut Waikar, *internal medicine*

UCSF/Mt. Zion Medical Center
Anna Bloxham, *internal medicine/primary*

COLORADO

University of Colorado School of Medicine, Denver
Henry Fischer, *internal medicine*
Paul Pottinger, *internal medicine*

CONNECTICUT

Griffin Hospital, Derby
Brandy McMahon, *medicine*

Hospital of Saint Raphael, New Haven
Kendall Lee, *medicine*
Jason Oliphant, *medicine*

Yale-New Haven Hospital
Victoria Catenacci, *internal medicine*
Monica Chacon, *pediatrics*
David Chang, *plastic surgery*
Marcoli Cyrille, *internal medicine*
Jennifer Eras, *internal medicine*
Andrew Gumbs, *general surgery*
Charles Hong, *internal medicine*
Hahnah Kasowski, *surgery, neurosurgery*
Lynda Kauls, *pediatrics, dermatology*
Susan Kim, *internal medicine*
Jason Klenoff, *surgery, otolaryngology*
Srinivas Rao, *internal medicine*
Jeffrey Reynolds, *internal medicine*
Nirav Shah, *internal medicine*
Lisa Suter, *internal medicine*
Mona Zain, *internal medicine*

GEORGIA

Emory University School of Medicine, Atlanta
Reshma Chugani, *pediatrics*

MARYLAND

Johns Hopkins Hospital, Baltimore
Hans Agrawal, *pediatrics*
Kamal Bharucha, *pediatrics*
Alan Cheng, *internal medicine*
Nirit Weiss, *surgery, neurosurgery*
Tong-Yi Yao, *pediatrics*

MASSACHUSETTS

Beth Israel Deaconess Medical Center, Boston
Katherine Auerswald, *internal medicine*
Bernice Ruo, *internal medicine*

Boston Combined Residency Program in Pediatrics (Children's Hospital)
Sheela Magge, *pediatrics*
Nicole Ullrich, *pediatrics*

Boston University Medical Center
Tobias Lee, *internal medicine/primary*

Brigham & Women's Hospital, Boston
Daniel Hurwitz, *medicine*
Linda Lee, *internal medicine*
Gregory Schwartz, *internal medicine/primary*

Cambridge Hospital
Pieter Cohen, *internal medicine/primary*

Harvard/Children's Hospital, Boston
Monica Chacon, *pediatric neurology*
Nicole Ullrich, *pediatric neurology*

Harvard Medical School, Boston
James O'Holleran, *orthopaedics*
Joseph Skowron, *orthopaedics*

Massachusetts General Hospital, Boston
Joanne Band, *pediatrics*
Kendall Lee, *neurology*
Brandy McMahon, *anesthesiology*
Olivia Okereke, *medicine*

Massachusetts General Hospital/McLean, Boston
Olivia Okereke, *psychiatry*
Lisa Price, *psychiatry*

Mount Auburn, Cambridge
Lisa Price, *medicine*

MICHIGAN

University of Michigan Hospitals, Ann Arbor
Christi Cavaliere, *plastic surgery*
Catherine Curtin, *plastic surgery*

MISSISSIPPI

Kessler Air Force Base, Gulf Coast
Michael Yerkey, *internal medicine*

MISSOURI

Barnes-Jewish Hospital, St. Louis
Jason Oliphant, *diagnostic radiology*

NEW YORK

Einstein/Montefiore Medical Center, Bronx
Sydney Butts, *surgery, otolaryngology*
Marcia Dover, *medicine, neurology*

Hospital for Special Surgery, New York
Russel Huang, *orthopaedics*
Ashley Wivel, *orthopaedics*

Mary Imogene Bassett, Cooperstown
Eric Shmookler, *medicine*

The Mount Sinai Hospital, New York
James Borin, *surgery, urology*
Naomi Donnelley, *internal medicine*

The New York Hospital
Gary Brendel, *psychiatry*
Russel Huang, *surgery*
William Pao, *internal medicine*
Ashley Wivel, *surgery*

New York University Medical Center
Chrysalyne Delling, *dermatology*
Gregory Raskin, *internal medicine*

Presbyterian Hospital, New York
Marjory Alabre, *internal medicine*
Mauricio Garrido, *general surgery*
Kimara Leibowitz, *pediatrics*


PETER CASOLINO

Monica Chacon, Maurice Garrido and John Forman welcome the news of their assignments with hugs and smiles.

NORTH CAROLINA

Carolinas Medical Center, Charlotte
Scott Porter, *orthopaedics*

Duke University Medical Center, Durham
Todd Atkinson, *orthopaedics*
William Duvall, *internal medicine*
Jaimie Nathan, *general surgery*
Eleanor Rhee, *obstetrics and gynecology*

University of North Carolina Hospital, Chapel Hill
Amy Taylor, *pediatrics*

OHIO

Summa Health System/Neoucom, Akron
Marc Jones, *transitional*

University Hospitals of Cleveland
Andrew Kroger, *pediatrics*

PENNSYLVANIA

Allegheny University Hospital, Philadelphia
Merle Carter, *general surgery*

Children's Hospital of Philadelphia
Daniel Coghlin, *pediatrics*
Barbara McGee, *pediatrics*
Samir Shah, *pediatrics*

Hospital of the University of Pennsylvania, Philadelphia
Naomi Botkin, *internal medicine*
Henry Chen, *internal medicine*
Carl Edelen, *internal medicine*
Kent Hu, *internal medicine*
Ellen Komisaruk, *obstetrics and gynecology*
Joanne Quinones, *obstetrics and gynecology*

University Health Center - Pittsburgh
Makunda Abdul, *obstetrics and gynecology*
Kent Chou, *orthopaedics*
Joon Yung Lee, *orthopaedics*

Wills Eye Hospital, Philadelphia
Marc Jones, *ophthalmology*

TEXAS

University of Texas SW Medical School, Dallas
Tara Bruce, *obstetrics and gynecology*
Daniel Hurwitz, *dermatology*
Patricia Stanford, *pediatrics*

WASHINGTON

University of Washington Affiliated Hospitals, Seattle
Michelle Barton, *pediatrics*
Albert Chong, *general surgery*
John Forman, *internal medicine*
Robert Kalus, *internal medicine*
Heather Lynch, *pediatrics*

University of Washington, Seattle
Seth Schwartz, *surgery, otolaryngology*

Some names appear twice because the graduate is entering a one-year program before beginning a specialty residency.

The transitional designation is a one-year program with three-month rotations in different specialties.

A focus on clinical research

Lawrence E. Shulman, Ph.D. '45, M.D. '49, retired from the NIH in 1994 after serving for nine years as the first director of the National Institute of Arthritis and Musculoskeletal and Skin Diseases. Shortly thereafter, NIH Director Harold E. Varmus, M.D., appointed him as NIH emissary for clinical research to the academic health centers. "My assignment," Dr. Shulman reports, "was to hold in-depth discussions to learn the views, concerns and suggestions to strengthen clinical research in the nation."

Dr. Shulman visited 21 medical schools including Yale, where he met with then-Dean Gerard N. Burrow, M.D. '58, and several members of the faculty. During his travels he evaluated current support mechanisms and formulated recommendations for new programs. Then in April of this year, the NIH announced the establishment of three new award categories for developing talented and skilled clinical researchers: the mentored, patient-oriented research career development award, the mid-career investigator award in patient-oriented research, and the clinical research curriculum award.


Lawrence E. Shulman

"There's been a growing concern by many that clinical research has not developed and fared as well as has basic laboratory research," says Dr. Shulman, who received a mastership from the American College of Physicians last March. "These new programs should provide a major investment by which discoveries from the laboratory may be translated into new and effective treatments for patients."

CLASS NOTES

'30s

Harvey Chenault, M.D., HS '39-41, of Paris, Ky., retired from practice as a neurosurgeon approximately 10 years ago. He says that he is now relaxing in the quiet of the country and fishing in a man-made lake he built on his 16-acre homestead.

'40s

Thomas L. Bucky, M.D. '43, HS '44-49, of Weston, Conn., retired from practice in 1996 after 40 years. Dr. Bucky and his wife, Doris, enjoy traveling to Florida to visit their two grandchildren. Last fall they also spent two weeks in Venice and Padua, Italy. He says that he is grateful for his Yale education and is relaxing and reflecting in his retirement years.

Robert E. Cooke, M.D. '44, HS '44-50, in retirement in Florida, remains active with the Kennedy Foundation in Washington which has guided federal legislation on the care of mentally retarded children.

Robert W. Frelick, M.D. '44, HS '44-45, remains active in retirement as a member of the advisory board of the National Cancer Institute. Dr. Frelick received a grant for smoking prevention/cessation in a target high school in Wilmington, Del. His wife Jane, '44 Nursing, remains active after three major joint replacements, tutoring G.E.D. students and supervising smoking cessation among prisoners.

Howard B. Hamilton, M.D. '44, retired, lectures on Japanese literature and the Noh Theater as an American resource person for the Japan Society. He is currently assisting the Library of Congress in digitizing 12,000 slides on these topics for the Internet.

Edith M. Jurka, M.D. '44, is active on the lecture circuit on topics in Noetic Medicine and has conducted symposia on intuitive reasoning and creativity.

Jerome J. Kaye, M.D. '44, reports that his daughter, Judy, is currently performing the historic character of Emma Goldman in the musical *Ragtime* on Broadway. Judy received a Tony award some years ago for her role in the *Phantom of the Opera.*

David E. Morton, M.D. '48, HS '49-55, retired in 1993, is working on his second novel. The first contained a major scene at Yale-New Haven Hospital. He and his wife, Kayoko, visited Italy in September just missing the great Assisi earthquakes. They traveled to Nagano, Japan in February where Kayoko

was nurse-interpreter at the Winter Olympic Games.

'50s

Robert N. Hamburger, M.D. '51, HS '53-54, received his fourth patent in July 1997, titled *Allergen Detector: System and Method.* Dr. Hamburger celebrated his 75th birthday in January, skiing and flying in Alta, Borego, Mexico, and San Diego (La Jolla), Calif. He and his wife Sonia attended the Association of Yale Alumni Education Program, *Ancient Civilizations of Peru,* in September and thought it was an exceptional and wonderful experience.

Michael Kashgarian, M.D. '58, professor of pathology and biology, has been elected to the board of governors of the Association of Yale Alumni. He is the only medical school faculty member currently named to the board, which has 21 members and four officers. The members serve staggered terms, with seven members elected each year. Dr. Kashgarian begins his three-year term July 1. In addition to general governance, the board elects AYA officers and selects nominees for the position of alumni fellow to the Yale Corporation.

Jack Levin, M.D. '57, HS '57-65, is on sabbatical at the Institut des Vaisseaux et du Sang in Paris, France, studying megakaryocytes and the regulation of platelet production.

Norman F. Moon, M.D. '56, writes to say he has retired from his full-time orthopaedic surgery practice and has written of his experiences as a treating physician in a book, *Terror in the Medical Office,* published this year by Kabel Publishers in Rockville, Md. Dr. Moon says that the publishers, of which **Karel Bedrich Absolon**, Ph.D., M.D. '52, is president, have been excellent to deal with.

David Weinstein, M.D., HS '59-60, writes that as he approaches age 70, he is still working 9 to 5, five days per week, in the practice of developmental medicine, neurology and epilepsy. Dr. Weinstein dabbles in neuroscience, consciousness and cognition. He sold his boat but is enjoying being a grandparent and comments that his grown children are all respectable members of society.

'60s

Robert L. Capizzi, M.D., HS '66-69, was honored by the establishment of the Robert L. Capizzi Professorship in Medicine at Jefferson Medical College. The professorship was made possible by a portion of a $3 million gift given by Mrs. Samuel M.V. Hamilton to Thomas Jefferson University to honor three physicians who cared for her late husband.

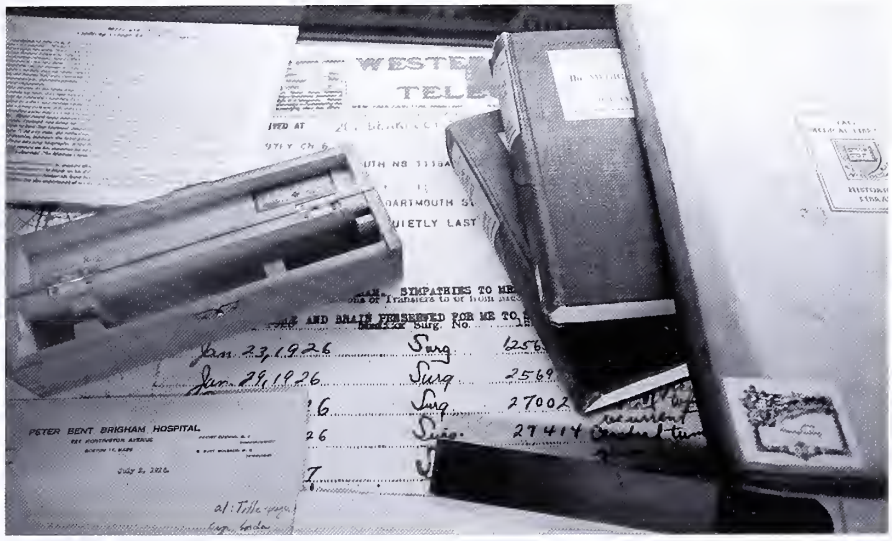
James J. Murphy, M.D. '64, retired in September from his position as chief of radiology at the Asheville Veterans Medical Center in Asheville, N.C., after 25 years of federal service.

Timothy A. Pedley, M.D. '69, has been appointed the Henry and Lucy Moses Professor of Neurology and chairman of the department of neurology at Columbia University. He will also serve as director of the neurology service and neurologist-in-chief of the Neurological Institute of Presbyterian Hospital, Columbia-Presbyterian Medical Center in New York City.

Edward F. Wilson, M.D. '63, after nine years as full-time medical examiner in Portland, Ore., moved to Delaware County, Pa., in February as part-time medical examiner. Prior to Oregon, Dr. Wilson worked two years in Pesamar, Pakistan and Abha, Saudi Arabia; 15 years in Eugene, Ore., in hospital pathology and as county medical examiner; two years in Utah as deputy chief medical examiner; and his first two years in Baltimore, Md., as assistant state medical examiner.

Armenia's health minister

Gagik Stamboltsian, M.D., HS '90-91, was appointed minister of health of Armenia in last July by President Levon Ter-Petrossian. Dr. Stamboltsian is chief of the Armenian General Benevolent Union Plastic and Reconstructive Surgery Center (PRSC). The PRSC, of which Dr. Stamboltsian remains chief, was established after the 1988 earthquake in Armenia in collaboration with Stephen Ariyan, M.D., HS '70-76, then professor and chief of plastic surgery at Yale. Dr. Stamboltsian was a member of a team of two surgeons, two anesthesiologists and 10 nurses that spent 12 months in training at Yale from 1990 to 1991. The unit opened in 1992. Since taking on his new role as minister of health he has continued to help reconstruct the wounds of victims of the earthquake.



JOHN CURTIS

Records and tools of Harvey Cushing, M.D., are on display in the foyer outside the Cushing/Whitney Medical Library. *Out of Sight, Not Out of Mind: Renaissance of the Cushing Brain Tumor Registry,* includes photographs and hospital records from more than 2,000 neurosurgical case studies from 1898 to 1936.

'70s

Francis S. Collins, M.D., Ph.D. '74, postdoctoral fellow '81-84 in human genetics and pediatrics, Director of the National Human Genome Research Institute, led a slate of speakers at the first AMA Genetics conference in New Orleans, La. on March 13-15. The title of the conference was *Genetics Medicine and the Practicing Physician.*

Edward S. Curry, M.D. '78, chief of pediatrics at the Kaiser Permanente Fontana Medical Center, was appointed to the board of directors of The Southern California Permanente Medical Group in March. Dr. Curry is a fellow in the American Academy of Pediatrics.

Michael K. Lindsay, M.D. '79, associate professor of obstetrics and gynecology at Emory University School of Medicine, was named director of the division of maternal fetal medicine in January.

Harry S. Romanowitz, M.D. '73, is the recipient of Student Health Services of Stamford Hospital's award for outstanding contributions to the health and well-being of the children of Stamford, Conn. He helped found and develop Stamford's School-Based Health Center Program. Dr. Romanowitz was also appointed by Governor John Rowland as a permanent member of Connecticut's Child Advocate Advisory Committee.

Barry Solof, M.D. '74, of Los Angeles, is currently the medical director of Outpatient Chemical Dependency Service at New Beginnings Hospital in Lakewood, medical director of the Washington Medical Center Recovery Unit in Culver City, and the medical director of Pride Solutions in Los Angeles, Calif.

Richard N.W. Wohns, M.D. '77, a practicing neurosurgeon in Tacoma, Wash., graduated from the Executive MBA Program at the University of Washington in June 1997.

'80s

Joseph Caprioli, M.D., HS '79-83, professor of ophthalmology at the University of California, Los Angeles School of Medicine, was awarded the 1997 Lewis Rudin Glaucoma Prize by the New York Academy of Medicine for outstanding glaucoma research published in 1996. Dr. Caprioli received the $50,000 prize for his research paper *Investigative Ophthalmology and Visual Science,* which explored the possibility that the body's own defense mechanisms could help protect the optic nerve cells against damage during times of stress.

Francis L. Crowley, M.P.H. '82, was appointed director of the public health department for the Town of Groton, Conn., in October.

Richard D. Gibbs, M.D. '86, and **Patricia H. Gibbs**, M.D. '87, HS '87-90, founders of the San Francisco Free Clinic, were named California Family Physicians of the Year in February by the Public Outreach Committee of the California Academy of Family Practice Board of Directors. The award is a high honor in primary care medicine and this is the first time that the award has been given jointly to two physicians and the first time to a husband and wife team. The mission of the clinic, founded in 1993, is to take care of patients without insurance, families caught between welfare and employer-provided health insurance.

Robert O. Kenet, M.D. '81, Ph.D. '83, and Stephanie Seligman were married in December at the Carlyle Hotel in New York City.

David R. Marks, M.D. '89, has been hired as a health reporter for WVIT Channel 30, the NBC television station in Connecticut. He contributes two to three stories a week for the station while maintaining a practice as medical director of the New England Center for Headache in Stamford, Conn. He was also a recent guest on the *Today Show* where he discussed new treatments for migraines.

Phillip Chung-Ming Yang, M.D. '89, is completing a cardiology fellowship at Stanford University. Dr. Yang was married in August 1997 to Mariko Yoshihara.

'90s


Sonya S. Erickson

Sonya S. Erickson, M.D., '91, associate in the department of obstetrics and gynecology at the University of Iowa College of Medicine, was one of 20 physicians named to the first class of the Association of Professors of Gynecology and Obstetrics/Solvay Pharmaceuticals Educational Schools Development Program participants. The 15-month program, which began in January, is designed to help OB/GYN professors teach women's health more effectively and focuses on four major components: curriculum and instruction; measurement and evaluation; research and statistics; and leadership and management.

James Hicks, M.D. '91, HS '92-95, is completing a fellowship in forensic psychiatry at New York University.


JOHN CURTIS (2)


James C. Rosser Jr.

James C. Rosser Jr., M.D., right, director of endolaparoscopic surgery and assistant professor of surgery, gave a talk on *21st Century Solutions to Challenging Healthcare Problems* at a Feb. 24 reception for the Association of Yale Alumni in Medicine. With accompanying videos, Dr. Rosser described his application of modern communications technology to surgery. From a studio in New Haven, he has supervised procedures in Ohio and Hawaii. He has also developed software that lets medical staff transmit information from house calls to the office via a laptop computer and a portable telephone. His technology is in use in a mobile van that brings health care to remote villages in Ecuador and Honduras.

ALUMNI ON CAMPUS

Lee Goldman, M.D. '73, M.P.H. '73, the Julius R. Krevans Distinguished Professor of Medicine, associate dean for clinical affairs and the chair of the department of medicine at the University of California, San Francisco, was presented the Outstanding Alumnus Award by Yale Cardiovascular Medicine at the annual Friendly Hearts Award Dinner last Fall. Dr. Goldman has also been named the new editor-in-chief of the *American Journal of Medicine* by the Association of Professors of Medicine Search Committee.

Stephen H. Moffic, M.D. '71, executive vice chair for managed care at the Medical College of Wisconsin, Department of Psychiatry and Behavioral Medicine, presented at Yale's Department of Psychiatry Grand Rounds in December on the topic *The Ethical Practice of Managed Care: Is There A Way.* Dr. Moffic has also published a book titled *The Ethical Way: Challenges and Solutions for Managed Behavioral Healthcare.*


ROBERT LISAK

Pedro Rossello

Pedro Rossello, M.D. '70, governor of Puerto Rico, made the case for the island's statehood during an address at the School of Law March 28. He spoke at a two-day conference titled *Foreign in a Domestic Sense: Reflections on the Centenary of the United States' Acquisition of Puerto Rico.*

This fall voters on the island are expected to vote in a referendum on the island's status. They may choose among the current commonwealth status, statehood and independence.

Dr. Rossello, now in his second term as governor, argued that as a state Puerto Rico would create a bilingual and bicultural bridge between the United States and emerging markets

in Latin America. Statehood, he argued, would convert Puerto Rico from a "disenfranchised outpost into an ever more valuable asset."


Gualberto Ruano

Gualberto Ruano, M.D. '93, Ph.D. '89, co-founder, chief executive officer and chief scientific officer of Genaissance Pharmaceuticals Inc. in New Haven, was a speaker at the Yale-New Haven Biotechnology Enterprise Forum series in April. The forum was sponsored by The Biotech Committee of Greater Haven and the Yale University Office of Cooperative Research. Dr. Ruano's topic was *Genomic Strategies and Drug Discovery.*

An announcement of a research and development collaboration agreement between Genaissance Pharmaceuticals, Inc. and Terrapin Technologies of San Francisco was made in February at the Second Annual Cambridge Healthtech Institute Conference on Gene Functional Analysis in San Francisco.

Mary Ann Shafer, M.D. '73, professor of pediatrics at the University of California at San Francisco and accociate director of adolescent medicine at the University of California, was a guest at a tea in February at the Yale Calhoun College master's house. She is also medical director at the Mission High School Clinic.

Dr. Shafer's academic and clinical activities have focused on the interrelationships among risky behaviors of adolescents and young adults, including such problems as sexually transmitted diseases (STD), alcohol abuse and eating disorders. She has developed STD and other risk prevention programs for high school students and military personnel and acts as a consultants to the Center for Disease Control, the military and the California State Department of Health regarding STD/HIV prevention.

The American Academy of Pediatrics awarded Dr. Shafer its Adele D. Hoffmann Award for her work in adolescent health.

Send news of Alumni/ae on Campus to Nicholas P.R. Spinelli, M.D. '44, in care of the Office of Alumni Affairs, P.O. Box 7613, New Haven, CT 06519-0613.

AYAM Outreach

Dean Kessler in Washington

Dean David A. Kessler, M.D., will speak at a reception Sept. 15 hosted by the Association of Yale Alumni in Medicine in conjunction with the Yale Club of Washington, D.C. A reception will follow Dr. Kessler's lecture, which is scheduled to begin at 6:30 p.m. in Room G50 of the Everett M. Dirksen Senate Building, First and Constitution streets NE, in Washington. To reserve seats for the lecture and reception, contact Terry Watson, 4323 Cathedral Ave., NW, Washington, D.C. 20016 or the Alumni Affairs office at (203) 785-4674.

Reunion '99: Save the date

Plan to join us in New Haven June 4 and 5, 1999, to celebrate the Association of Yale Alumni in Medicine Annual Spring Reunion Weekend. Classes whose years end in 4 and 9 will be celebrating reunions, but alumni from all years are welcome to attend the festivities, symposia, historical programs, campus tours and other special events. Contact the Association of Yale Alumni in Medicine, Office of Alumni Affairs, P.O. Box 7613, New Haven, CT 06519-0613. Telephone (203) 785-4674; fax (203) 737-5153.

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CLIFFORD C. BEEBE

Clifford C. Beebe, M.P.H., formerly of Milford, Conn., died Feb. 6 at the Masonic Home and Hospital in Wallingford. He was 89.

Born in New Haven, Mr. Beebe received a bachelor's degree from Lafayette College in Easton, Pa., a master's degree in public health from Yale in 1946 and a master's degree in education from the University of Bridgeport. He was a consultant for 31 years at the Connecticut Department of Education in the vocational rehabilitation department until he retired in 1975.

MAXWELL BOGIN

Maxwell Bogin, M.D., a prominent Connecticut pediatrician, died Dec. 2. He was 95.

Dr. Bogin graduated from Yale College in 1923 and the School of Medicine in 1926. He was chief of pediatrics at Bridgeport Hospital from 1948 to 1967 and a former state chairman of the Connecticut Chapter of the Academy of Pediatrics and president of the Hezekiah Beardsley Pediatric Society.

In 1978 the Department of Pediatrics of Bridgeport Hospital instituted the annual Maxwell Bogin, M.D., Lectureship in Pediatrics, which carries course credit for health professionals. Dr. Bogin served as chairman of the medical advisory board of the Rehabilitation Center of Fairfield County and as consultant in pediatrics to the Connecticut State Department of Health. He was a founding partner of the Children's Medical Group in Bridgeport and supervised pediatric clinics in Easton and Monroe. He was also a member of the Fairfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association.

THOMAS E. CARSON

Thomas E. Carson, M.D., died Oct. 1, 1997, after an apparent heart attack at his home in North Warren, Pa. He was 63.

Dr. Carson graduated from Yale College in 1956 and the School of Medicine in 1960. He completed his internships at Strong Memorial Hospital in Rochester, N.Y., and McKeesport Hospital in Pennsylvania. He was on the staff and medical director at Warren State Hospital for the last 15 years and had previously worked at Torrance State Hospital in Pennsylvania.

Dr. Carson was a member and deacon of the First Presbyterian Church. He was a past board member of the American Cancer Society's Warren County Unit and a member of the Warren County Medical Society.

STANLEY M.K. CHUNG

Stanley M.K. Chung, M.D., of Honolulu, Hawaii, died April 21. He was 62.

Dr. Chung was a graduate of Northwestern University and earned his medical degree from Yale in 1960. He began his postgraduate training at the Cornell Medical Center and was a fellow in orthopaedic surgery at the Mayo Clinic. He completed his residency in orthopaedic surgery at the University of Pennsylvania. While in Philadelphia, Dr. Chung was picked by C. Everett Koop, M.D., as a member of the first team to separate conjoined twins.

Dr. Chung, who devoted much of his career to treating children, became a member of the medical staff at the Kapiolani Medical Center for Women and Children in 1978. He was named chief of the Medical Center's department of pediatric surgery in 1989, and in 1992 he served as chairman of orthopaedics in the surgery department. Dr. Chung was also an associate professor of surgery at the University of Hawaii John Burns School of Medicine and served two years as an Air Force captain.

WARREN P. CORDES

Warren Platts Cordes, M.D., formerly of Chatham, Mass., died Feb. 11 in Raleigh, N.C. He was 93.

Dr. Cordes was born in Northhampton, Mass., and was a graduate of Colgate University. He received his medical degree from Yale in 1933. He served in the Massachusetts National Guard from 1936 to 1939 and also in the U.S. Navy Medical Corps during World War II, stationed at New Caledonia in the South Pacific, reaching the rank of commander.

In 1950, Dr. Cordes was appointed superintendent of the Gardner State Hospital. His specialties were psychiatry and neurology. He retired in 1973.

Dr. Cordes was a member of the Massachusetts Medical Society for 50 years. He was also active in both the Boy Scouts of America and the Massachusetts Archeological Society.

WILLIAM H. DRUCKEMILLER SR.

William H. Druckemiller Sr., M.D., died Sept. 25 at his home in Fairview, Pa. He was 83.

Dr. Druckemiller, born in Sunbury, Pa., graduated from Bucknell University in 1935 and received his medical degree from Yale in 1939. He served as a general surgeon in the U.S. Navy and then as a neurosurgeon from 1946 to 1960. He was chief of neurosurgery at the National Naval Medical Center in Bethesda, Md., and retired from the Navy in 1960 with the rank of captain.

Dr. Druckemiller entered private practice in Erie, Pa., and was chief of neurosurgery at Saint Vincent Health Center from 1960 to 1977. He also served as chief military consultant of

the National Aeronautics and Space Administration's Mercury Project from 1958 to 1960.

SUMMER GOLDENTHAL

Summer Goldenthal, M.D., formerly of New Haven, died April 24 at the Brian Health Care Center in Canton, Ga.

Dr. Goldenthal, a World War II Army veteran, graduated from the School of Medicine in 1951 and served his residency at Yale-New Haven Hospital and at Johns Hopkins. He was a clinical instructor at Yale in 1956 and on the staff at Grace-New Haven Hospital. In 1959 he set up a private radiology practice in New Haven. He was also a radiologist for the Fannin Regional Hospital in Blue Ridge, Ga., and the Copper Basin Medical Center in Copperhill, Tenn.

H. PATTERSON HARRIS JR.

H. Patterson Harris Jr., M.D., M.P.H., of Southport, Conn., died Jan. 5 at Bridgeport Hospital in Bridgeport, Conn. He was 87.

Born in Baltimore, Dr. Harris received a bachelor's degree from Yale University in 1932, a medical degree from Duke University School of Medicine in 1938, and a master's degree in public health from Yale in 1965. He served as assistant supervisor at Fairfield Hills Hospital in Newtown, Conn.

Dr. Harris had recently retired as medical examiner in Fairfield, and prior to that was a school physician, the director of public health for Fairfield, and a medical internist in private practice for more than 20 years.

ISAO HIRATA JR.

Isao Hirata Jr., M.D., died Feb. 25 at Providence Hospital of Columbia, S.C. He was 74.

Dr. Hirata, who was born and raised in New Haven, earned a bachelor's degree from Yale in 1943, and received his medical degree in 1945 at the age of 21. Dr. Hirata was a member of the Alpha Omega Alpha Honor Society. He completed his residency in general surgery at Grace-New Haven Hospital in 1950 and practiced in New Haven.

Dr. Hirata was secretary of the medical staff at Yale-New Haven Hospital from 1956 to 1972, and the Yale football team physician from 1956 to 1971. While at Yale he held the positions of surgeon in chief of the University's department of health and assistant clinical professor at the School of Medicine. In 1972 he accepted the position of director of student health services at the University of South Carolina, which he held until he retired in 1988. He served as president of the American College Health Association from 1979-80.

Dr. Hirata, whose Japanese-born father was a 1912 graduate of the medical school, told classmates at his 50th that he was glad to have been at Yale during World War II, when life in the United States was difficult for Japanese-Americans. Following the war, he served in the Army until 1953, at which time he returned to New Haven.

Forty-five years after the war ended, Dr. Hirata saw classmate Alice Shepard Cary, M.D., at their 1990 class reunion in New Haven. Dr. Cary had lived in Kyoto for most of those 45 years, moving to Japan just after the war. He told her that he had family in Japan he had never met. She offered to look them up.

Besides not speaking Japanese, the largest obstacle to finding the other branch of Hiratas was that Dr. Hirata knew next to nothing about them. "During the war, my parents were so sensitive that they did not want ever to talk about the family in Japan," he said in a 1995 *Yale Medicine* interview. "My mother wouldn't tell me anything about my relatives. She didn't even want to admit we had any." And so the matter rested for decades.

When Dr. Cary returned home to Japan after the reunion, she took with her the few details Dr. Hirata had gathered: The family was from the southern city of Fukuoka; one of his father's brothers was a physician and two others had been in the Japanese navy and army. She was able to locate members of the family, and in 1992 Dr. Hirata and his wife, Mary Keeler Hirata, were reunited with his Japanese relatives and learned of his remarkable ancestry of 20 generations of physicians. At a banquet in his honor with 40 of his relatives, he listened to his cousin tell the story of the first Hirata healers in the mid-1600s.

HERBERT S. HURWITZ

Herbert S. Hurwitz, M.D., of Scarsdale, N.Y., died Dec. 20. He was 68.

Dr. Hurwitz graduated from Harvard College in 1950 and from the Yale School of Medicine in 1954. He completed his internship and residency at the Johns Hopkins Hospital and Boston Children's Hospital.

After military service in Bordeaux, France, Dr. Hurwitz entered private pediatric practice in White Plains, N.Y., from which he retired in 1992. Dr. Hurwitz was on the staff of the White Plains Hospital Medical Center and St. Agnes Hospital. He was a faculty member at Babies Hospital, Columbia University, and the State University of New York at Purchase.

Dr. Hurwitz was a recognized poisoning prevention expert and the New York area chairman of the American Academy of Pediatrics Accident Prevention Committee, which was responsible for the development and implementation of child-resistant bottle caps for medical packaging. He played a prominent role in the crusade for legislation and public education to ensure universal acceptance of this safety device.

Dr. Hurwitz was a past president of the Harvard Club of Westchester County, N.Y.

WILLIAM P. KOUGHAN

William P. Koughan, M.P.H., died on April 6. He was 56.

Mr. Koughan graduated from

Boston College and received a master's degree in public health from Yale in 1971. He served for four years as vice president of Lawrence General Hospital in Lawrence, Mass.

Mr. Koughan served 10 years as executive director of Wing Memorial Hospital and Medical Centers and president and CEO of Wing Health Systems in Palmer, Mass. During his tenure at Wing Memorial Hospital, he expanded access to health care services within the greater Quaboag Valley. He brought primary care to the towns surrounding Palmer, beginning in 1976 and was instrumental in the foundation of Palmer ambulance. He also served as president and CEO at North Hills Passavant Health Corporation in Pittsburgh, Pa., and president and CEO of Horizon Health System, Inc. in Bethlehem, Pa. In 1991 he moved to Watertown, N.Y., to serve as president and CEO of Samaritan Health Systems.

PAUL R. LIGHTFOOT

Paul R. Lightfoot, M.D., of Claremont, Calif., died April 4. He was 59.

Dr. Lightfoot graduated from Fordham College in New York in 1960 and received his medical degree from Yale in 1964. He worked throughout his career at Kaiser Hospital in Fontana, Calif., serving as chief, director and chairman of critical care in the department of cardiology.

OLGA A.G. LITTLE

Olga A. Gavriluk Little, M.D., died in Willimantic, Conn., on Nov. 30. She was 87.

Dr. Little received her medical degree from Boston University, completed an internship in pediatrics at Yale from 1935 to 1937, continued her post-graduate training in psychiatry at Fairfield Hills Hospital in Newtown, Conn. She and her husband, Mervyn, met in medical school and worked together throughout their careers. In 1954 they helped found Natchaug Hospital and served as medical director and president for years.

ROBERT R. MCDONNELL

Robert R. McDonnell, M.D., of New Haven, Conn., died Dec. 11 in New Haven. He was 78.

Dr. McDonnell graduated from Colby College in Waterville, Maine, in 1942 and received his medical degree from Jefferson Medical College in Philadelphia in 1945. He was a captain in the Army from 1946 to 1948 and he completed residencies in neurosurgery at New Haven Hospital and at the Hartford Hospital from 1948 to 1952.

Dr. McDonnell was an attending physician at Yale-New Haven Hospital and the Hospital of Saint Raphael from 1952 until his retirement in December 1996. He also served as treasurer of the Connecticut State Medical Society and was a member of the New England Neurological Society and the American Medical Association.

STEPHEN F. NAGYFY

Stephen F. Nagyfy, M.D., died Dec. 28, at Wilson Memorial Hospital in Johnson City, N.Y. He was 86.

Dr. Nagyfy received his bachelor's degree from Yale in 1932 and his medical degree from the School of Medicine in 1936. He later taught at Iowa State University. During World War II, Dr. Nagyfy served in the Navy as a lieutenant commander in the Medical Corps. He moved to Binghamton, N.Y., after the war and served as physician for the Endicott Johnson Corp.

Dr. Nagyfy later went into private practice associated with Wilson Memorial Hospital-UHS and also served as chairman of obstetrics and gynecology. He retired in 1985.

PAUL A. O'CONNOR

Paul A. O'Connor, M.D., of Hackettstown, N.J., died Jan. 2 at Mountainside Hospital in Glen Ridge, N.J. He was 89.

Dr. O'Connor received a bachelor's degree from the University of Notre Dame in 1931 and his medical degree from Yale in 1935. He served his internship at Martland Medical Center in Newark, N.J. During World War II he was a lieutenant commander in the Navy Medical Corps.

Dr. O'Connor practiced general surgery in Newark for 52 years before retiring in 1989. He was on the staff at St. Michael's Medical Center and the Presbyterian Hospital, both in Newark, and St. Mary's Hospital in Orange. He also served as the senior police surgeon for the Newark Police Department from 1954 to 1992.

Dr. O'Connor, nicknamed Ducky, was a halfback on the 1929 and 1930 Notre Dame national championship football teams under the legendary coach Knute Rockne. He played himself as a football player in the motion picture *Spirit of Notre Dame*, which was released in the 1940s.

NELSON K. ORDWAY

Nelson K. Ordway, M.D., died of prostate/bladder cancer on Dec. 31 in Scottsdale, Ariz. He was 85.

Dr. Ordway, a native of Maine, attended Yale College and was a 1938 graduate of the School of Medicine. His postgraduate training was done at the New Haven Hospital and the Hospital of the University of Pennsylvania. During World War II he was a research assistant in pathology at Yale, where he conducted research on defenses against chemical warfare. In 1945 he joined the pediatrics faculty at Yale as an instructor. In 1947, he was invited to help a fellow Yale alumnus, Myron E. Wegman, M.D. '32, M.P.H., rebuild the pediatrics department at Louisiana State University Medical School in New Orleans and became department chair in 1952.

According to Dr. Wegman, "Nelson brought to our budding department a dimension of Yale-bred laboratory competence and research that led us to fantasize about building a miniature New Haven in New Orleans." But while at LSU, Dr.

Ordway ran afoul of then-rampant McCarthyism when he rose to the defense of a colleague who had refused to sign a loyalty oath. Dr. Ordway maintained that political views were irrelevant to his colleague's competence as a teacher. The colleague was forced to resign and Dr. Ordway was told that pediatrics would receive no funding as long as he remained chairman. He then joined the faculty of the University of North Carolina and returned to Yale in 1958 as professor of pediatrics.

In 1967, he served a year as a Rockefeller Foundation visiting professor at the Universidad del Valle, in Cali, Colombia, then moved to the University of Oklahoma, where he remained until 1974. He periodically taught and lectured in Latin America. Throughout his career, he placed an emphasis on direct care of infants and children. The chance to do more of this led him to join the Indian Health Service in 1974, first in Gallup, N.M., and then in Phoenix, Ariz., where he eventually retired in 1985.

Dr. Ordway, as a member of Physicians for Social Responsibility, was arrested protesting against continued testing of nuclear weapons in Arizona. He was a lover of music and an avid hiker who at 16 climbed the *Jungfrau* in the Swiss Alps. At age 64, he trekked with granddaughter Nancy in the Himalayas to a level of almost 19,000 feet. He was still camping, with the aid of a walker, within a few months of his death.

GERALD B. SHATTUCK

Gerald B. Shattuck, M.D., of Portsmouth, N.H., died Dec. 7. He was 74.

Dr. Shattuck received a bachelor's degree from Dartmouth College in 1943 and a medical degree from Yale in 1946. He was a pediatric intern and assistant resident at the University of Rochester Strong Memorial Hospital in N.Y. from 1946 to 1949, and an assistant at Harvard Medical School from 1949 to 1950. Dr. Shattuck was on the clinical faculty at Harvard and at the Children's Hospital in Boston from 1950 to 1960. He also taught at the University of New Hampshire's School of Allied Health Services, the University of Southern Maine, and New Hampshire Vocational Technical Institute.

Dr. Shattuck practiced pediatrics in Portsmouth from 1950 until 1986 and was chief of medical staff, medical services and pediatrics at Portsmouth Regional Hospital. He was also a senior pediatrician for Kron Medical Corp. in Chapel Hill, N.C., from 1986 to 1988.

HUGH A. SMITH

Hugh Allan Smith, M.D., of Damariscotta Mills, Maine, died Jan. 5 at Heritage Manor, Winthrop. He was 88.

Dr. Smith received his bachelor's degree from Western Reserve University in 1932 and earned his medical degree in 1936 from Yale. From 1936 to 1940, he completed his residency in radiology at Strong Memorial Hospital in Rochester, N.Y., and, from 1940 to 1942, served as an instructor in radiology at Yale. He then entered private practice in Hartford, Conn.

In 1946 Dr. Smith moved to Maine, where he practiced as an associate radiologist at Eastern Maine General Hospital and, in 1949, he was named chief of the department of radiology. He held the post until 1972 and continued to serve the department until his retirement in 1977.

BENJAMIN M. SPOCK

Benjamin M. Spock, M.D., who revolutionized the child-rearing philosophy of his day by encouraging parents to show their children both affection and firmness, died March 15 at the age of 94.

A 1925 graduate of Yale College, Dr. Spock completed the first two years of medical school at Yale. He came to national prominence in 1946 with the publication of *Baby and Child Care*. In his book, which has sold 50 million copies around the world, Dr. Spock explained the different stages of child development so parents could act on that knowledge. He challenged then-current notions that parents should neither coddle nor kiss their children. Two decades later, he linked pediatrics and politics by denouncing nuclear weapons and the war in Vietnam, stands that brought him to a federal court in 1968. His conviction on charges of helping young men avoid the draft was reversed on appeal. Vice President Spiro Agnew and others blamed the youth revolt of the 1960s on his "permissive" child rearing advice, but parents and pediatricians saw a doctor who offered practical advice in simple terms.

Morris A. Wessel, M.D. '43, met Dr. Spock in 1947 at the Mayo Clinic, where Dr. Wessel had a fellowship. He recalls: "If you were seeing a child and having some difficulty about what was going on, he would come in and talk to the parent and make some sense out of it. I wanted to be that kind of pediatrician." According to Dr. Wessel, Dr. Spock came to defy the upper-crust culture into which he was born in New Haven in 1903. His father was a lawyer for a railroad company. "His moral feelings about the war and nuclear weapons were not the pattern of New England aristocrats," Dr. Wessel said.

He started his medical studies at Yale, but after two years switched to the Columbia University College of Physicians and Surgeons. After serving as a psychiatrist in the naval reserve during World War II, he completed writing his book.

"He liberated families from the kind of rigid authoritarianism that so characterized child rearing in the first decades of this century," said Joseph Warshaw, M.D., deputy dean and chair of pediatrics at the School of Medicine. "So much of what he did and what he talked about became part of the conventional wisdom that it is hard to really appreciate the impact that he had. He basically empowered families to use common sense and take a more relaxed approach."

OLIVER G. STONINGTON

Oliver G. Stonington, M.D., of Breckenridge, Colo., died of cancer Feb. 4. He was 82.

Born in Staten Island, N.Y., Dr. Stonington graduated in 1933 from St. Paul's School in Concord, N.H. and went to Princeton University. In 1939, he took a pre-medical year at Harvard University and then went on to graduate from Yale School of Medicine in 1943. Dr. Stonington did his residency training in urologic surgery as an Army captain at Hines Veterans Hospital in Chicago.

In 1956, Dr. Stonington joined the faculty of the Colorado University Health Sciences Center in Denver. During his tenure as professor, he was honored nine times as the Outstanding Clinical Teacher of the Year. Dr. Stonington also received the American Urologic Association Award for Most Outstanding Research in 1975 for his work on prostate cancer. He retired in 1977 as head of urology in the Department of Surgery at CU. Always active in sports, Dr. Stonington celebrated his 80th birthday skiing.

ARTHUR A. WARD JR.

Arthur A. Ward Jr., M.D., of Seattle, Wash., died Dec. 23 of complications following surgery. He was 81.

Dr. Ward was born in Ceylon (present-day Sri Lanka) and came to the United States at the age of 15. He graduated from Yale College in 1938 and from the School of Medicine in 1942. Dr. Ward did his residency at Montreal Neurological Institute, then taught at Yale as an instructor in physiology in 1945. He also taught at the University of Illinois and the University of Louisville.

In 1948, Dr. Ward was invited to develop a neurological division at the University of Washington Medical School. Without even a building, he helped design the laboratories and created the research and teaching programs. He then developed the clinical program. Gradually he set up the epilepsy center for research. In 1965, the division became a department with Dr. Ward serving as chair until 1981.

In 1976, Dr. Ward founded the UW's Northwest Regional Epilepsy Center, which he directed until 1986. He was chief of the Neurosurgical Service at UW and Harborview Medical Center. Dr. Ward was president of the American Academy of Neurological Surgery and editor of the journal *Epilepsia.*

PATRICIA WANNING WATSON

Patricia Wanning Watson, M.D., of New Paltz, N.Y., died Dec. 19, at her home. She was 85.

Dr. Watson, born in Cambridge, Mass., graduated from Radcliffe College and received her medical degree from Yale in 1940. She practiced as a pediatrician in Boston, then took time out to raise four children. Dr. Watson worked as a specialist in organic causes of mental disorders and in bio-feedback in Kingston, N.Y. She had a lifetime interest in the brain and the mind.

BETSEY CUSHING WHITNEY

Betsey Cushing Whitney, the philanthropist who in 1985 provided $8 million to expand the Yale Medical Library in honor of her father and her husband, died March 25 at the age of 89.

Her father was Harvey Cushing, M.D., the pioneering neurosurgeon and graduate of Yale College who came to the medical school to teach in 1933. Her husband was John Hay Whitney, known as Jock, a 1924 Yale College alumnus and fellow who published the *Herald-Tribune*, served as ambassador to Great Britain, backed Hollywood movies and Broadway shows, raced horses and collected art.

After Mr. Whitney died in 1982, Mrs. Whitney sought a way to bring together in memoriam her husband and her father, who had never met, according to her daughter Kate Whitney of New York City. Her endowment of the Harvey Cushing/John Hay Whitney Medical Library was at that time the largest individual gift to the school. "It was wonderful to be with her when she went to the opening, and to have her see the students already in the library and using the library. It was very, very gratifying to her that she brought this about," said Kate Whitney. "The thing that captured my mother's involvement was her excitement and her desire to be involved in the actual design and the details of the new building for the library and the renovation of some of the old spaces. It gave her enormous pleasure to be a part of that."

In endowing the library, Mrs. Whitney carried on a family philanthropic tradition. Her husband honored his father by donating funds to pay for Payne Whitney Gym. Her father, along with his friends and colleagues John F. Fulton, M.D., and Arnold C. Klebs, M.D., bequeathed rare medical manuscripts and books to the library. The resulting collection was the nucleus of the Medical Historical Library, which opened in 1941. Dr. Cushing's design for the library, a Y-shaped wing that jutted from the back of Sterling Hall of Medicine, was adopted and completed after he died in 1939. The design of the new library maintained that concept.

Mrs. Whitney was born in 1908, the second of three daughters. She also had two brothers. In 1930 Mrs. Whitney married James Roosevelt, the oldest son of Franklin Delano Roosevelt. Their marriage produced two daughters, Sara and Kate, but ended in divorce. In 1942, Mrs. Whitney married John Hay Whitney.

Mrs. Whitney was said to be President Roosevelt's favorite daughter-in-law and she frequently served as a hostess at White House functions. In 1983 she established the Greentree Foundation, named after her 438-acre estate on Long Island's Gold Coast. The foundation assisted local community groups.

In 1995, she returned to the medical school for an exhibit of surgical tools, papers and photographs from her father's archives and collection. "She came up in a wheelchair and actually stood and went around all the cases," recalled former Dean Gerard

N. Burrow, M.D. '58, who described Mrs. Whitney as "an absolutely wonderful woman."

GEORGE L. WILSON

George L. Wilson, M.D., of Naples, Fla., and Derby, Conn., died on May 2 at his home in Naples. He was 75.

Born in Everett, Mass., Dr. Wilson attended Harvard University and received his medical degree from Tufts University in 1947. He was a corpsman at Chelsea Naval Hospital during World War II and served as a Naval surgeon in Korea and Japan during the Korean conflict.

Dr. Wilson practiced thoracic surgery at the Hospital of St. Raphael in New Haven from 1956 until his retirement in 1992. He was also a clinical instructor of thoracic surgery at Yale. He served on the Board of Trustees and was president of the Medical Staff at the Hospital of St. Raphael. He was also on the Board at Quinnipiac College and was a member of the parents council at Davidson College.

CHARLES ZIGUN

Charles Zigun, M.D., of Fairfield, Conn., died March 5 in Bridgeport Hospital. He was 68.

Born in Bridgeport, Dr. Zigun was a graduate of Yale College in 1952 and the School of Medicine in 1956. He was in private practice in Fairfield for over 30 years and was affiliated with the greater Bridgeport Mental Health Center as a staff psychiatrist for five years. Dr. Zigun was a past president of the Congregation Rodeph Sholom, the Jewish Family Service and the Connecticut Region of the United Synagogue of America.

IN MEMORIAM

The School of Medicine has received notification of the death of the following persons:

John B. Barnes, M.D. '79
September 16, 1997

Clifford C. Beebe, M.P.H. '46
February 7, 1998

Maxwell Bogin, M.D. '26
December 2, 1997

Wyntha T. Boothe, M.P.H. '61
February 14, 1995

Ormond V. Brody, M.D. '60
August 13, 1996

Lewis H. Bronson Jr., M.D. '37
April 1, 1988

Clarence William Bushnell, M.P.H. '51
October 28, 1997

Cynthia D. Butler, M.P.H. '76
February 6, 1991

Thomas E. Carson, M.D. '60
October 1, 1997

George B. Corcoran Jr., M.D. '44
August 28, 1997

Warren P. Cordes, M.D. '33
February 11, 1998

William H. Druckemiller, M.D. '39
September 25, 1997

H. Patterson Harris Jr., M.D., M.P.H. '65
January 5, 1998

Isao Hirata Jr., M.D. '45
February 25, 1998

George L. Hoffmann, M.D. '53
May 16, 1997

Kathleen H. Howe, M.P.H. '56
December 3, 1997

Herbert S. Hurwitz, M.D. '54
December 20, 1997

Henry V. Kogut, M.D., HS '48
October 18, 1997

Olga A.G. Little, M.D., HS '37
November 30, 1997

D. Bruce McLean, Med '36
January 26, 1998

Frances S. Miller, M.P.H. '39
June 16, 1996

Stephen F. Nagyfy, M.D. '36
December 28, 1997

Paul A. O'Connor, M.D. '35
January 2, 1998

Nelson K. Ordway, M.D. '38
December 31, 1997

Joseph T. Prekup, M.P.H. '61
January 1, 1997

James D. Prokop, M.D. '59
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Joseph P. Rossi, M.D., HS '60
June 7, 1996

Roger N. Ryley, M.D. '39
November 1, 1992

Gerald B. Shattuck, M.D. '46
December 7, 1997

Hugh Allen Smith, M.D. '36
January 5, 1998

Benjamin Spock, M.D., Med '29
March 15, 1998

Myra D. Tyler, M.D. '50
January 13, 1998

Patricia E. Wanning, M.D. '40
December 19, 1997

Arthur A. Ward Jr., M.D. '42
December 23, 1997

Jane L. White, M.P.H. '43
October 10, 1997

Richard V. Worthington, M.D. '38
November 29, 1997

Charles Zigun, M.D. '56
March 5, 1998

The designation Med. *indicates the deceased attended the School of Medicine for a portion of his or her education.*

The four humors weren't that funny

By
Gregory Raskin

Laughter, they say, is the best medicine. But can laughter cure Methicillin-Resistant Staphylococcus Aureus? Let me put that another way …

Once, when I was a young boy, there lived an alarming bit of eczema on my face. I itched, I whined, and my annoyed mother was forced to drag me to the doctor's office. Upon inspecting my grill, the pediatrician looked at my mother gravely, shook his head, and deadpanned: "I think we'll have to amputate."

Petrified, I turned to my mother. Strangely, she was smiling. I was confused for a moment, but then I understood. This man, my doctor, had just made a joke under what was surely the gravest of circumstances. He had wielded his irony and slain two unhappy people. In their places were a smirking mom and a beaming, reverent (although still quite blemished) boy.

Can you see that this real-life example points to an important issue? If you are thinking, "Yes! Eczema can be cured by amputation," you may have missed the point entirely. Also, you are hopefully not a dermatologist. What you should have gleaned is that humor in medicine has an important role, one that is often overlooked.

Toward the beginning of my clinical training, I was nervous around my patients. I ended up being very serious, both out of anxiety and respect. However, being serious all the time is not inherent to my character, and I think by trying to act a certain way I ended up appearing even more awkward than I really am. While medical school at Yale stresses the importance of the doctor-patient relationship, I never appreciated how humor can be used to one's advantage. It can distract a patient who is self-absorbed and depressed, help a patient to be on your side, and may turn a stressful situation into one of friendly rapport.

As my clinical training progressed, I developed a different way to think about respect. I feel that doctors should regard patients as though they are normal people. This is sometimes hard for a beginning medical student. I think that the majority of my patients do better when they do not feel they are being treated as extremely fragile. On the other hand, one cannot be perceived as cavalier or immature. Humor walks a razor's edge: it is vital to feel out the situation to determine whether or not, in the words of Woody Allen, "This is not the right crowd for this joke." In short, don't tell a knee-slapper to a guy with patellar tendinitis.

I also have the particular concern that I tend to write often—in forums where plenty of people can read what I write—and I don't want to be disrespectful. For example, when I rotated through surgery, we amputated an unfortunate gentleman's toe which had become gangrenous. Would the patient whose toe I amputated appreciate it if he knew I was telling the above amputation-related humorous anecdote? Is it OK, but only if he never finds out? Should I hang up my word processor forever? Because of such ethical dilemmas, future columns of mine dealing with possibly taboo subjects will appear under the pseudonym "Galen," or possibly "Assistant Dean for Admissions Thomas Lentz."

Humor in medicine can also have value that goes beyond the obvious. In a word: cost-effectiveness. HMO executives and even the hospital president will be eating out of your latex-gloved hands when your cheery patients leave the hospital in record time. Numerous studies have shown shorter hospital stays for patients treated by funny doctors than for those who have brooding doctors who wear black, quote Søren Kierkegaard and pipe Wagner into their hospital ward.

You're thinking, fine, this will work if I'm a genuinely funny person, but what about my colleagues who are dull as a three-week-old scalpel? HMOs will still approve. If you're not that funny but still attempt humorous intervention, you may drive your patients from the hospital, saving society countless dollars. If all else fails, feel free to try a variation of the following (nearly foolproof) gag:

After a medical conference where attendees were plied with material from pharmaceutical firms, I ended up with a sample capsule from a drug company. It looks just like a normal blue and white capsule, except that it's about 8 inches long and 3 inches in diameter. Occasionally I'll put it in my breast pocket, enter a patient's room, say "Good morning, Mrs. Jones, it's time for your medicine," and then produce this enormous pill.

Usually this is met by a laugh, although I'm sure to scout out my audience before I try such a trick. I never do it on anyone who's recently had abdominal sutures.

I wouldn't want to split any sides.

Gregory Raskin, M.D. '98, invites all interested physicians to call him up for more good gags to use on the job. He is a first-year resident in internal medicine at New York University Medical Center.

A _____
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Please send additional information on the conferences checked at left. Letters correspond with conference listings on the opposite page.

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Sept. 16-20 Wednesday-Sunday	**The 22nd Yale Physician Assistant Certification/ Recertification Preparatory Conference** Course Coordinator: Christiane G. Nockels, P.A. Omni Hotel, New Haven, CT	**B**
Sept. 25 Friday	**Death of Neurons** Course Director: Pierre Fayad, M.D. Harkness Auditorium	**C**
Oct. 1, 2 Thursday-Friday	**AIDS Conference** Course Director: Gerald H. Friedland, M.D. Omni Hotel, New Haven, CT	**D**
Oct. 10 Saturday	**Second Annual Michael S. Voynick Lecture in Neuro-Oncology** Course Director: Joseph M. Piepmeier, M.D. Hope 110	**E**
Oct. 14 Wednesday	**8th Annual Dual Diagnosis Committee Conference** Course Director: Douglas Ziedonis, M.D. Harkness Auditorium	**F**
Oct. 16, 17 Friday-Saturday	**Digestive Disease Review for the Primary Care Provider** Course Director: Victor J. Navarro, M.D. Harkness Auditorium	**G**
Oct. 23, 24 Friday-Saturday	**Health and Spirituality Conference** Albert Schweitzer Institute for the Humanities Directed to a multidisciplinary audience of practitioners and graduate students in medicine, divinity, public health and social work. Dedicated to the memory of Dr. Albert Schweitzer's son-in-law, Dr. David Miller. Hope 110	**H**

For information, contact the Office of Postgraduate and Continuing Education, Yale University School of Medicine, 333 Cedar Street, P.O. Box 208052, New Haven, CT 06520-8052; Tel: (203) 785-4578

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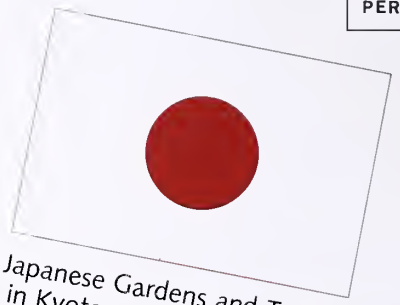

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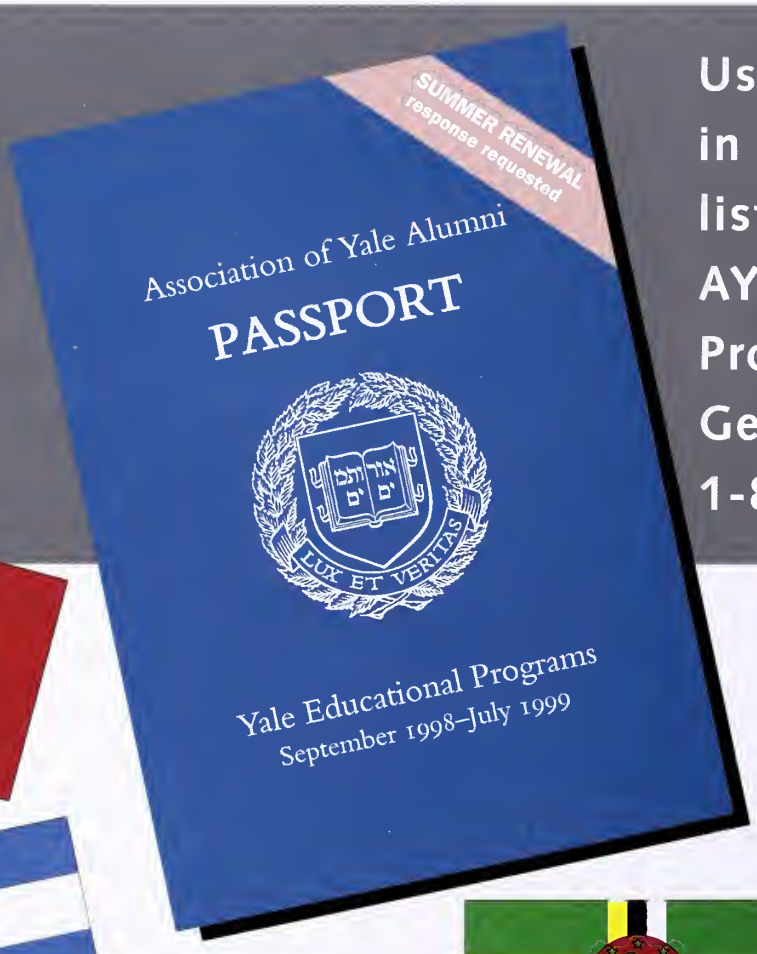

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April 2-17, 1999

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Tunisia: Land of Many Faces
March 11-20, 1999

Yale Medicine

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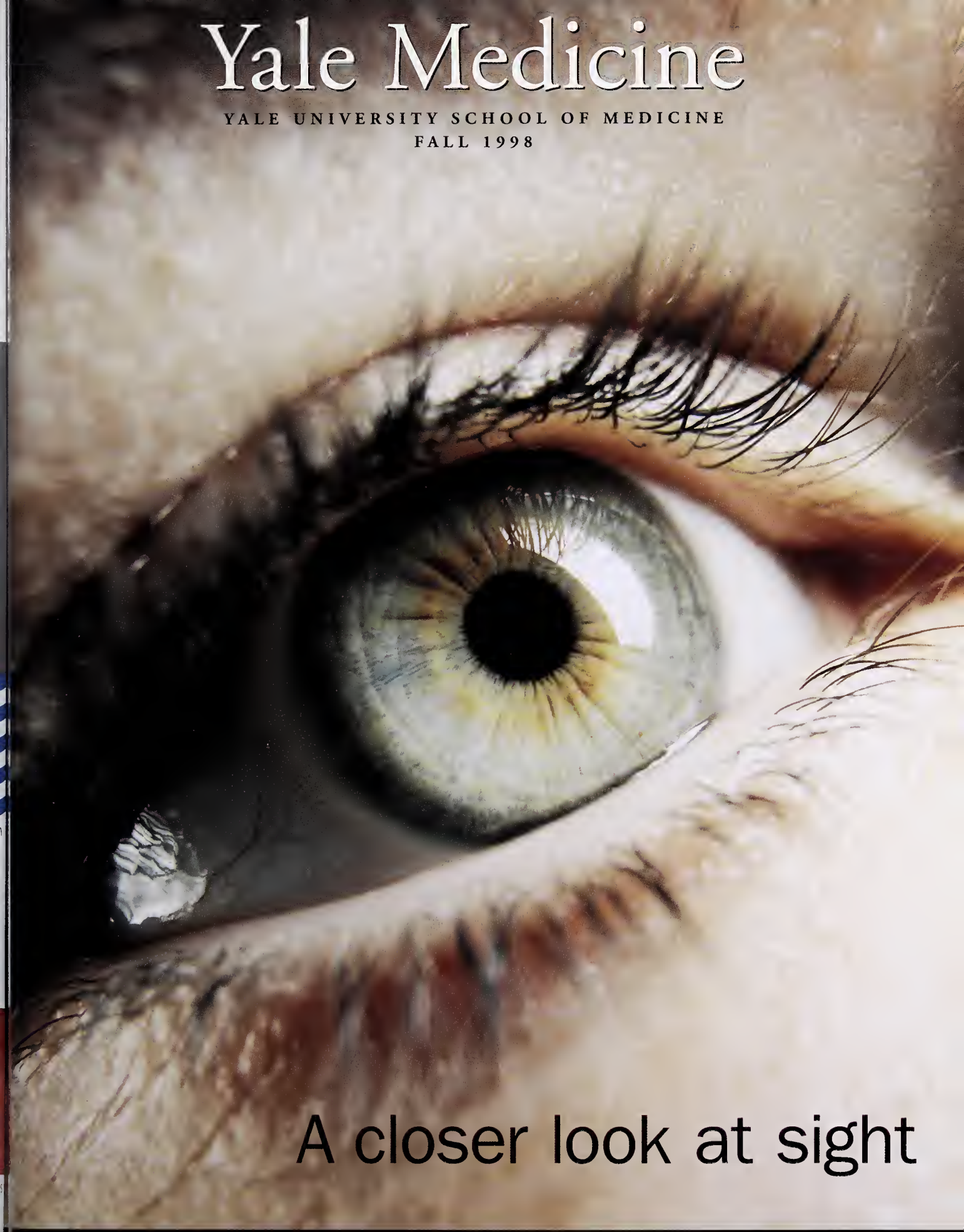
FALL 1998



A closer look at sight

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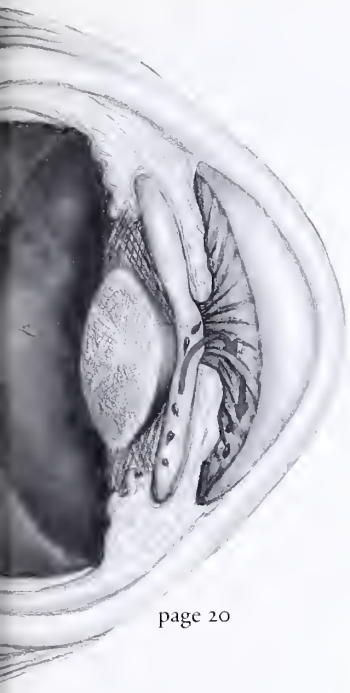

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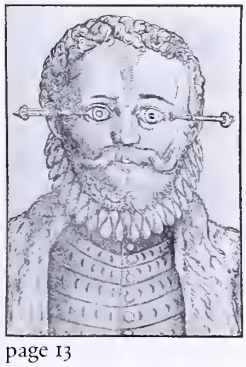

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Yale should divest itself of tobacco stocks

To the Editor:
It was discouraging to learn of the Yale Corporation's April decision not to divest its considerable holdings in tobacco stocks. I urge the medical school to lobby in favor of divestiture.

Physicians need to be more outspoken about the dangers of alcohol and cigarettes. The late Dr. John Knowles, former president of the Rockefeller Foundation, said we could cut the nation's health bill by 50 percent if everyone stopped smoking and drinking!

My father graduated from the School of Medicine in 1934 and our family enjoys your magazine.

Edward T. O'Donnell Jr.
Wilmington, Del.

Longevity and talent

To the Editor:
Like Helen Langner (*A Life of Engagement*, Summer 1998), I grew up in Milford and know the Langner family. While Helen was admired and revered, she was not the only talented member of the family. Her "kid brother" Gustave, now 94, who was consulted for your article, is a competitive swimmer and still wins senior titles internationally. If Dr. Langner were of the modern generation, she would probably say: "Our talent must be in our genes."

David Rosenbaum, B.A. '47
Milford, Conn.

How to reach us

***Yale Medicine* welcomes news and commentary. Please send letters to the editor and news items to *Yale Medicine*, P.O. Box 7612, New Haven, CT 06519-0612, or via electronic mail to ymm@yale.edu, and include a daytime telephone number. Submissions will be edited for length, style and content.**

Early X-rays, continued

To the Editor:
Missing from the extended debate on whether Yale or Dartmouth produced the first X-ray after Roentgen (*Letters*, Summer 1998) is one significant piece of information.

Peter Spiegel wrote, "If Yale's physicist, Arthur Wright pre-empted the Dartmouth group, it remains unreported and unsubstantiated, at least in the scientific literature." In fact, Dr. Wright's report was published in the Feb. 1, 1896, issue of *Engineering and Mining Journal* and in *Electrical Engineer* of February 5.

Wright wrote an additional report with more experiments in the March issue of the *American Journal of Science*. It is ironic that Wright's report antedated a report from Harvard by four days.

Raymond A. Gagliardi, MD '45, HS '48-51
Historian, the American Roentgen Ray Society
Bloomfield Hills, Mich.

Class act

To the Editor:
Thank you for the most recent update on the traditional second year class show. It has been almost 30 years since the Class of 1972 performed in *Guaiac Positive* to rave reviews. After all these years the memories of the skits, the songs and the class shenanigans directed toward the "New Curriculum" of 1968 stand out as some of the most unforgettable and enjoyable episodes of my Yale experience. (How often in a medical career does one get to lampoon his professors, portray immunologist Byron Waksman and be applauded at the same time?)

Kudos and congratulations to the most recent keepers of the tradition. Indeed, I hope that in 2028 the current class can look back on this bonding experience with their colleagues with the same fondness and joy that my classmates and I share now.

Lawrence P. Temkin, M.D. '72, HS '72-77
Tucson, Ariz.

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For a world of emerging diseases, a revived program in microbiology


Jorge Galan


Craig Roy


Norma Andrews

Three decades ago, it seemed that modern medicine had virtually eliminated many infectious diseases. Armed with antibiotics, vaccines and a sense of victory in the war against microbes, medical schools began to look at the discipline of microbiology in a different light, and in 1972 Yale joined others in disbanding its department.

By the 1980s, however, such deadly microbes as HIV, Ebola, Marburg, and Legionnaires' disease surfaced to remind physicians that infectious diseases were still alive and represented very real public health threats. Moreover, some of the older pathogens had developed resistance to drugs that had once been effective.

With this in mind, faculty at the School of Medicine began work several years ago to reestablish a formal program in the microbiology of infectious disease. In July, those plans came to fruition with the appointment of Jorge E. Galan, D.V.M., Ph.D., as the first chair of a new Section of Microbial Pathogenesis. Support for the program came from The Esther A. and Joseph Klingenstein Fund Inc. and the Lucille P. Markey Charitable Trust.

"Times change," Dr. Galan said in an interview. "With the new emerging infections, and with others making a comeback as you would expect in any kind of biological cycle, there is a new interest in infectious disease. I hope that interest is here to stay."

Microbial Pathogenesis is the fifth autonomous section at the medical school and the first created since 1988, when the Section of Immunobiology was founded. Dr. Galan and his colleagues will focus their research on the interactions that occur between pathogens and their hosts, an increasingly rich and fruitful area of research. The section also will become the academic and administrative home to a four-year-old graduate track in microbiology now administered as part of the Biomedical and Biological Sciences Program. The microbiology track, which has 25 students this year, was created in anticipation of the new section's founding.

Dr. Galan and his two colleagues in the section, Craig R. Roy, Ph.D., and Norma W. Andrews, Ph.D., will carry out research on bacteria and parasites and teach first- and second-year medical students. In addition, the new chair plans to apply for a training grant to further strengthen the microbiology track. Over the next few years, the section is expected to grow to a total of six faculty members.

Caroline W. Slayman, Ph.D., deputy dean for academic and scientific affairs and chair of the task force that recommended the section, said Dr. Galan was selected as chair because he is one of the world's leading researchers in the area of bacterial pathogens. "His selection," she said, "reflects the feeling of the search committee that the real challenge is to work with pathogens and study their interactions with their host cells."

Keith A. Joiner, M.D., professor of medicine and epidemiology, and a member of the search committee, said Dr. Galan was recruited not only for his work in bacterial pathogenesis, but also for his broad scientific perspective, which will facilitate interactions with colleagues in related fields such as cell biology, immunology, epidemiology, infectious diseases and structural biology.

Dr. Andrews, a faculty member in cell biology for the past four years, is an authority on parasite-host interactions. Dr. Roy worked in the same department as Dr. Galan at the State University of New York at Stony Brook and was recruited to Yale to continue his research on bacterial pathogenesis. Using *Legionella pneumophila* as a medium, Dr. Roy studies mechanisms by which bacteria subvert the normal functioning of human cells.

Dr. Galan believes the idea that infectious diseases will one day be completely eradicated is mistaken. "We will never, ever be able to conquer infectious diseases," he said. "We may learn how to deal with a given pathogen but eventually other pathogens will emerge. This is going to be a battle forever, there is no question about it."

Physician associates gain their master's

Starting next year, graduates of the physician associate program will receive master's degrees instead of the graduate professional degree now awarded. The Yale Corporation approved the change in June in recognition of the program's curriculum, long considered to be of master's level. The Class of 1999 will be the first since the program started in 1971 to receive master's degrees.

The change comes, says Elaine E. Grant, PA-C, M.P.H. '92, assistant dean and director of the physician associate program, as the profession debates whether a degree or a title is more appropriate. Students themselves have made their preference clear. "We started seeing more and more students choosing other schools to get a master's," Ms. Grant says.

Four years ago, in response to new standards for accreditation, the curriculum was amended to include research methodology, biostatistics and epidemiology. The 25-month course includes 10 months of classroom studies and 15 months of clinical training. For graduation, students must successfully complete 12 four-week rotations,

Lyme disease vaccines prove effective

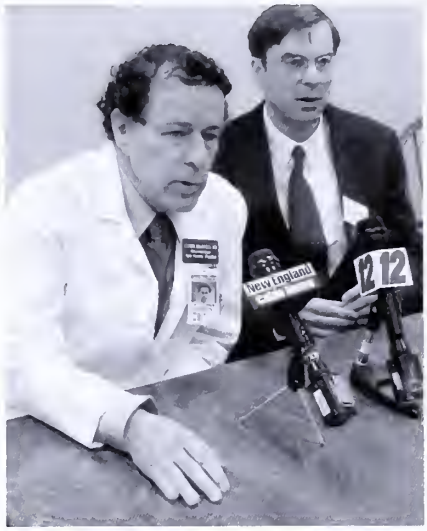
Clinical trials conducted at Yale over the past two years have proven the effectiveness of two Lyme disease vaccines—one developed by Yale faculty—the first such drugs of their kind. Advisory panels have now endorsed both vaccines and the pharmaceutical companies that own the drugs are awaiting FDA approval to begin marketing them.

In studies at Yale and other centers involving more than 20,000 people over two Lyme disease seasons, the vaccines were found to prevent the disease in a majority of cases. The Yale vaccine, LYMErix, was found to prevent 76 percent after three injections. SmithKline Beecham has obtained exclusive licensing to the Yale vaccine.

ImuLyme, a vaccine developed by Pasteur Merieux Connaught of Swiftwater, Pa., was found to prevent Lyme disease in 68 percent of cases after two injections and 92 percent of cases after a third dose. Differences in efficacy between the two vaccines could be due to varying methods of surveillance. ImuLyme excluded people over 65, while LYMErix included all adult age groups.

The results of the studies were published in the July 23 issue of *The New England Journal of Medicine.*

"These two studies demonstrate that vaccination can be an important new approach to preventing Lyme disease, which is the most common tick-borne disease in the United States," said Robert T. Schoen, M.D., clinical professor of internal medicine and a member of the team that studied the Yale vaccine.



JOHN CURTIS

Stephen Malawista, left, and Robert Schoen respond to reporters' questions during a press conference on Lyme disease.

Lyme disease was first identified by Yale researchers Stephen E. Malawista, M.D., and Allen C. Steere, M.D., in 1975. The vaccine was derived from basic research performed at the School of Medicine by a team including Richard A. Flavell, Ph.D., professor and chair, section of immunobiology, Fred S. Kantor, M.D., the Paul B. Beeson Professor of Medicine, Erol Fikrig, M.D., associate professor of medicine, and Stephen W. Barthold, D.V.M., Ph.D. This work was supported by grants from the National Institute of Health and the Centers for Disease Control, as well as a generous grant from the Mathers Foundation.

Both vaccines stimulate immune responses to produce antibodies against Lyme disease. The vaccines not only provide immunity, but also may kill the spirochete, the bacterium in the mid gut of the tick that causes Lyme disease.

"Ticked off" about Lyme disease treatment: While physicians discussed therapies, vaccines and research at a Yale symposium on Lyme disease in early June, several dozen people took to Cedar Street to protest what they called improper diagnosis and treatment of the tick-borne illness by Yale clinicians and researchers. According to the protesters, who carried placards and distributed flyers saying they were "ticked off" at Yale, medical school physicians minimize the severity and frequency of the illness. "Many of us have gone undiagnosed and untreated because of the Yale protocol," said Maureen Albertson of Bridgeport.

Physicians at Yale have maintained that many cases of Lyme disease cannot be verified. "Lyme disease has become a magnet for people who do not feel well," said Stephen E. Malawista, M.D., a professor of medicine and one of two researchers who identified Lyme disease in 1975. "No one doubts that they are suffering. The question is whether they are suffering from Lyme disease. There is a difference between hope or belief and hard clinical evidence. A danger is that some other condition will be ignored while the possibility of Lyme disease, however remote, is being endlessly pursued."

which expose them to primary and emergency care. To ensure that students understand the profession they are entering, Ms. Grant said applicants must have worked as emergency medical technicians, nurses, hospital volunteers, research assistants or medical technicians or had other health care experience.

Physician associates, generally known as physician assistants, are licensed health care professionals who work with physicians. In most states they are licensed to prescribe medications and most work in primary care.

The Yale program's first class of five students graduated in 1973; in August, 36 students in the Class of 2000 began their studies. Students learn to take medical histories, perform physical examinations, order and interpret lab tests, diagnose and treat illnesses, assist in surgery and counsel patients. "The profession has been successful because the generalist educational component has allowed the profession to be flexible in fulfilling the health care needs of the country," Ms. Grant said. "Physician associates have been able to shift as needs have shifted."

11 grants awarded to advance research in women's health

The Ethel F. Donaghue Women's Health Investigator Program at Yale announced its first round of grants in August for studies of women's health. These are the first awards made since the program received a $6.5 million grant in February from The Patrick and Catherine Weldon Donaghue Medical Research Foundation. The new program was created to advance women's health research and develop

new cutting edge areas of investigation that will result in direct practical benefit for women.

"These projects represent a wide variety of research interests in women's health, and provide an exciting cornerstone for our program," said Carolyn Mazure, Ph.D., professor of psychiatry and director of the research program. "The funded areas of study address unanswered questions in women's health and begin the process of changing both the health and health care of women."

1998 DONAGHUE WOMEN'S HEALTH INVESTIGATOR AWARD RECIPIENTS

▶ Aydin Arici, M.D., associate professor of obstetrics and gynecology, will study how estrogen protects the blood vessel walls from degeneration in women with cardiovascular disease. The goal is to develop a better understanding of the molecular mechanisms of estrogen action, which may lead to development of improved estrogenic substances providing more targeted cardiovascular interventions for women.

▶ Linda M. Bartoshuk, Ph.D., professor of surgery, will study burning mouth syndrome, an intense oral pain that afflicts about one in six postmenopausal women. The study will identify and characterize those at risk, and test a drug therapy which may provide effective treatment to ease the pain of this syndrome.

▶ Priscilla S. Dannies, Ph.D., professor of pharmacology, is seeking ways to improve the survival rate of women suffering from ovarian cancer. Specifically, she will study whether certain estrogen antagonists combined with chemotherapeutic agents can induce ovarian cancer cell death. This knowledge will enhance the use of these agents in clinical settings, and hopefully improve the outcome of patients suffering from ovarian cancer.

▶ Marc Galloway, M.D., associate professor of orthopaedics and rehabilitation, is investigating how to improve the surgical recovery of women athletes who undergo knee surgery. Laboratory studies suggest that pain threshold and immune responses vary according to the menstrual cycle. This study will determine if surgical outcomes can be improved by correlating surgical procedures with the time of the menstrual cycle. The study will also examine differences in social support and adherence to exercise regimens for men and women, both of which have been shown to influence the rate of recovery.

▶ Bruce G. Haffty, M.D., associate professor of therapeutic radiology, is

A high school link to the Human Genome Project

With the help of a Yale geneticist, some New Haven-area high school students have been advancing the frontiers of molecular biology. For the past year and a half Yale geneticist Wesley Bonds Jr., Ph.D., has worked with the students from the Sacred Heart Academy in Hamden and their teacher to teach DNA sequencing. Since then the students themselves have gone on to teach sequencing workshops to teachers and other students, attended the International Conference on Gene Mapping and Sequencing and established what may be the country's first high school gene bank.

"The students are getting a unique, hands-on introduction to modern molecular biology," says Dr. Bonds, an associate research scientist in genetics. "DNA sequencing is the perfect way to introduce students to scientific experiments because it is repetitive work and can be easily evaluated."

Sister Mary Jane Paolella, a biology teacher at the school, first became interested in teaching DNA sequencing to her students in March of 1997. She had read about a researcher at the University of Washington in Seattle who taught high school students to sequence chromosome fragments. That researcher put her in touch with Dr. Bonds here in New Haven. The efforts of Dr. Bonds and Sister Paolella have been incorporated into a course on biotechnology, with 11 students this academic year. Those 11 students have learned to mentor students and teachers from urban and suburban high schools at the marathon sequencing days they offer twice a year. They are also part of the High School Human Genome Project, a miniature of the National Human Genome Project, which is working to map all of the 3.2 billion pairs of DNA molecules that comprise the human genome.

"The same sequencing theories and problems in finding a gene are identical to the national project," says Dr. Bonds. "The students are doing the same things, but on a smaller scale with less equipment."

DNA sequencing is a unique teaching tool, Dr. Bonds believes, in that it allows students to use current research techniques to understand biological systems usually approached in other ways. Because DNA sequences are now readily available over the Internet, Sister Paolella and Dr. Bonds believe that many other high schools should be able to involve themselves in genomics, even if they don't have access to sequencing equipment themselves.

"Our hope is to get other high schools and universities working together to change the focus of high school biology," says Sister Paolella.

MICHAEL MARSLAND

Wesley Bonds Jr. and Sister Mary Jane Paolella, a biology teacher at Sacred Heart Academy in nearby Hamden, Conn., have created an innovative course in gene sequencing that is part of the High School Human Genome Project.

trying to determine whether women who carry the genetic mutations BRCA1 and BRCA2 have a higher risk of local recurrences in conservatively-treated breast cancer. The results will provide information to women diagnosed with early stage breast cancer who carry the genetic mutations, so they can make more informed decisions about options for treatment.

▶ Harvey Kliman, M.D., Ph.D., a research scientist in obstetrics and gynecology, is seeking predictors of successful embryo implantation in infertile couples. More than 10 percent of reproductive age couples suffer from infertility, and in 20 to 25 percent of such couples there is no proven cause. Implantation success predictors are likely to lead to a better understanding of the causes of infertility in women and to improved efficacy and reliability of embryo transfer.

▶ John M. Leventhal, M.D., professor of pediatrics, is studying whether a volunteer-based, home-visit program can improve the health, social functioning, and parenting of young inner-city mothers. Trained volunteers, who will be matched with pregnant women between the ages 15 to 25 who are receiving care at Yale-New Haven Hospital, will provide practical advice about parenting and meeting the mother's social and economic needs. The study will determine if this type of intervention can improve the success of these young mothers.

▶ Mark J. Mamula, Ph.D., associate professor of medicine (rheumatology), is investigating systemic lupus erythematosus (SLE), an immunologic disease of unknown causes that afflicts primarily women. The study will examine how specific cellular proteins or antigens become targeted for attack by the immune system. Dr. Mamula hopes to identify autoantigenic candidates that may initiate this autoimmune cascade and provide a first step for intervention in this disease.

▶ Nina S. Stachenfeld, Ph.D., research scientist in the John B. Pierce Laboratory, is examining the actions of estrogen and progesterone on the systems that regulate body fluid balance. Researchers suspect that female sex hormones increase disease susceptibility and progression in post-menopausal women. Understanding of body fluid regulation could lead to the eventual prevention or treatment of a variety of chronic diseases that specifically affect women.

▶ Suzanne Swan, Ph.D., associate research scientist in the department of psychiatry, plans to study the conditions under which women use violence in domestic relationships. Evidence suggests women become violent in self-defense, out of fear, and as a response to violence perpetrated against them; however, such action often results in more violent retaliation. Dr. Swan hopes to understand these patterns in order to develop and implement domestic violence intervention and prevention programs for women.

▶ Viola Vaccarino, M.D., Ph.D., assistant professor of epidemiology and public health, will study whether women benefit from coronary bypass surgery to the same extent as men in terms of symptom relief and functional and psychosocial recovery. This study will improve the ability of healthcare professionals to counsel female patients, enhance decision-making for women considering bypass surgery, and develop interventions to improve women's recovery after bypass surgery.

These projects are led by Yale investigators with collaborators across departments and disciplines, in conjunction with researchers from other major institutions, and with the help of community clinicians. The program will publish its second request for applications this fall.

Estrogen studies yield hope of breast cancer treatment

Yale University researchers have visualized in atomic detail how two important female sex hormones, progesterone and estrogen, bind to their receptors—an accomplishment that could help scientists design better medications to treat breast cancer, ease the symptoms of menopause and prevent unwanted pregnancies.

The Yale scientists' data are available to the worldwide research community through the Protein Data Bank at Brookhaven National Laboratories on Long Island. Paul B. Sigler, M.D., Ph.D., professor of molecular biophysics and biochemistry, and his colleagues are the first to make the structure of the estrogen-receptor complex available to scientists through the data bank.

Dr. Sigler's detailed atomic comparison of the estrogen and progesterone receptors binding—prepared in collaboration with Yale graduate student David M. Tanenbaum and postdoctoral associates Shawn P. Williams, Ph.D., and Yong Wang, Ph.D.—was published in the May 26 issue of the *Proceedings of the National Academy of Sciences.* A separate report by Dr. Sigler and Dr. Williams on the progesterone receptor alone was published May 28 in the journal *Nature.*

Drugs such as tamoxifin and raloxifene that bind to the estrogen receptor and block the uptake of estrogen have been shown in recent studies to be effective in treating and even preventing breast cancer. However, even more effective estrogen blockers could be created using the three-dimensional, computerized "snapshot" of the estrogen receptor captured at Yale, said Dr. Sigler, a Howard Hughes Medical Institute investigator at Yale. Tailor-made medications that improve the uptake of estrogen instead of blocking it could help relieve menopausal symptoms.

"Our work with the progesterone receptor has given us by far the highest resolution, that is, the clearest look we have ever had, of the chemistry that underlies a steroid binding to its receptor," said Dr. Sigler. Using a technique called X-ray crystallography, the researchers generated an image of progesterone bound snugly in its receptor's specific binding pocket at a resolution of 1.8 angstroms, which is roughly the distance between two atoms.

Weighing privacy and progress, Congress considers limits on patient data

Advances in genetic screening abilities have put the medical world on alert about threats to patient privacy. In August, Sen. Christopher Dodd, D-Conn., came to the medical school to ask faculty about ways to ensure the privacy of genetic records.

Sen. Dodd, who is sponsoring legislation that would bar insurers and employers from discriminating based on genetic predisposition to disease, told reporters, "The last thing I would want is any suggestion that we are trying to limit the importance of moving forward with genetic technology."

Several faculty members who met with Sen. Dodd agreed. Maurice J. Mahoney, M.D., J.D., professor of genetics, pediatrics and obstetrics and gynecology, pointed to the importance of the flow of information to physicians and family members. "One has to reach a balance," he said. "We don't want to inhibit that kind of flow. If we develop a culture in which we are fearful of the consequences of sharing information within the profession, that is to the detriment of health care. On the other hand, I have fears about allowing medical information to flow freely in the economic structures of our society and government."

Sen. Dodd told the gathering, "It seems to me we ought to be able to strike a balance here in pursuing that, while, at the same time, offering people some sense of security that this information is not going to be used to deprive them of insurance or employment." According to Sen. Dodd, discussions with constituents showed strong concerns about privacy. "The public response to that issue dwarfed every other issue."

Also present at the press conference were patients and families concerned about the potential economic and professional consequences of the genetic diseases they carry. Peter Przybylski said his 11-year-old daughter Ashley has carbamoyl phosphate

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Building a town-gown partnership, from high school to medical school

A five-year collaboration between Yale University and New Haven's Career High School entered a new phase in September, as students and teachers moved to a new building a few blocks away from the medical center. The proximity, as well as a new shuttle bus, will bring students closer to the anatomy classes they take and their internships at the medical school and Yale-New Haven Hospital.

New Haven Mayor John DeStefano visits a science lab on the first day of school at the new Hill Regional Allied Health and Business Career High School.

Career High—or Hill Regional Allied Health and Business Career High School, as the school will be known in its new building—was created in 1983 to introduce students to careers in health, business and computer technology. Until this year the magnet school and its 450 students occupied a former elementary school on Wooster Square that was originally built to handle only 300 students. The new 165,000-square-foot building at 140 Legion Ave. opened this year with 600 students. It will admit a full complement of 750 next year.

The school's relationship with Yale began in 1993 when Career students came to the medical school for anatomy lessons given by medical students and William B. Stewart, Ph.D., associate professor of surgery and section chief for anatomy and experimental surgery. Since then it has grown into a multifaceted program that two years ago became a formal partnership. The School of Nursing has provided mentors and internships, and medical library staff have trained teachers in the use of the Internet. This past summer 15 Career students participated in a two-week program on the campus of the medical school, living in Harkness Hall and studying biology and chemistry with faculty from the medical school, Yale College and the New Haven public schools. Medical faculty and staff have advised Career staff on computer networks and laboratory equipment. The new school will have 650 networked computers with links to the Yale computer network.

"What's exciting about the partnership is that it goes beyond simply trying to inspire kids to become a physician or a nurse or researcher," says Claudia Merson, Ed.M., Coordinator of Career High School Partnership at the medical school. "We work with the faculty to provide opportunities for students to acquire the skills and discipline they are going to need to get there."

"Another facet of the collaboration has been the opportunity for every student to take advantage of at least one of a series of internships offered at the hospital and medical school. Students spend two days a week working in a clinical or laboratory setting while gaining academic credit for their work. These internships give our students the chance to apply and expand upon skills learned in the classrooms at a first-rate medical center," says school principal Charles Williams. "The kids love it."

synthase deficiency, in which blood ammonia levels can become lethal without proper management. "I would hate to see her have to take a position based on her medical coverage, as opposed to what she wanted to do," he said.

A new tool to combat cocaine addiction

Yale researchers have found that a combination of medication and counseling can be effective in treating cocaine addiction, a significant finding given the lack to date of any generally effective medication to treat cocaine dependence. The research also suggests a promising strategy involving treatment of those who abuse a combination of drugs, such as alcohol and cocaine.

The study, led by Kathleen M. Carroll, Ph.D., associate professor of psychiatry, and researchers at the Substance Abuse Treatment Unit at the Department of Psychiatry, compared different treatments for alcohol and cocaine abusing patients. Some patients received a combination of disulfiram and one of three types of counseling while others received counseling but no medication. Because most cocaine-dependent people also abuse alcohol, the application of disulfiram, also known as antabuse, could have broad implications in the treatment of cocaine abuse. The researchers' findings were published this year in *Addiction*. The National Institute on Drug Abuse sponsored the study.

The best outcomes in the 12-week study of 122 people who abused both cocaine and alcohol occurred among those who received both disulfiram and psychotherapies which encouraged them to get involved in self-help groups or taught them skills for coping with situations in which they were likely to use illicit drugs.

Alcohol dependence is often a problem among cocaine users, according to the authors. A 1990 study found that 85 percent of those considered cocaine-dependent also met standards for alcohol abuse. Also, once use of both substances becomes a pattern, it is hard to

Brain surgery, without opening the skull

JOHN CURTIS

Neurosurgeons Juan Bartolomei and Alain deLotbinière prepare the gamma knife to specify the precise location in the brain where radiation will be concentrated. By varying which of the helmet's 201 openings are plugged, surgeons exercise fine control over the target beams.

For decades neurosurgeons have treated diseases of the brain by beaming radiation inside the skull, sidestepping the need to cut through scalp and bone. The arrival of a 30-ton gamma knife at Yale in July enables this intricate form of brain surgery with a previously unmatched precision.

The Swedish-made gamma knife beams up to 201 gamma rays around a single point in the brain, letting the radiation accumulate on that point without disturbing surrounding tissue. Individually, the rays do no harm, but when they converge on their target the concentration of radiation can destroy lesions, tumors and blood vessel malformations. Based at the Temple Medical Center, the $2.9 million instrument is the first of its kind in Connecticut and one of only 35 in the whole country.

Treatment with the gamma knife requires placing the patient in a fixed frame that keeps the head absolutely steady during the procedure. Once ready, the patient lies inside the gamma knife for between 15 minutes and two hours. The radiation treatment is accurate to within .3 millimeters. After the treatment the radiation can take days or weeks to achieve the desired effect.

Because it is more accurate and easier to use, the gamma knife has largely replaced its precursor, the linear accelerator which beams X-rays into the brain. The linear accelerator was accurate to within plus or minus 1 millimeter and could take hours to do what the gamma knife does in minutes.

"With the gamma knife," said Alain deLotbinière, M.D., associate clinical professor of neurosurgery and director of radiosurgery at Yale-New Haven Hospital and of the Gamma Knife Surgery Center, "we can destroy abnormal tissue very precisely without damaging adjacent normal brain tissue and without subjecting patients to the trauma of surgery. The gamma knife enables us to destroy tumors in areas of the brain that are inaccessible to the surgeon's scalpel or so close to vital structures, such as the optic nerve, that surgery could irreparably harm normal brain tissue."

abstain from one without renouncing both. Researchers have begun new studies to determine the best combination of antabuse and counseling to reduce cocaine use and craving.

A new strategy for stroke and Alzheimer's?

Researchers at the School of Medicine have found that blocking an enzyme known to be involved in cell death could help treat Alzheimer's disease, Parkinson's disease, strokes and other age-related neurological diseases.

The findings, published in the Aug. 7 issue of *Cell*, were the result of observations of mice bred with defective copies of the Caspase-9 gene. The Caspase family of genes plays a role in programmed cell death, called apoptosis, a necessary element of normal biological processes. "The balance between cell production and cell death is important for normal brain development," said Pasko Rakic, M.D., SC.D., the Dorys McConnell Duberg Professor of Neurobiology. "Too much or too little cell death can cause severe malformations leading to disorders such as mental retardation and childhood epilepsy. This study shows that Caspase-9 is essential for cell death and therefore gives new insight into how the brain develops in normal and pathological conditions."

In experiments with mice lacking Caspase-9, the investigators found that the absence of the gene blocked neuronal apoptosis. Abnormal activation of cell death is implicated in many human diseases and specific caspases have been linked to a handful of diseases. The research suggests that a therapy could be designed to stop Caspase-9 from triggering apoptosis, thereby blocking cell death linked to

Dissecting the body with the click of a mouse

Exploring the depths of the human body is one of the hallmarks of the first year of medical school. Through new computer software that offers three-dimensional views of human anatomy, Yale students can now dissect the body with the click of a mouse.

The new computer teaching tool provides a complement to standard anatomy training in the cadaver lab. Based on data from the National Library of Medicine's Visible Human Project, the software called the Divisible Human allows students to view three different images of the same body part simultaneously on a computer monitor. "This is the first time that the Visible Human data has been available in a form where students can actually manipulate and learn something from it," said William B. Stewart, Ph.D., associate professor of surgery and section chief for anatomy and experimental surgery. "What one can do is pick a plane and dissect into it. From the anatomist's point of view one of the most critical skills you can teach students is how to reason and problem solve in three dimensions."

"The difference in technology between moving from plane to plane and true animation is extraordinary,"

JOHN CURTIS

Anatomy professor William Stewart instructs students Ron Samet and Fred Cobey in the use of Divisible Human software.

said John A. Paton, Ph.D., director of academic computing at the school, describing the software developed by Shane Dunne, Ph.D., a computer scientist from Kingston, Ontario. "It means people can explore much more effectively than they could before." Adds Dr. Stewart "This is the way that in the future they will be viewing radiology." Dr. Stewart is the first anatomy instructor in the country to use the software and also has developed laboratory exercises to use with it.

The new software allows access to cross-sectional slice images of the anatomy, at any orientation and in any combination. Although each slice image is two-dimensional, the program presents multiple slices in a three-dimensional format which clearly illustrates relative position and orientation. Other commercial and academic software using the visible human allow access only in two dimensions, in standard orientations and much more slowly. And while most programs tend to be difficult to learn, Dr. Dunne says his software is "as quick and easy to use as a video game."

Personal warmth, hostile slogans for medical delegation to Iran

The delegation toured the ancient city of Persepolis near the desert city of Shiraz.

On their arrival at a hotel in the Iranian desert city of Shiraz, members of a medical delegation from the West, including three Yale physicians, were greeted by a banner declaring, in English, "Down with USA." Inside the hotel, however, a friendlier reception awaited. "You're from the United States?" the clerk asked the physicians. "It's nice to have you here."

The physicians were members of a delegation sent by the International Society of Nephrology in March. It was the first exchange involving nephrologists since the society sponsored an exploratory trip three years ago. Other scientific exchanges are planned over the next two years.

"There had been a lot of concern in Iran about scientific isolation," said Asghar Rastegar, M.D., associate chair for academic affairs in the department of medicine, who three years ago made the exploratory trip on behalf of the society. "The society then decided to support scientific exchanges with Iran." The March trip was at the invitation of the Iranian Society of Nephrology and was timed to coincide with their annual scientific conference in Tehran.

The delegation included Dr. Rastegar, Fredric O. Finkelstein, M.D., clinical professor of medicine; Michael Kashgarian, M.D., '58, professor of pathology and biology; Saeed Fatenejad, M.D., assistant professor of medicine; Bernd Sterzel, M.D., chair of nephrology at the University of Erlangen in Germany. Also on the trip were Dr. Finkelstein's wife, Susan H. Finkelstein, M.S.W., an assistant clinical professor of social work and psychiatry, and Dr. Sterzel's daughter, Hannah. During their two weeks in Iran, the physicians traveled about the country, met with fellow nephrologists and gave lectures at nephrology and pathology conferences in Tehran and Shiraz.

Members of the delegation in the lobby of their hotel in Shiraz, where an unfriendly banner belied the warmth of the staff.

Although a U.S.-imposed economic embargo never barred scientific exchanges, American academics have been reluctant to travel to Iran over fears about conditions there and a perceived hostility towards Americans. The embargo has also denied the country the economic wherewithal to import modern medical equipment.

"Medicine in Iran has always been very sophisticated," said Dr. Finkelstein. "There is an artistic tradition and education is really revered in Iran. The problem is the rigidity of the Islamic government and the limits placed on Iranian access to knowledge from the outside world."

Dr. Finkelstein and Dr. Rastegar first met in Iran in 1978, when Dr. Finkelstein was visiting on a three-month exchange. Five years later, Dr. Rastegar left when religious fundamentalists dismissed him from a university post. Over the past nine years, however, he has made regular visits to Iran to maintain contact with Iranian physicians and to see his family.

"Iranian scientists look to the United States and many of them have trained here," he said.

Dr. Kashgarian offered a mixed assessment of Iranian medicine. "The quality of care is probably equivalent to care anywhere in the West," he said. "Some of the facilities are not quite up to date. Their access to the latest drugs is more restricted."

The physicians said the Islamic regime's dictates have changed the teaching of medicine. The student body is of mixed caliber, Dr. Kashgarian said, because it is divided into students who compete for admission and those who are admitted, under lower standards, because of links to religious or revolutionary organizations. Also, because the Islamic government rapidly expanded the number of medical schools from seven to 34 and the number of graduates from 800 to 5,000 each year, the quality of education has fallen, Dr. Rastegar said.

The role of women in medicine has

also changed because of religious dictates. Only women should examine women, according to religious leaders. As a result, more than half the medical students are female. They are expected to enter certain specialties such as obstetrics and gynecology, but Dr. Rastegar noted that women also study neurosurgery. "It has opened certain doors and closed certain doors," he said.

Medicine is not the only area where women's status has changed. Ms. Finkelstein contrasted the oppression she felt as a woman with the vibrant, intelligent Iranian women she met there. On the plane to Iran, she said, women wore fashionable Western clothing—until they entered Iranian air space. "Out came the scarves and the coats," she said, referring to the clothing women, including foreign visitors, must wear in Iran. Even in a Tehran hotel she was expected to cover all but her face every time she ventured outside her room. Some Iranian women, she said, turn their clothing into a political statement by including brighter colors than religious law permits or wearing scarves looser than allowed. "Things are loosening up a little bit," she said. "There really is a kind of cohesive society, wonderful family life, wonderful food, a rich culture that people really enjoy and appreciate. There is a lot there that is truly very positive."

According to Dr. Rastegar, to understand the attitudes of Iranians one must place the events of the past 20 years in the context of the revolutionary changes that have occurred. Although he is quick to acknowledge that Iran is not a democracy, he finds that debate about the nature of politics and society is more open than it was under the repressive regime of the Shah Mohamad Reza Pahlavi. Television images of mobs storming the U.S. Embassy, however, have created a "scar" that taints American perceptions of Iran and defines relations. "For the American people to deal with that scar they had to demonize the people behind it," says Dr. Rastegar. "This can only be broken if there is face to face contact between individuals. This trip was a step in that direction."

certain neurological diseases.

"When mitochondria, the energy factories of cells, are damaged, Caspase-9 is activated, leading to cell death," said Richard A. Flavell, M.D., professor of immunobiology and biology, and one of the researchers. "In cells lacking Caspase-9 this damage did not give rise to cell death."

Yale ethicist defends safeguards in human investigations

Is the pace of medical advances moving beyond existing safeguards regarding the use of human subjects in experimentation? A series of recent federal reports to the U.S. Congress asserted just that. Responding to the reports, Yale faculty member Robert J. Levine, M.D., told Congress in June that the present methods and guidelines employed by medical schools to assure the safe and ethical use of humans in investigations are "working very well."

According to four reports recently issued by the inspector general's office of the Department of Health and Human Services, the system designed to protect human subjects in clinical trials has failed to keep pace with advances in medicine such as gene therapy. "Our total effort reveals a brittle system and even a few cracks," George Grob, deputy inspector general for evaluations and inspections, testified in June on his office's yearlong inquiry before the House Government Reform and Oversight Subcommittee on Human Resources.

Not so, said Dr. Levine, a professor of medicine and lecturer in pharmacology, who testified in rebuttal on behalf of the Association of American Medical Colleges. Dr. Levine, who chairs the Human Investigation Committee at the School of Medicine, said, the reports "created the impression that the IRB [Institutional Review Board] system is a disaster just looking for a place to happen.

"It would be easy to infer there is a systemic threat to patients," Dr. Levine testified. "Yet, quite to the contrary, the report acknowledges the study yielded no evidence of harm or abuse to patients."

For the past two decades, medical schools have been required to follow federal regulations for in-house institutional review boards. Any federally funded research involving human subjects must pass through several layers of review by the school's board.

While Dr. Levine disagreed with many of the reports' findings, he did agree with some recommendations for improving the existing system. He concurred that IRBs, in which participation is voluntary, face tremendous workloads and would benefit from greater resources. Requiring IRB review after funding has been approved would reduce the workload, he said, and ensure that research involving humans has been reviewed. He also agreed that training for investigators and IRB members is essential.

Although he described IRBs as overworked and short of resources, he said, "By any standards of realistic performance the IRB system works very well."

Children thrive when fathers stay at home

Fathers can play the traditional child-rearing role of mothers with no detriment to the children, according to a 12-year Yale study. The study, led by Kyle D. Pruett, M.D., who presented his findings last December at the American Psychoanalytic Society's annual meeting in New York City, found that stay-at-home fathers raise "vital and vigorous" children while enhancing their own capacities for intimacy and self-regard. The study followed 18 Hispanic, white and African-American children from two-parent households of various income levels.

According to Dr. Pruett, clinical professor in the Child Study Center and psychiatry, the fathers initially feared they would become intellectually bored and overweight, lose physical prowess and become more isolated socially. They confronted problems such as a baby's persistent crying by

wondering what their wives would do. Then, according to the report, within 10 days to a few months later the fathers developed their own care-giving styles. The children thrived and, on average, exceeded norms on standard development tests, especially those measuring problem-solving skills. Researchers, who conducted biennial evaluations over 12 years, reported no signs of intellectual or emotional trouble among the children. "They felt a zest for life, were both assertive and comfortably dependent, showed a vigorous drive for mastery and expressed the usual childhood worries for boys and girls," the report said. The fathers' involvement stimulated the emotional attachment that is vital to development of personality in the early years, according to the report.

The findings have been published in a variety of journals and lay publications, including *The Psychoanalytic Study of the Child.*

HIV drug resistance an increasing threat

Despite the clinical gains a new generation of AIDS medications have yielded, drug-resistant strains of HIV and the frequency of their transmission increasingly threaten public health efforts to thwart the spread of AIDS, according to an analysis co-authored by the director of the Yale AIDS Program.

"Prevention of both development of HIV drug resistance as well as transmission of drug-resistant variants is a central issue of public health importance," wrote Gerald H. Friedland, M.D., professor of medicine and epidemiology and director of the Yale AIDS Program, and Mark A.Wainberg, Ph.D., of the McGill University AIDS Center in Montreal. In their report, published in the June 24 issue of *The Journal of the American Medical Association,* the two sounded a warning about antiretroviral therapy.

Researchers have identified viruses resistant to the antiviral agents longest in use, according to the report. Current methods for detecting HIV resistance may be inadequate and resistance may be more widespread than previously thought. They also found that failure to adhere to just one of three medications in a regimen can lead to a resistance to all three.

The authors call for increased emphasis on adherence to medications and population-based studies of the prevalence, mechanisms and transmission rates of drug-resistant strains of HIV. "In the meantime," they wrote, "prevention of both occurrence and transmission of drug-resistant HIV is important in the public health arena. These subjects must be addressed if antiviral therapy is to play its optimal role in blunting and altering the course of the HIV pandemic."

Seeing the whole person instead of the disease

Tracing the rise of medical technology from ancient examples of trepanation to the advent of the X-ray, John H. Lienhard, Ph.D., host of a popular National Public Radio science program, urged physicians to look at the whole human rather than individual ailments. The keynote speaker at the 50th annual meeting of Associates of the Cushing/Whitney Medical Library at Yale University on May 6, Dr. Lienhard spoke on the dangers of reducing the person to an illness during treatment. He is the M.D. Anderson Professor of Mechanical Engineering and History at the University of Houston.

"Medicine has to find its way back to the tough problem of curing the whole body instead of just pieces of it," Dr. Lienhard said during his talk, *The Lesion Within: What Happened to Medicine When 19th Century Ingenuity Seized Upon an 18th Century Perception?* His radio program, *Engines of Our Ingenuity,* describes the way art, technology and ideas have shaped mankind.

JOHN CURTIS

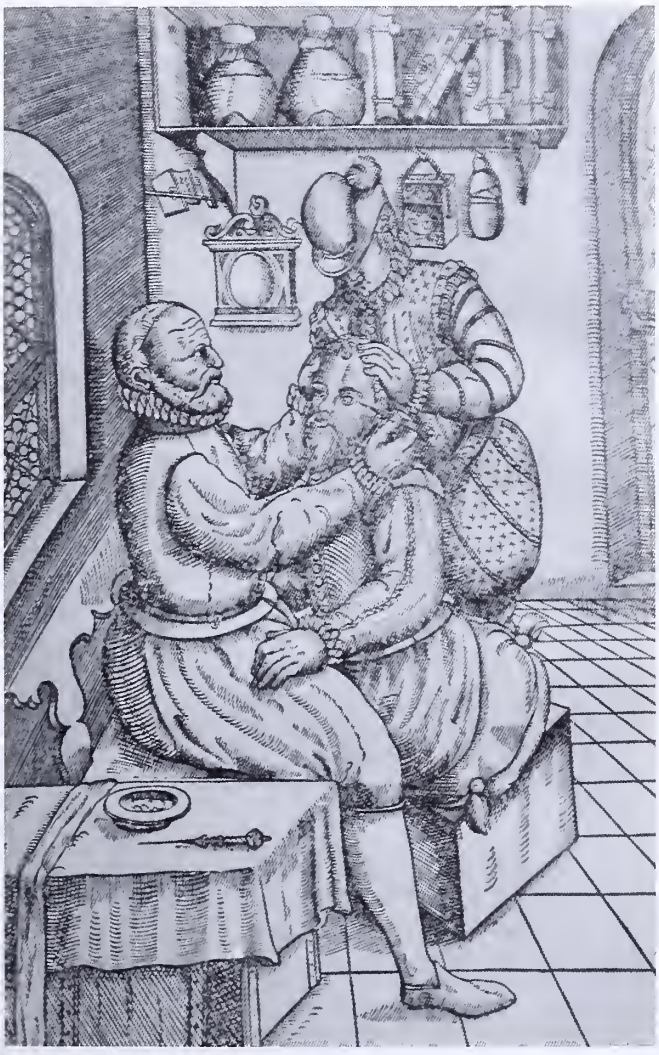
Before giving his talk in the Historical Library, John H. Lienhard, left, chats with former deputy dean Arthur Ebbert Jr., professor emeritus of medicine.

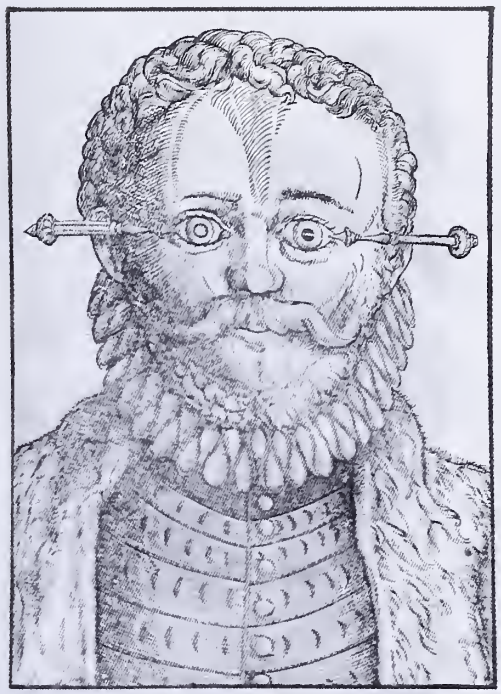
According to Dr. Lienhard, 18th century physicians discovered how "specific disorders caused suffering and death" and in the 19th century physicians invented stethoscopes and X-rays to peer inside the body without violating it. But, he argued, technology shifted emphasis from the patient to the disease. "Handling a bedpan is no less essential to the healing process than transplanting a human heart," he said.

The following morning Dr. Lienhard returned to the relationship between technology and medicine at Grand Rounds in the Fitkin Amphitheater. He praised computers and their use in medicine, but cautioned that they affect human thought by creating on a two-dimensional screen what "the mind's eye" once had to imagine. Medieval architects, he said, designed Gothic cathedrals, not with advanced mathematics or detailed drawings, but from a vision in their minds. "See to it that your children in public schools aren't allowed to avoid thought by pushing buttons," he said. "Believe me, the eye of the mind is under attack."

A medieval oculist

Bartisch's manual of eye surgery shows how far medicine has progressed.





Top right **The medieval volume *Augendienst* by royal oculist Georg Bartisch of Saxony described many ophthalmological procedures, including a method of removing a cataract. A needle should be drawn across the pupil and uvea, he wrote, and then the cataract pushed out of the way as shown on the right hand side of the drawing.**

Above **Bartisch went on to recommend that the patient be seated lower than the surgeon, braced by an assistant. Prior to the surgery, the patient should be purged and abstain from drink and "conjugal deeds."**

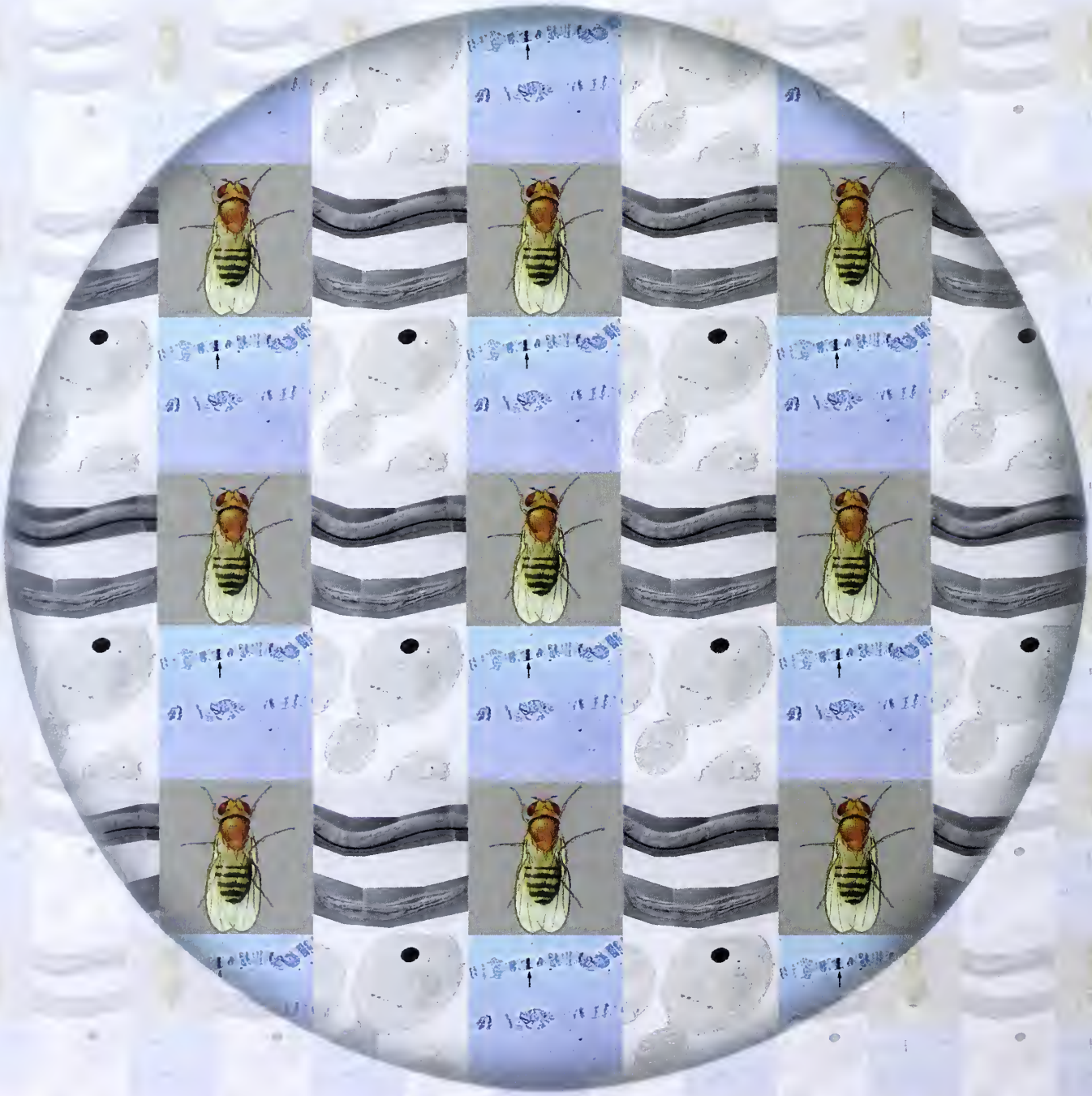
From glass spheres that magnify letters to laser-driven radial keratotomy that corrects myopia, physicians through the centuries have sought devices and procedures to protect, restore and improve sight. Not all their ideas worked—ophthalmologists enjoyed a dubious reputation as "eye-destroyers" during the Renaissance—but one of their number, Georg Bartisch, wrote and illustrated what would be hailed as the first modern work on eye surgery.

Published in 1583, *Augendienst* includes 91 woodcuts based on drawings by Bartisch that illustrate ailments and their treatments in often gruesome detail. The woodcuts show not only ophthalmological procedures prevalent in the Renaissance, but the latest fashions in waistcoats, caps, jewelry, coiffures and other finery. The author served as oculist, the medieval term for ophthalmologist, to the court of Lord Augustus I of Saxony and was the first eye surgeon to practice extirpation of the bulbus in cancer of the eye.

A copy of the book, from its original printing in 1583, is part of the legacy of neurosurgeon Harvey Cushing, M.D., who bequeathed it to the library with his collection of historical medical volumes. Also in the library's collection are assorted ophthalmological tools from the past, including wood and leather cases containing antique scalpels for removing cataracts and refraction lenses for measuring vision.

—John Curtis

Found in *trans*



JEANNE CRISCOLA

lation

Studying the genetics of fruit flies, nematodes and other model organisms may greatly speed the search for cures for human disease.

By Neeraja Sankaran

FRANK POOLE

The collaboration of Allen Bale, left, and Tian Xu has led to a new understanding of basal cell carcinoma, the most common form of skin cancer.

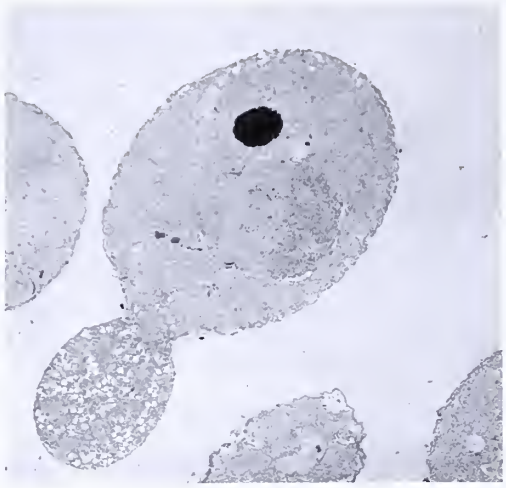
When cancer researcher Allen Bale, M.D., and his team discovered a gene associated with the development of basal cell carcinoma in 1996, he decided that if he really wanted this new knowledge to help his patients, the thing to do was learn more about fruit flies. So the associate professor of genetics and medicine and director of the DNA Diagnostics Laboratory went to work studying the genetics of *Drosophila melanogaster* in the laboratory of his genetics department colleague Tian Xu, Ph.D.

Until less than a decade ago, Dr. Bale's move from humans to *Drosophila* would have seemed startling. "Those connections just weren't made," he says. "People were working on fruit flies and people were working on humans, but they weren't working on both." Today, moving between species has emerged as an increasingly necessary part of scientific research and an ever more common path at Yale. The result in Dr. Bale's case was that he was able to open up entirely new ways of looking at the most common form of skin cancer in humans.

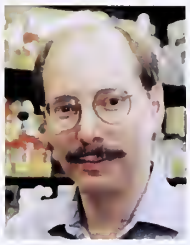
Although Dr. Bale's laboratory had found a link between the occurrence of basal cell carcinoma and the gene—which they named *NBCCS* (for nevoid basal cell carcinoma syndrome)—they had no idea how this association gave rise to the cancer. Moreover, its function in a normal human cell was a complete mystery. Without this information, it was virtually impossible to assess how the cancer might be triggered through the workings of *NBCCS*. Pinpointing the function of a single gene in humans would be a monumental and expensive task. So Dr. Bale turned to Dr. Xu and *Drosophila melanogaster*, the tiny fruit fly.

Neeraja Sankaran is a first-year graduate student in the History of Medicine program.

By comparing the genetic sequence of *NBCCS* against other previously identified genes of the fruit fly, Dr. Bale eventually was able to find that it was structurally similar to a gene called *Patched*. *Patched* was known to produce a protein that controls the development of distinct anterior and posterior segments of the fly. Using this information, Dr. Bale had the key he needed to direct his own investigations into the human version of the



PETER NOVICK



JOHN CURTIS

Cell biologist Peter Novick works in yeast, left, to draw lessons about human function. "The fundamental machinery that makes a cell a cell," he says, "is essentially the same in all living organisms."

Below **Michael Stern's discoveries in the species of worm known as *C. elegans* have had important implications for understanding how cancers grow. The top image shows a normal worm; the smaller one below has mutation in the gene that controls the migration of muscle cells.**

MICHAEL STERN

gene. "Once we could show the human gene was similar to *Patched*," he says, "we knew what other genes it would be likely to function with." The *NBCCS* gene is now widely recognized as the key gene that causes basal cell carcinoma. Moreover, researchers have found that mutations in these other genes are also responsible for other cancers. Dr. Bale's laboratory is now looking at the ways existing medicines for basal cell carcinoma affect the *Patched* gene in hopes of coming up with more effective treatments and, one day, a cure.

Dr. Bale's approach—to switch hunting grounds from the human genome to that of the fruit fly—is an example of an ever-increasing trend within the medical community to use simple model systems to learn about the function and behavior of our own genes. Translational research, as this growing body of work has come to be known, is based on the notion that the genetic similarities among species—from single-cell organisms to humans—are far greater than the differences. By understanding the genetics of the simpler organism, investigators believe they can identify and understand the functioning of the shared genes in humans. Translating the complex activities of human genes into the activities of similar genes in simpler species makes it far easier to interpret the biology of humans and especially human diseases.

"Simple cells have much to teach us," says Carolyn Slayman, Ph.D., a geneticist who is deputy dean for academic and scientific affairs at the medical school. "It is becoming increasingly clear that the basic pathways of cell growth and development arose very early in evolution and have remained virtually unchanged since." The increasing availability of genome sequence information coming in from all over the world has provided a

major impetus for the recent explosion in translational research. Scientists now believe that some 80 percent of all human genes appear to have a functional counterpart in the fruit fly. The nematode *Caenorhabditis elegans*, whose genome size is comparable to *Drosophila*, and even the single-cell yeast *Saccharomyces cerevisiae* are some other widely used model organisms for which most genes have human equivalents.

The resemblance goes beyond mere structural similarities of genes to entire networks and pathways inside the cells of different organisms. Like jigsaw puzzles that become more difficult and time-consuming as the number of pieces increases, complex organisms contain more genes than simpler organisms do. But the links between these pieces appear to be the same. So by learning how the pieces fit together in simpler puzzles, scientists are putting together a map to guide them through the labyrinth of human genetics as well. "The fundamental machinery that makes a cell a cell is essentially the same in all living organisms," says cell biologist Peter Novick, Ph.D. "If one can understand the basic working of a simpler system such as the yeast, then the rest is just a matter of specialization."

A SIMPLER APPROACH

The high degree of evolutionary conservation among all species allows scientists to substitute a gene in one organism with its counterpart from another. Moreover, experimentation on humans in most of these cases is simply not feasible, making animal models a necessary substitute. Using animal models can vastly speed up researchers' capacities to analyze new genes and mutations associated with a huge range of human diseases. The savings can be tremendous. Where the estimated time and cost for the completion of a genetic experiment on a mammalian system might typically run one year at a cost of $10,000 and take about five to 10 technicians, the same test on *C. elegans* or *Drosophila* systems can take a single person a matter of weeks to complete at a fraction of the cost.

"As recently as 10 years ago we only had indications that the mechanisms used by these different organisms were related, but this is now an established fact," says Michael Stern, Ph.D., associate professor of genetics in the Boyer Center for Molecular Medicine and a pioneer in demonstrating the importance of those relations. During his postdoctoral research at the Massachusetts Institute of Technology, he studied the migration of post-embryonic precursor muscle cells to their eventual locations in the adult nematode. After he arrived at Yale, he learned that SEM-5, a gene product of one of the crucial members of this pathway, looked much like a protein known to be important in human cell-to-cell communication. Probing into the sequence and struc-

From worms and yeast, clues about human disease

Model System	Gene	Human Homologue	Function	Potential disease target
Yeast *Saccharomyces cerevisiae*	*SEC 4*	*Rab*	Molecular switch to control membrane traffic	Blindness
	GDI	*GDI*	Localization cycle necessary for polarization	Mental retardation
Nematode *Caenorhabditis elegans*	*sem-5*	*GRB2*	Cell-to-cell communication	Cancer
Fruitfly *Drosophila melanogaster*	*Drk*	*GRB2*	Cell-to-cell communication	Cancer
	Hif-1	Human *Hif* analog	Activation of p53 oncogene	Hypoxia
	Lats	Human *Lats*	Tumor suppression	Cancer
	Myosin V	*Myosin V*	Cytoskeletal rearrangement	Gricelli's disease
	Patched	*NBCCS*	Distinguishes anterior and posterior segments in the developing fly	Basal cell carcinoma syndrome

ture of the gene, Dr. Stern found that the gene bore a remarkable resemblance to a human gene called *GRB2* (Growth factor Receptor Binding protein) and also to a fly gene named *Drk*.

The finding was useful in learning about the conservation of these pathways among different species, and it also had important implications for understanding how cancers grow. Further investigation showed that these genes helped activate the human *Ras* gene, which is found to be mutated in some 30 percent of human cancers. What was perhaps most surprising of all was that either the human gene or the fly gene could functionally replace the worm gene. "This underscored the remarkable conservation of entire pathways that are important for cellular communication," says Dr. Stern. "The knowledge that we gain about how these pathways work in both systems can now be used to derive a comprehensive understanding of the pathway in humans. This will help us put together the pieces of a jumbled genetic puzzle that we didn't know would fit together so elegantly."

By moving genes from one model organism to another as Dr. Stern is doing, investigators can get an ever more precise understanding of the fundamentals of cell life and, from there, cell dysfunction and human disease.

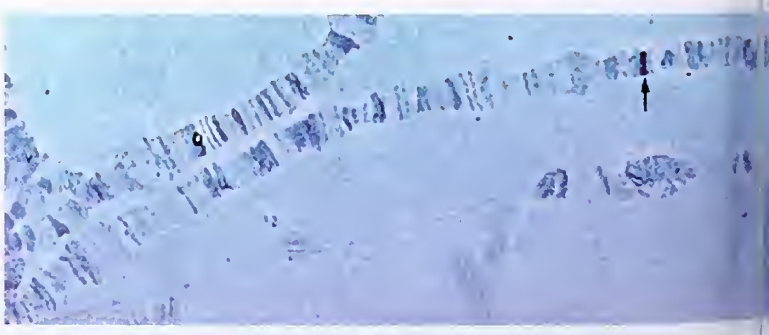
This multi-lane, two-way street between humans and simple models has become a familiar path for other researchers around Yale. Much of the credit goes to Dr. Xu, who is an associate professor of genetics in Yale's Boyer Center and an assistant investigator in the Howard Hughes Medical Institute. In his own work, he employs fruit flies and mice to understand the molecular mechanisms of human diseases. With a new genetic approach that he developed during his postdoctoral research at the University of California Berkeley, Dr. Xu developed fruit fly models that develop tumors and neurodegenerative disease. He then demonstrated that mice and humans also contain homologues of the fly genes that he identified, and that mice lacking these genes also develop these diseases. These models, Dr. Xu says, are useful not only to study the function of known proteins, but also to discover important regulators not yet revealed by other methods.

OXYGEN AND THE BRAIN

Cancer is not the only domain in which translational research holds promise. Gabriel Haddad, M.D., chief of respiratory medicine in the Department of Pediatrics, frequently sees children experiencing breathing difficulties and associated problems due to respiratory ailments. Also a professor of cellular and molecular physiology, he has long been exploring how and why the different types of cells in the body respond differently to a lack of oxygen. "Nerve cells in particular are sensitive to oxygen deprivation," he says. "The brain for example will suffer irreversible damage if the oxygen or blood supply is cut off for even five to 10 minutes. In contrast, the cells of a newly born animal and cancer cells show considerable tolerance to the lack of oxygen."

In the hope of developing ways to prevent or minimize the damage to brain cells under conditions of hypoxia (low oxygen), such as happens during a stroke, Dr. Haddad began to investigate the molecular pathways

ROBERT LISAK



Gabriel Haddad, left, turned to the Xu lab to learn about *Drosophila* genetics in an effort to better explain how nerve cells respond to oxygen deprivation. The research relates directly to stroke and respiratory disease. Above: ***Drosophila*** **chromosomes taken from the salivary glands.**

triggered by these conditions. "We were able to carry out some tests in tissue cultures but in order to understand the true progression of events we needed living systems," he recalls. He began his studies on a species of turtle able to withstand oxygen deprivation for several months. His aim was to understand how its cells could withstand such a long period without oxygen. While these animals were useful for figuring out some of the physiological aspects of tissue hypoxia, they were not easily amenable to advanced molecular approaches. Consequently, he considered alternative models. Six years ago, he began looking into the *Drosophila* system. "It not only had the advantage of being an ideal genetic system," he says, "but also was extremely tolerant to hypoxia—demonstrating the ability to recover even after hours of oxygen deprivation."

A clinician by training, Dr. Haddad needed to broaden his knowledge. Like Dr. Bale, he turned to Dr. Xu's lab to learn the practicalities of working with the fruit fly before launching a full scale investigation in his own laboratory. He is now investigating the hypoxia response on the fruit fly model via a number of approaches. He explains: "One of the methods is to try and identify genes that help the flies recover from oxygen depletion. To this end, we have selected for mutants that are highly sensitive to oxygen deprivation and we are zooming in at the moment on a few mutations that produce this effect." His laboratory is also trying to identify similar genes in the mammalian and human genome. "Given the fact that flies and mammals have very similar genes for so many different functions such as ion channels and embryonic development, it is quite likely that they will also share genes in pathways that are relevant to oxygen deprivation." Eventually, Dr. Haddad envisions the development of biochemical therapies for stroke and other conditions that could induce anoxia tolerance in human cells to minimize damage in sensitive areas of the body.

Basic researchers also find they can benefit from switching between model systems. Lynn Cooley, Ph.D., associate professor of genetics, studies the building of the cytoskeleton during development in fruit flies. Her findings may have fundamental implications in understanding the behavior of cancer cells in humans, because they undergo significant rearrangements in their structure during the growth and metastasis of a tumor. "To understand the underlying biology," she says, "one really has no choice but to turn to a model system."

Even the most basic, one-cell organism shares fundamental genetic properties with humans. The complete yeast genome sequence is now available. Furthermore most of the expressed genes of mammalian cells have been identified. "Once we are able to see what a gene does in the yeast," says cell biologist Dr. Novick, "we can apply principles of reverse genetics to look for the function of the homologues."

JOHN CURTIS

Lynn Cooley's study of the development of the fruit fly cytoskeleton has fundamental implications for cancer metastasis.

Dr. Novick's own research explores the mechanisms by which the yeast cell secretes different proteins from specific locations on the cell membrane. "This property of cellular polarization has very obvious relevance in cells like neurons and epithelial cells," he says. "For instance, if an epithelial cell in the lining of the digestive tract were to secrete the enzymes in the wrong direction, you would destroy your own tissues rather than digest the food."

To date, his investigations in yeast have turned up more than a dozen genes with human homologues for polarization alone. Six of these genes are produced as one big complex, which have been found to be involved in the polarization of cells in the lining of the kidney. Mutations in other proteins that interact with these gene products have been implicated in diseases such as retinal degeneration leading to blindness and one form of mental retardation.

What of the future? By all indications the different model systems continue to yield useful results with increasing relevance to many human diseases. Says Dr. Slayman: "These days a researcher who finds a new human gene will immediately look for homologues in fruit flies, yeasts or nematodes where functional experiments are much easier. Conversely, a scientist who finds a new yeast or nematode gene will rush to find a human homologue which may offer a clue to a known human disease." It's all there, it seems, if only the right translations can be found. YM

A vision for vision

With new emphasis on retinal disease, research and the community, Yale's ophthalmology department finds its focus.

IN NOVEMBER 1996, when Bruce Shields arrived as the new chair of the Department of Ophthalmology and Visual Science, he had his work cut out for him. While Yale remained a world leader in vision research and the treatment of glaucoma, the department had significant problems to solve. With the advent of managed health care, reimbursement rates for clinical services were dropping, with no end in sight. At the same time, insurers began moving to redirect all but the most complex eye-care cases back to primary care physicians. Faculty had to increase their patient load to compensate for the reimbursement deficit, and the more difficult caseload had begun to cut sharply into teaching time. "Ophthalmology," says Dr. Shields, "was hit as hard as any specialty."

Meanwhile, the future of funding for all biomedical research was under fierce debate in Washington. As academic medicine faced its most serious challenges in decades, the ophthalmology department was without permanent leadership. Two acting chairs forged ahead as Yale searched for a successor to glaucoma pioneer Marvin Sears, who had stepped down as chair in 1993.

Two years after Dr. Shields' arrival, the department still faces challenges but a plan is in place. Faculty have worked together to define a concise mission for the department, which has launched new programs and recruited promising young faculty to its ranks. One of Dr. Shields' first decisions was to strengthen Yale's expertise in retina care and research, with the goal of creating a world-class program as the department has done with glaucoma since the 1960s.

Other new programs are in the works. Cooperation among community ophthalmologists, Yale-New Haven Hospital and the School of Medicine led to the establishment this summer of the Yale-New Haven Eye Laser Center, which specializes in refractive surgery to correct nearsightedness and astigmatism. The department has transformed its residents clinic—a concept that has become outmoded in modern academic medicine—into a comprehensive eye service that has solved part of the primary care-referral problem while eliminating a two-tiered system that had channeled indigent patients to the care of physicians-in-training. Another initiative has been the establishment of a low-vision center to offer practical help to patients whose poor vision cannot be improved. Meanwhile, Dr. Shields is cultivating alumni of the residency program to increase their involvement in departmental activities, enhancing continuing medical education, and devoting time to fund-raising.

An authority in glaucoma like his predecessor, Dr. Shields speaks enthusiastically about maintaining excellence in glaucoma research and specialized care. His own research has been devoted to the development of new laser treatments for advanced forms of the disease. Focusing on retina, too, makes sense not only financially, he says, but also in terms of public service. "When we talked with ophthalmologists in the community, one of their messages was that Yale should strive to offer services that aren't readily available elsewhere," he says. "Glaucoma and disorders of the retina are two major disciplines in ophthalmology that account for most of the blinding disorders in this country. They also represent areas of significant technological advances and the promise of better care."

▸ STORIES BEGIN ON PAGE 22

ROBERT LISAK

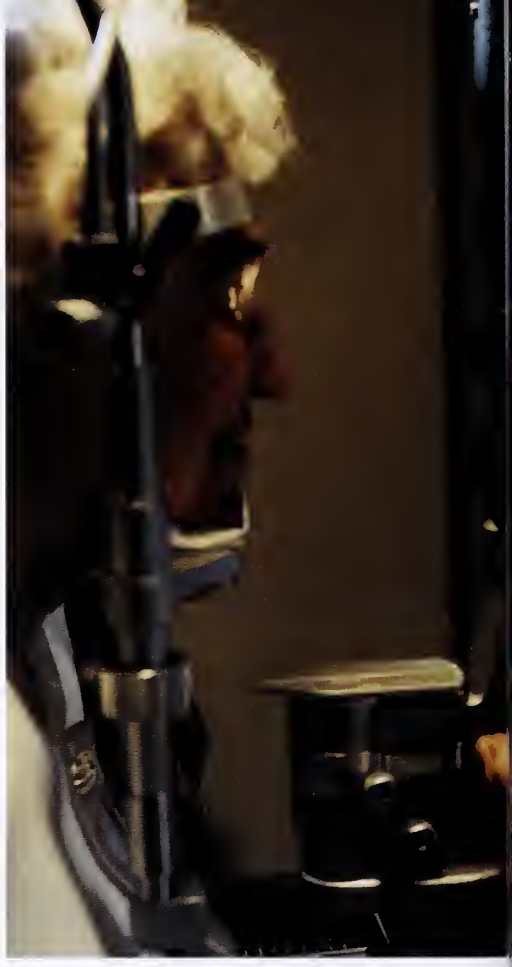
BACKGROUND: YALE OPHTHALMOLOGY

Ophthalmologist Ray Gariano uses a laser, above, to perform surgery for retinal disease in the operating room at Yale-New Haven Hospital. At right and in background, a healthy eye and its normally developed blood vessels. When vessels grow abnormally, the retina is damaged and sight can be lost.

The retina

From the smallest infants to the oldest patients, new approaches to retinal disease are repairing disorders of this delicate layer of sight-giving tissue.

By Julie Miller



Born more than three months prematurely in April 1997, twins Rosalie and Alexander Comfort weighed a pound and a half each, suffered from respiratory distress and faced the serious possibility of losing all or most of their sight. Along with their early delivery at only 24 weeks came exposure to a rare condition known as retinopathy of prematurity, in which normal formation of blood vessels in the retina is interrupted. "The worst case," says their father, Tim Comfort, a chief petty officer in the Navy, "was that they would be able to see only shapes. The best was that with surgery, they would have very good, useable vision."

Until recently, little could be done to prevent retinopathy of prematurity, or ROP. Although 80 percent of cases typically resolve themselves without intervention, more than 500 infants a year are blinded by this disorder, in which the retina can be torn from its base by the pressure of rampaging capillaries. But with better screening in place, physicians are able to identify most infants at risk for the syndrome and prepare for a critical 72-hour window in which preventive treatment can be given.

In the Comfort family's case, that moment came in late July 1997, when their ophthalmologist in New London saw the first signs of impending retinal detachment and referred them to Yale. Two days later, associate professor Kathleen Stoessel, M.D., performed a procedure called cryopexy on the tiny infants, then only eight weeks old and still a month shy of their due date. One of several tools in the ophthalmologist's arsenal, cryopexy freezes the rear portion of the retina, causing the threatening vessels to shrivel harmlessly away. The twins left Yale for Lawrence and Memorial Hospital in New London, and returned home to rural Uncasville, Conn., soon after with their sight intact.

The retina, a critical link in the complex chain that turns light into sight, is the thin layer of tissue that generates nerve impulses from the stimulus of light and dark. When all is in good working order, words on a page or the view from our window reach the brain with perfect clarity. When retinal problems arise, the cause most often is the abnormal growth of the minute blood vessels within the retina. While not all cases are reversible, many once-discouraging cases respond to advanced techniques being applied at Yale, including cryopexy and laser surgery. Moreover, new diagnostic tools such as digital angiography are enabling ophthalmologists to diagnose retinal disorders earlier and more precisely than ever before—and to intervene before sight is lost.

More than any other group of vision disorders, retinal disease affects patients along an extremely wide span of ages. Retinopathy of prematurity affects tens of thousands of infants born in the United States every year, although it spares most of them the loss of sight. Diabetic retinopathy, which is more widespread, is the leading cause of serious visual impairment among Americans between the ages of 20 and 64. And age-related macular degeneration is the chief cause of moderate to profound visual loss among adults over age 60 in the United States.

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Julie Miller is a writer in North Stonington, Conn.

ROBERT LISAK (3)

Retinal disorders, which are among the leading causes of blindness in the United States, span the generations from infancy to the later years of life. Twins Rosalie and Alexander Comfort, top right, were born with retinopathy of prematurity while Theresa Kalman, above, developed the disease in midlife as a complication of diabetes. Eighty-six-year-old Hazel Swift, top left, was treated by Kathleen Stoessel for macular degeneration.

Right **The retina lines the inside of the eyeball with photoreceptive cells, known as rods and cones, that convert light into nerve impulses. The macula distinguishes fine detail at the center of the field of vision.**

Facts about vision loss

- Almost all blindness in the United States is the result of common eye diseases. Less than 3 percent is the result of injuries.
- 100 million Americans are visually disabled without corrective lenses (70 million are myopic). 14 million have severe visual conditions not correctable by glasses.
- 80 million people in the United States alone are afflicted with potentially blinding eye disorders and the majority are visually disabled without glasses.
- 12 million are handicapped by motor sensory diseases such as amblyopia and strabismus.
- 11 million experience corneal disorders including herpes and dry eye.
- 5.5 million have cataracts that obstruct vision.
- 2.8 million are colorblind.
- 2.3 million endure visual loss from inflammatory diseases such as uveitis.
- 1.1 million are legally blind.

SUZAN SHUTAN

All statistics refer to United States

Source: Research to Prevent Blindness

IN MIDLIFE, AN ASSAULT FROM DIABETES

The Comfort children's bout with retinopathy demonstrates the fragility of the retina early in life, when immature vessels are most at risk for disturbance. In midlife, retinal disease occurs most often among people with diabetes. Excessively high blood-sugar levels can damage small blood vessels in the eye, particularly in the retina, says Dante Pieramici, M.D., assistant professor of ophthalmology. Some of the blood vessels close completely, while others leak fluid or blood into the retina. The retina becomes wet and swollen and fails to work properly. New vessels grow abnormally in the places where others have closed, causing further bleeding, scarring and retinal detachment that can result in blindness.

In some ways, this process is a mystery. "We don't know the actual connection between diabetes and disease of the small blood vessels. What we have learned is that keeping tight control over blood sugar levels significantly reduces the chances of diabetes complications in the eye, and if you have complications already, it reduces the chances of their becoming worse," Dr. Pieramici says.

Theresa Kalman was not prepared for the damage diabetes did to her eyesight. The 53-year-old woman, who also has cardiovascular and kidney problems, awoke one morning unable to see. Her only warning had come the day before, when vision in one eye was cloudy. For the next several months, family members helped her negotiate a suddenly unfamiliar house and tend to the daily necessities of living. A series of visits to local doctors produced no clear explanation for the sudden loss of sight.

Dr. Pieramici's diagnosis was severe diabetic retinopathy in both eyes. He surgically removed a portion of the vitreous gel, along with the abnormal blood vessels and scar tissue. Once cleared of debris, the retina could be reattached. The surgeon also removed a cataract and placed an artificial lens in one eye. While the chances for partial success were good, he says, "We weren't sure how much vision she would get back. We had to see how much damage there was to the retina."

Mrs. Kalman's recovery was the happy kind. Several days after surgery, she could see well enough to read, watch television and care for herself again. For the first time in five months she saw her 16-month-old grandson's face. "It was amazing," she says. "I cried."

Laser and surgical treatments have reduced the incidence of legal blindness in patients with severe diabetic retinopathy from 50 percent to less than 5 percent, Dr. Pieramici notes, adding that Yale helped develop many of the advanced laser techniques during the past 20 years as a center for clinical trials. In addition, trials are being designed for surgical techniques to treat patients with chronic swelling of the retina that fails to respond to laser treatment.

As remarkable as these interventions are compared to what was available to patients only a few years ago, the laser is still an invasive tool and can damage the retina. As molecular biology provides more tools for drug development, ophthalmologists are hopeful that new medications will provide less damaging ways of treating abnormal blood vessel growth.

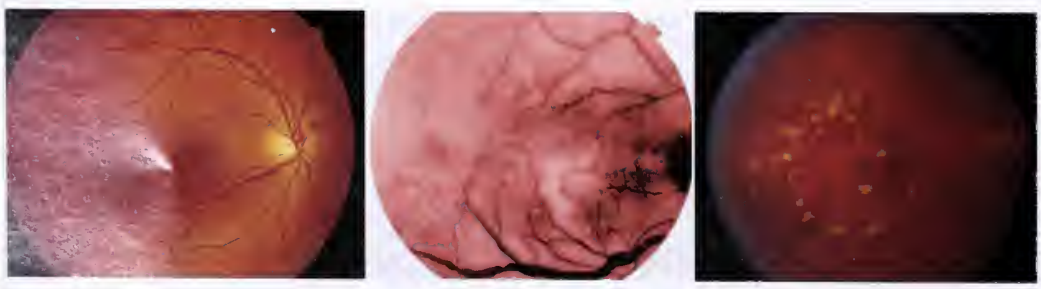
A PUZZLE OF THE AGING PROCESS

One day four years ago, Hazel Swift noticed a blurring of vision in her left eye. When an exam revealed swelling in the macula near the center of the retina, Mrs. Swift, now 86, went to see Dr. Stoessel. An angiogram confirmed the presence of an abnormal blood vessel in the macula, the area responsible for central vision and the sharp, fine-detail sight that is crucial to reading and driving.

Age-related macular degeneration is the most common cause of vision loss among people over 65. In Mrs. Swift's case, the presence of the abnormal blood vessel indicated the more destructive "wet" form of the disease in her left eye. "Dry" macular degeneration was diagnosed in the right. In the wet form, errant vessels from the wall of the eye make their way through the pigment layer and can slip under the retina. The vessels leak fluid or blood around the macula and damage sight. The hallmark of the more common dry macular degeneration is the atrophy of pigment cells, which appears as yellow spots in the retina.

During the delicate laser surgery that followed, Dr. Stoessel cauterized the abnormal vessel in Mrs. Swift's left eye in an attempt to prevent further damage. But over the past several years, additional laser treatments

▸ 27



Retinopathy and macular degeneration

A normal eye, far left, is compared to those damaged by diabetic retinopathy, middle, and macular degeneration, left. Errant blood vessels in the patient with diabetes leak fluid or blood into the retina, threatening sight. In macular degeneration, injury to the macula appears as a sea of small yellow spots.

Lessons from the lab

From the eyes of newts to the green glow of the jellyfish, clues to the mystery of sight.

Colin Barnstable, director of research at the Yale Eye Center, is applying molecular tools to a discovery made 50 years ago by Yale anatomist Leon Stone, left. Stone's research in newts suggested a means of restoring retinal cells.

Fifty years ago, a Yale scientist named Leon Stone made a remarkable discovery about the vision of newts. If the eye is dislodged and then reattached, the retina not surprisingly is destroyed. But in the newt, unlike humans, the cells of the retina grow back and sensitivity to light returns. Dr. Stone's newts could regenerate retinal cells even when the eyes were completely removed and then put back.

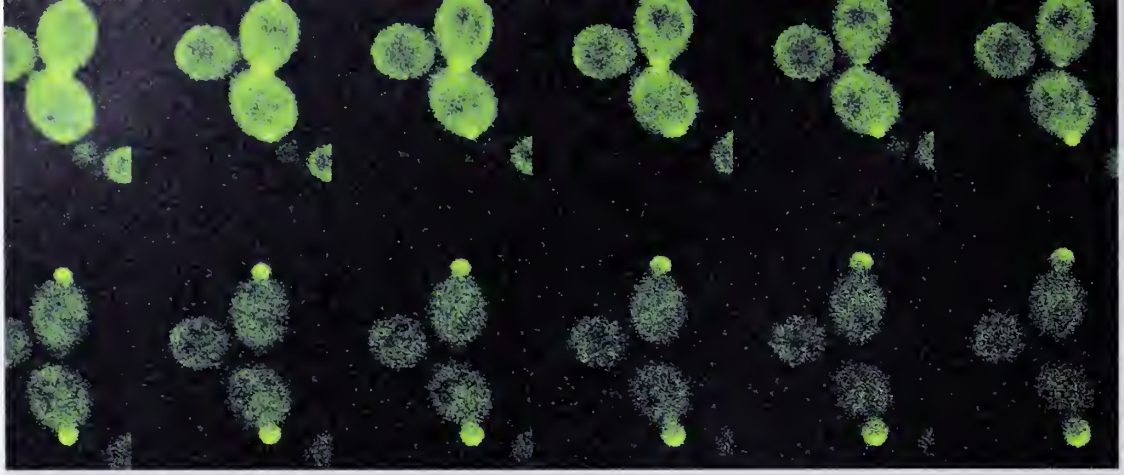
Why should newts regain their sight while humans and other mammals lose it forever to injury or disease? What other clues from simpler organisms might there be to lead us to new treatments for vision loss? And on a much more basic level, how is it that we are able to convert the patterns of a million photons into images in our mind's eye?

These questions drive the work of the Visual Neuroscience Program at Yale, where basic scientists pursue knowledge that may some day provide new and better treatments for retinal disorders. In addition to the explosion in molecular biology and genetics that promises to shed light on all human disease, basic research in ophthalmology benefits from an extremely rich base of knowledge generated over the past 150 years.

"More is known about the vision pathway than any other part of the nervous system," says Colin Barnstable, D.Phil., professor of neuroscience and director of research at the Yale Eye Center. "Because vision is so important to us as humans, it has led to a fascination of how sight works. Scientists have been at it for centuries."

Basic research at Yale is relevant to many of the degenerative diseases that rob sight. In their efforts to learn more about retinal disorders, researchers at Yale are focusing much of their attention on the photoreceptor cells, known as rods and cones, that process light energy. Macular degeneration involves the loss of cone photoreceptors in the central part of the visual field, and retinitis pigmentosa is caused by loss of rod photoreceptors that are used for night vision. Many forms of retinitis pigmentosa are caused by mutations in rod photoreceptor genes associated with the conversion of light energy into electrical nerve signals.

"We're asking how a change in the protein leads to the death of the cell. Once we understand the sequence of events, we can design therapies to stop the death of the photoreceptor," says Dr. Barnstable. Much of his research centers on transcription factors, proteins that regulate the expression of other genes in photoreceptors. Scientists around the world have isolated transcription factors in which mutations may be causing photoreceptors to degenerate. Dr. Barnstable and M.D./Ph.D. student Julian Martinez recently isolated a transcription factor named Erx that regulates the expression of rhodopsin, the light sensing molecule in rods. It is possible that mutations in Erx itself may cause some forms of retinitis pigmentosa. On a broader level understanding how genes like Erx work may lead to identification of new targets for drug or gene therapy.



THOMAS HUGHES

A time-lapse series of images, left, shows the movement of a protein known as Sec 3 during the life of a yeast. By tagging the proteins with a fluorescent reporter produced in jellyfish, Thomas Hughes, below, and colleagues are able to discern the function of certain genes relevant to vision more quickly than ever before.

A FLUORESCENT MARKER

Five years ago, scientists at Columbia University found they could use an unusual substance produced by jellyfish to follow the activities of gene products within cells. This green fluorescent protein, or GFP as it is known to researchers today, showed enormous potential as a reporter—a detectable molecule that allows scientists to take a snapshot of a cell and determine the movement and function of proteins within it.

What was new about GFP was that for the first time one could study function without killing the cell, as previous reporter techniques based on antibodies had required. Instead of a snapshot, scientists now had a movie to study for clues to the inner working of genes and the proteins they expressed.

Yale scientist Thomas Hughes, Ph.D., was among the first to recognize the potential of the GFP reporter and to develop techniques for its use, in particular for the study of mammalian genes. "The [NIH-sponsored] Human Genome Project promises to reveal the sequence of every human gene by the year 2005," says Dr. Hughes, associate professor of ophthalmology and visual science, and of neurobiology. "Having all the sequences is comparable to having all the books in a library. The problem is, we don't have a card catalog. We don't know what the genes do yet, just that they're there."

Thomas Hughes

ROBERT LISAK

Dr. Hughes and his team have tacked GFP onto the proteins expressed by genes in cells from organisms as varied as yeast and human and watched them light up as they travel to the nucleus, the cell surface, or the cytoskeleton, for example. "By fusing GFP to these proteins," he says, "we can learn where these genes are in the cell and how they are used—in a matter of two days instead of the months it used to take."

POTENTIAL FOR TRANSPLANTATION

While a better understanding of transcription factors and gene products may someday help prevent degenerative diseases that destroy sight, another strategy is needed to help the large group of patients who have already lost the photoreceptor cells that make vision possible. One avenue being explored is the transplantation of cells to rebuild the damaged retina. For this to work, a source of photoreceptors needs to be identified.

Dr. Barnstable had long known of the work of Leon Stone with newts and wondered how the retina could regenerate. What genes might humans hold in common? Would it be possible, he wondered, to transform the pigmented cells that lie behind the retina and turn them into functioning photoreceptors?

Working in mice, the early results of research in this area have been encouraging. "So far," Dr. Barnstable says, "we have been able to take these cells and turn them into retinal cells using a cocktail of growth factors. We also have a mouse strain in which a single mutation causes this to happen spontaneously."

Understanding how to control this process might allow some degree of vision restoration for patients who have lost their sight. And while transforming pigment cells into functioning photoreceptors that can detect light might sound fantastic, it's not that far-fetched. "The trillions of cells that make up the human body," says Dr. Barnstable, "were initially derived from a single cell."

have been required to treat abnormal vessels that developed from the underlying macular degeneration. Although her left-eye vision is blurred, management of her right eye has been more successful. Despite its progression from dry to wet form of the disease, the right eye has responded well to laser treatment. Two years ago, a buildup of blood and fluid in the macula of her right eye was treated promptly with laser, and her blurred vision has improved and been stable for more than a year.

Mrs. Swift, who lives alone, has a life filled with friends, church activities and three grandchildren. With the help of glasses, her eyes still work. She lives independently, drives a car, cooks, reads and enjoys watching birds at the feeder in her back yard. Her sight is generally good, she feels, despite the loss of central vision on the left side. "When I put my glasses on," she says, "I'm not really aware of it."

More than 90 percent of patients with macular degeneration have the dry form, for which there is no effective treatment, according to the National Eye Institute. Laser treatment, the only proven therapy for the wet form, is most effective if the condition is diagnosed early.

The incidence of macular degeneration increases dramatically with age. Whereas fewer than 10 percent of people have significant macular changes at age 65, nearly 50 percent have some degree of change at age 80, says clinical faculty member David Parke, M.D. "The importance of these figures takes on even greater meaning as we tend to live longer."

Many people in their 70s and 80s develop significant macular disease, while others show little evidence of it. "If we knew which variables were involved in preventing macular degeneration in some patients, there is the potential that they could be used as a treatment to prevent the growth of abnormal vessels," says Dr. Stoessel. "We have to examine the growth factors that allow blood vessels to develop normally and the factors that prevent too much blood vessel growth. We need to understand these better in order to learn what goes wrong when children are born prematurely with stunting of the retinal blood vessels. The growth factors in retinopathy of prematurity may turn out to be similar to the growth factors in macular degeneration."

LOOKING TO THE FUTURE

The chief of the department's retinal service is looking at precisely that question in the laboratory. Like his counterparts in other disciplines including cancer biology and cardiovascular research, Ray Gariano, M.D., Ph.D., is interested in the process of angiogenesis—the formation and differentiation of blood vessels—as a potential area for intervention. His approach as an ophthalmologist has been to study in utero the development of retinal blood vessels to learn what growth factors regulate normal blood vessel growth. "What's exciting," he says, "is that one molecule has been implicated in both normal angiogenesis and the abnormal blood-vessel growth that occurs in retinal disease. We're getting closer to a much better understanding of the process."

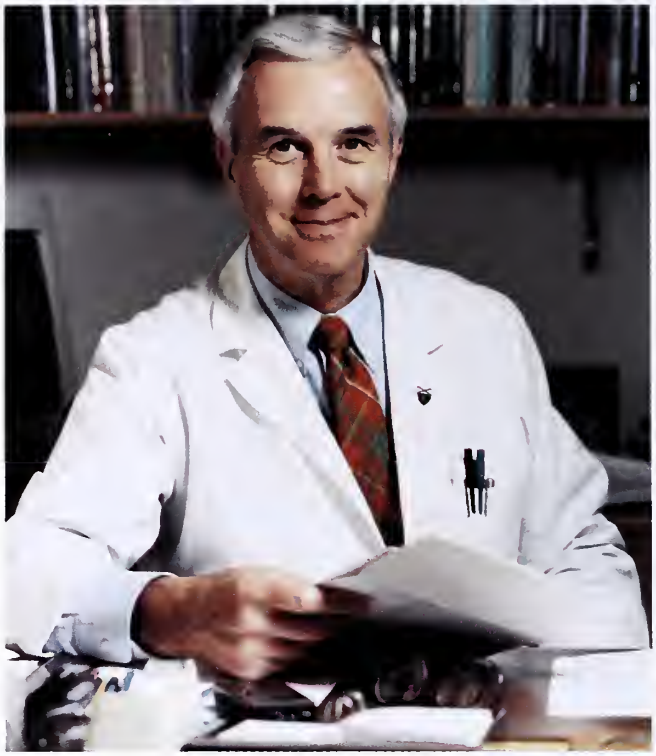
More than a year has passed since Rosalie and Alexander Comfort's eyes were treated with cryopexy. The retinal vessels have regressed, and the children, now 17 months old in late September, are doing well. Alex had surgery at the end of August on his eye muscles. He is doing well but is frustrated at having to wear eyeglasses for nearsightedness, which is common among children with retinopathy. "Now the biggest challenge is keeping his glasses on. He has the habit of flinging them off," says his mother, Diana Comfort. They keep two pairs around the house because they never know where his glasses will end up.

Rosalie doesn't wear glasses and didn't need the surgery. Like her brother, her development seems to have been delayed slightly by weaker eyesight, but both children seem to be catching up. The Comforts, who also have a 4-year-old daughter, are happy with the twins' progress. And while they had hoped Alex wouldn't need glasses, they feel good about his future. "He'll be able to see. Without some kind of vision, he would be very limited," says his father, who looks forward to introducing his son one day to the outdoor pursuits he enjoys. "I like to hunt and fish, and I want to take him along." YM

ROBERT LISAK

A year after his initial treatment for retinopathy, Alexander Comfort sees well with the aid of corrective lenses. "Now the biggest challenge is keeping his glasses on," his mother says fondly. "He has the habit of flinging them off."

Over a few short decades, dazzling advances in the study of vision



ROBERT LISAK

"The linkage of computers with lasers has been truly remarkable," says department chair Bruce Shields, "allowing us to perform diagnostic procedures that were impossible before."

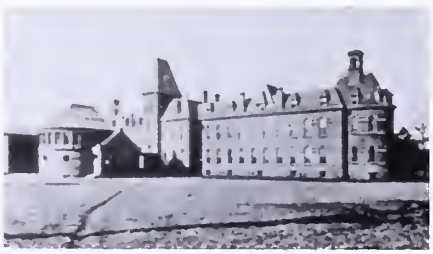
The advances in medical technology that have taken place over the past century would have dazzled the physician of the early 1900s, says M. Bruce Shields, M.D., chair of the Department of Ophthalmology and Visual Science. Comparing his early days as a physician with the era in which his grandfather, a physician in Oklahoma, began his practice, Dr. Shields says: "My grandfather made house calls on horseback. I began practicing medicine in the U.S. Navy on a nuclear submarine."

Dr. Shields, who is 57 and a trim 6 feet 2 inches tall, was born and raised in Oklahoma. He is one of five physicians in his family. In addition to his grandfather, his brother is a physician in rehabilitative medicine, and two uncles were ophthalmologists.

You came to Yale in November 1996. What has changed in the department since then? Because retinal diseases such as diabetic retinopathy and macular degeneration are among the leading causes of blindness in this country, our plan has been to broaden our emphasis significantly in this area of ophthalmology. We've added to our clinical faculty and strengthened the clinical service with support from our group of researchers. Retinal diseases and glaucoma encompass the majority of blinding disorders in this country. Over the past year, I surveyed ophthalmologists around the state to learn how we can provide better services in the community. A frequent response was that we need to provide clinical services that are not readily available in the community. That's one of the things we're trying to do.

What lies ahead? Well, first, to continue the aspects of the department that have been historically strong. Yale has been known for its excellence in research, so

A history of ophthalmology at Yale



1876
Yale School of Medicine introduces ophthalmology as a separate subject in the curriculum. Arthur Matthewson of Brooklyn lectures the medical students.

1884
The New Haven Dispensary organizes a separate eye clinic under William Carmalt, who also practices general surgery.

1895
Henry W. Ring becomes chief of the Section of Ophthalmology.

1914
Arthur Alling is made section chief.

1935
Eugene Blake assumes leadership of the section. Dr. Blake has a special interest in glaucoma and will organize major glaucoma screening programs in Connecticut.

1948
Yale anatomy professor Leon Stone publishes studies in newts demonstrating that retinal cells are capable of regenerating.

1951
Rocko Fasanella becomes chief of the ophthalmology section and establishes the first residency training program. Gregory Flynn is the first trainee.

1961
Marvin Sears joins as the first full-time chief of ophthalmology, still a section in the Department of Surgery.

one of our goals for the future is to expand that area. Secondly, I'm devoting a large amount of time to making our education programs for residents, fellows and medical students among the best in the country. We also plan to continue increasing our clinical services to the community. We're growing in stature as the tertiary center in Connecticut for eye problems, and we're trying to structure that in a way that will be financially sound for the institution.

What are some of the current trends in ophthalmology? What strikes me is the progress in technology, specifically laser technology. So much of the surgery we do today is with a laser beam rather than a scalpel. Eye surgeons were the first to apply this technology to medicine, first in the treatment of retinal disorders and then in the management of glaucoma. Later applications have included surgery of the eyelids and refractive surgery, in which we reshape the front of the eye to eliminate the need for glasses or contact lenses.

The application of computer technology represents another major advance for functions such as measuring a patient's field of vision. The linkage of lasers with computers has been truly remarkable, allowing us to perform diagnostic procedures that were impossible before. One example is image analysis of the optic nerve for diagnosing glaucoma, in which a laser beam scans the nerve tissue, while a computer analyzes the data and creates three-dimensional images of the tissue. Computers are also used to guide therapeutic laser beams for delicate reshaping of the cornea in refractive surgery.

The development of optical systems has allowed us to diagnose eye conditions more precisely than before and to perform delicate operations by providing information that cannot be obtained with the naked eye.

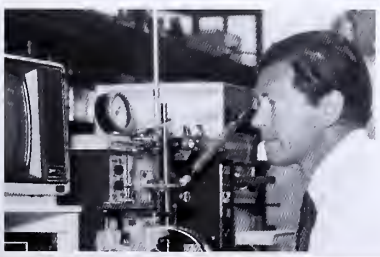
There also have been remarkable advances in pharmacology, especially in glaucoma treatment. There are now six categories of eye drops for treating glaucoma, most of which have been developed since the pioneering work with timolol in the 1970s in which Dr. Sears played a major role. Other advances in ocular pharmacology include new medications to treat infection and inflammatory disorders of the eye.

What interests you most about your work? My life's work has centered on my chosen subspecialty, glaucoma, which represents a large group of disorders. After my residency in ophthalmology at Duke, I completed a fellowship in glaucoma at Massachusetts Eye and Ear Infirmary in Boston. Then I returned to Duke, where I was a member of the faculty for 22 years and director of Duke's glaucoma service. In recent years, I have been developing laser treatments for the most advanced types of glaucoma. If there's one thing I've enjoyed most about my profession, it's teaching.

How did you come to be a physician? I was born in Okmulgee, a small town just outside Tulsa, Okla. My family moved to Enid when I was 4, and I grew up there. The wide, open spaces and wheat fields of Oklahoma were a good place for a boy to grow up.

I met my wife, Sharon, while I was attending Oklahoma University School of Medicine, and she was a student at the university's nursing school. We married after graduation in 1966 and have two children. Sarah, 25, is a student at Elon College in North Carolina, and John, 24, attends Tulane University in New Orleans. We live in Hamden.

As for entering medicine, I thought about many things, including law and business, but felt that being a physician was the most challenging thing I could do with my life.



1971
Dr. Sears creates the Department of Ophthalmology and Visual Sciences and serves as the first chair.

1978
Timolol, based on Dr. Sears' research, is approved by the FDA for glaucoma treatment.

1979
Establishment of the Connecticut Lions Glaucoma Research Center for advanced glaucoma research.

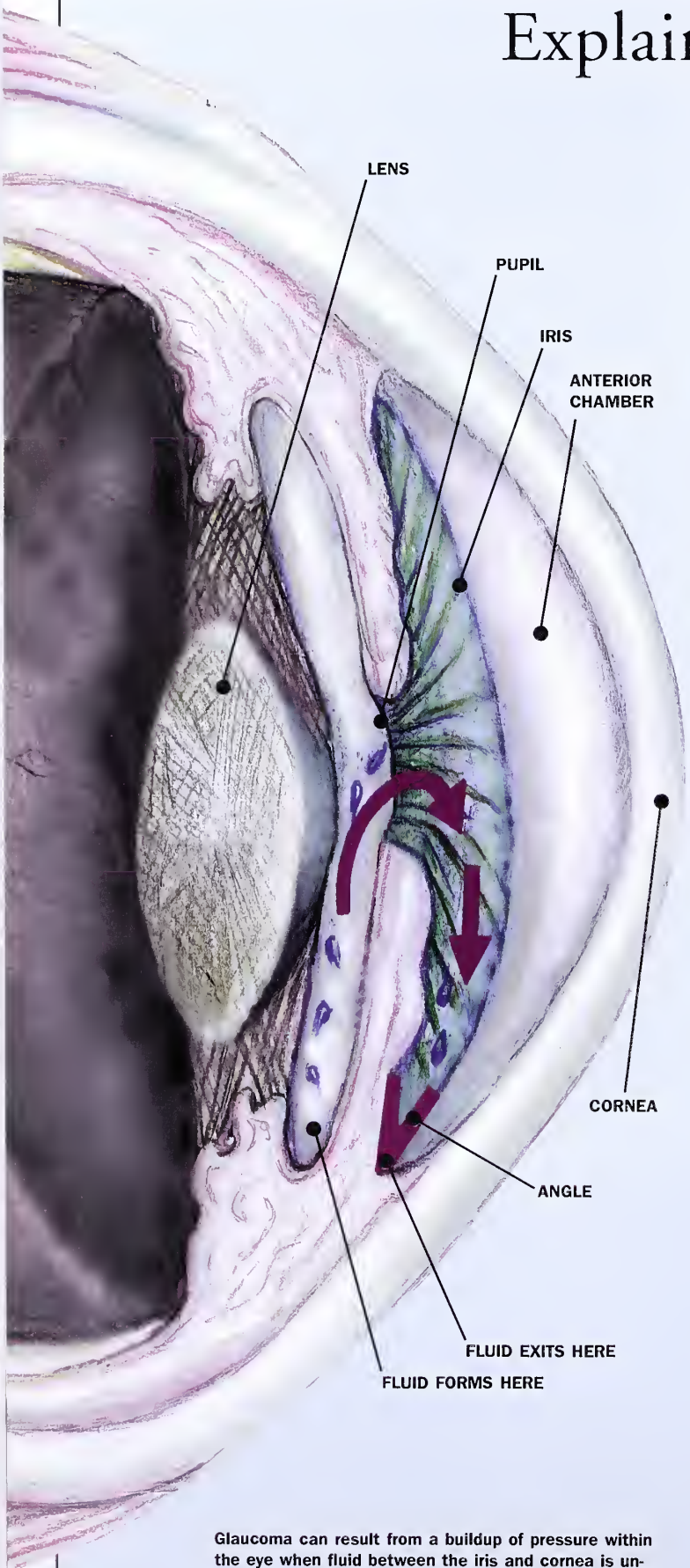
1986
Opening of the Yale Eye Center.

1993
Joseph Caprioli appointed acting chair.

1995
Caleb Gonzalez appointed acting chair.

1996
Bruce Shields joins as chair and the Marvin Sears Professor of Ophthalmology.

Explaining glaucoma



Glaucoma can result from a buildup of pressure within the eye when fluid between the iris and cornea is unable to drain freely, ultimately damaging the optic nerve.

SUZAN SHUTAN

New studies in gene expression, neural signaling add to a solid core of basic research.

When Marvin Sears, M.D., came to Yale in 1961 to head the eye service, ophthalmology occupied 130 square feet in the Department of Surgery and had one full-time faculty member: a young recruit from Hopkins named Marvin Sears.

Under his leadership during the next three decades, ophthalmology developed into a full-fledged department with top-flight research and clinical care, culminating in the opening of the Yale Eye Center in 1986. Under Dr. Sears, Yale turned out specialists in eye care and visual science who went on to lead their own departments around the United States, Europe and Japan.

Much of that excellence revolved around glaucoma, a disease that affects 3 million Americans and has blinded more than 120,000 people in the United States alone. Dr. Sears started the glaucoma service at Yale and has devoted his research to explaining how glaucoma increases pressure within the eye with such devastating results. His work in adrenergic pharmacology made Yale an international center for glaucoma treatment and led to the development, and FDA approval in 1978, of timolol, the first useful topical medication for glaucoma since 1908. He also developed two innovative surgical procedures for clot removal and tumor removal from the eye, used worldwide.

Although Yale is now branching out into other areas of ophthalmology—retinal treatment and research in particular—new department chair Bruce Shields is a dyed-in-the-wool glaucoma specialist, and pupil of Sears. "When I was studying to become an ophthalmologist, his writings and teachings were already part of the foundation of our understanding," says Dr. Shields, who headed the glaucoma service at Duke before coming to Yale in 1996. Dr. Shields was named the first Sears Professor of Ophthalmology and Visual Science in 1997.

Glaucoma damages vision in most cases by increasing pressure inside the eye through the buildup of fluid known as the aqueous humor. In the most common form, open-angle glaucoma, fluid between the iris and

cornea is unable to drain freely and ultimately exerts pressure on the optic nerve at the rear of the eye. If this pressure is not relieved over time, peripheral vision begins to fade and can progress to blindness.

Dr. Shields says that despite new areas of focus, "we are very committed to maintaining excellence in glaucoma and continuing to build there." Physicians and scientists in the department are exploring several promising lines of research. For example, Yale researchers have found that mutations in a gene called myocilin (also known as TIGR) affect the drainage of aqueous humor from the eye in many patients with glaucoma. Yale scientists also have found expression of the gene in the ciliary body, which produces the aqueous humor.

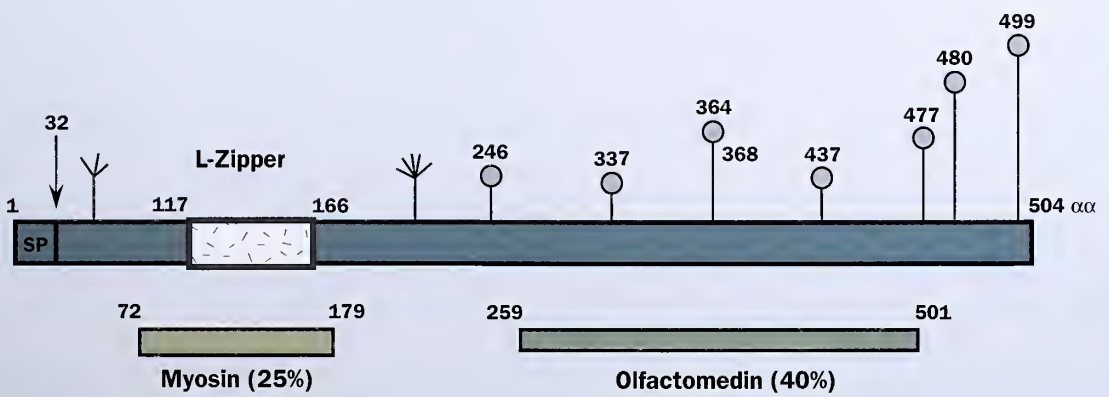
The myocilin gene encodes a protein critical to structures in the eye that regulate pressure. Its discovery may be useful in identifying people at risk for glaucoma before they begin to lose their sight. Because symptoms of glaucoma often do not appear until the disease has progressed, early diagnosis is important. "In the future there may be great value in detecting whether or not a person carries these gene mutations," says Miguel Coca-Prados, Ph.D., professor of ophthalmology and visual science, in whose laboratory the myocilin gene research is being conducted.

YALE OPHTHALMOLOGY

Glaucoma research pioneer Marvin Sears at the bench in the 1970s, when his work in pharmacology made possible the development of timolol.

Pressure within the eye follows a circadian rhythm, rising during the day and falling at night. Research scientist Douglas Gregory, Ph.D., and colleagues have found that catecholamines, substances that function as neurotransmitters, are important in controlling aqueous humor flow in both humans and rabbits. This information is being used to study the interaction between catecholamines and the cells that produce aqueous humor.

Glaucoma results specifically from the loss of nerve cells in the retina known as ganglion cells. And while glaucoma is most often characterized by increased pressure within the eye, a significant number of patients with this disease have normal intraocular pressure, says Colin Barnstable, D.Phil., professor of neuroscience and director of research in the department. If one could discover what causes these ganglion cells to die, he suggests,



MICHELLE TRIPP

ROBERT LISAK

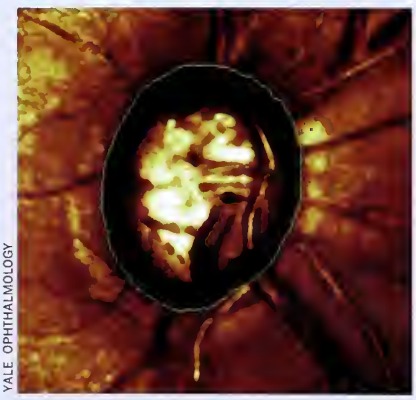
Miguel Coca-Prados has found that mutations in the myocilin gene affect the drainage of fluid in glaucoma.

it might be possible to help patients with normal pressure glaucoma.

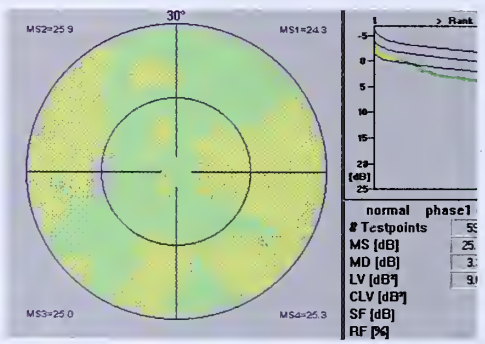
Dr. Barnstable, who has been studying the formation of retinal ganglion cells for many years, is testing the theory that a high concentration of the neurotransmitter glutamate may be the cause of ganglion cell death. Because glutamate in high concentrations is thought to be the cause of brain damage in strokes, cell death in glaucoma could be similar to other brain injuries and diseases.

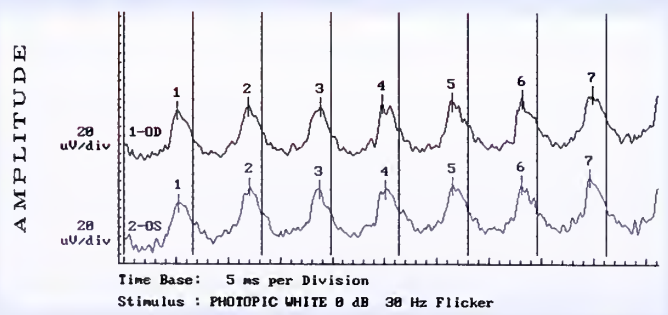
This hypothesis is being tested by isolating ganglion cells, growing them in culture and studying the effects of glutamate on the cells. A system has been designed to study the effects of drugs that may block the damage caused by glutamate. Dr. Barnstable is also examining whether increasing any of the factors important in the growth of retinal ganglion cells allows the cells to withstand high concentrations of glutamate. According to Dr. Barnstable, growth factors can be supplied that allow the cells to survive for extended periods in culture.

Yale is one of 11 centers participating in the Advanced Glaucoma Intervention Study, a clinical trial to determine the optimum surgical intervention when medical therapy is no longer adequate. Eydie Miller, M.D., associate professor of ophthalmology, is the principal investigator at the Yale site. Although argon laser surgery decreases resistance to aqueous outflow, the results last only about five years, and repeating the procedure is less effective, says Marc Weitzman, M.D., assistant professor of ophthalmology. "The AGIS study should give us answers to questions about when to use argon laser surgery in advanced glaucoma and what types of patients are the best candidates for it."



YALE OPHTHALMOLOGY





Clockwise from top left: **Linking lasers with computers has enabled much earlier diagnosis of glaucoma through analysis of the optic nerve head. Other technological advances allow ophthalmologists to measure a patient's field of vision and the response of the rod and cone cells to flickering light.**

Among the newest instruments in glaucoma treatment are the semiconductor diode lasers, which have recently been obtained at Yale and are being evaluated in the hope of finding better therapies to prevent blindness in patients with advanced forms of glaucoma. Over the past 10 years, Dr. Shields has studied the effectiveness of laser surgical techniques to reduce the pressure in eyes by destroying portions of the ciliary body. "This has been a major advance," says Dr. Weitzman, "because there is much less pain and inflammation, and there are fewer complications than with similar, earlier procedures."

For the myopic among us, a new center for laser surgery

Imagine a clear, gel-filled orb that captures light and projects it on a screen. Through it unfold a million small dramas as well as the important scenes that make up life.

That light-refracting structure is the eye, and, when it is misshapen, sight is distorted or impaired. For centuries, artificial lenses—in monocles, eyeglasses and other devices—have corrected poor vision. Now, thanks to the refinement of laser techniques during the past decade, people with nearsightedness and certain other disorders have another option.

ROBERT LISAK

Shachar Tauber prepares a patient for vision correcting surgery at the Yale-New Haven Eye Laser Center, which opened in July.

Laser vision correction permanently reshapes the front of the cornea, altering the focus of light on the retina. The procedure is used to correct myopia, or nearsightedness, and astigmatism. Myopia occurs when the cornea is either highly curved or the eyeball is abnormally long. People who are nearsighted see near objects clearly, but distant objects are blurry. In astigmatism, the cornea is curved more in one direction than another. Light rays that enter the eye are unequally bent, creating a distorted image.

The Yale-New Haven Eye Laser Center opened in July of this year at Temple Medical Center in downtown New Haven, as a cooperative effort of the School of Medicine and Yale-New Haven Hospital. David Silverstone, M.D., assistant chief of ophthalmology at YNHH, played a principal role in the concept and success of the project. The center offers two surgical procedures to reshape the cornea: PRK (photorefractive keratectomy) and LASIK (laser *in situ* keratomileusis). PRK helps patients with mild to moderate myopia as well as those with astigmatism. In this procedure, the excimer laser, which produces a beam of ultraviolet light in pulses that last a few billionths of a second, removes microscopic portions of corneal tissue to reshape the front corneal surface.

LASIK, a more advanced procedure for treating myopia and astigmatism, is particularly effective for patients with higher degrees of nearsightedness and has been shown in recent research to be effective treatment for all forms of refractive error, says Shachar Tauber, M.D., director of refractive surgery at the new laser center. In LASIK surgery, a flap is made in the cornea with an instrument called a keratome.

The laser beam is applied to the cornea under the flap, treating the corneal tissue as it does in PRK. The flap is then replaced in its natural position, where it protects the newly treated cornea. Both procedures are performed on an outpatient basis and take just minutes to complete, according to Dr. Tauber. Many patients recover their vision quickly and experience little postoperative discomfort from the procedures.

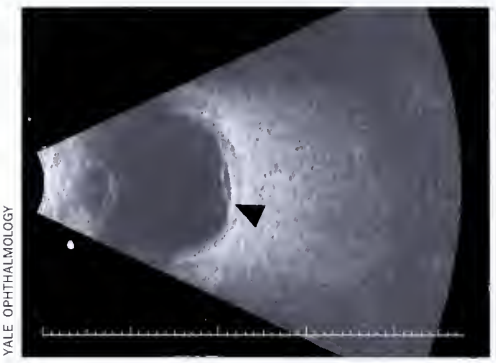
Laser vision correction can greatly improve the life of the firefighter who wears contact lenses and the police officer who worries he may lose his glasses in a scuffle and won't be able to protect his partner or himself. It also makes a great difference in the lives of people who are excluded from jobs in industries that do not hire employees who wear contact lenses or glasses. "That's where the laser has become a true workhorse," says Dr. Tauber. "It really has revolutionized the field of refractive surgery."

Improving the odds, and quality of life, for AIDS patients

In surveys, fear of vision loss has ranked consistently as the leading quality-of-life concern among people living with AIDS—and with good reason. Among the opportunistic infections that often accompany the disease is a blinding disorder known as cytomegalovirus retinitis. One in four patients with AIDS develops CMV retinitis, which attacks and destroys the retina and leads to irreversible loss of sight if left untreated.

A decade ago, the only treatment for this form of viral retinitis was daily intravenous therapy, an expensive and unpleasant ordeal that carried with it the serious side-effects of kidney toxicity and reduced immune function—less than ideal for patients with HIV.

That picture has brightened somewhat since the introduction of new medications and surgical interventions during the past several years. Yale is among a handful of centers evaluating a new delivery system for the antiviral agent ganciclovir, one of a half-dozen drugs now available to treat CMV retinitis. Concentrated into tiny pellets in slow-release form, ganciclovir is implanted into the vitreous cavity of the eye, where it bathes the retina for as long as eight months before the implant procedure must be repeated.



YALE OPHTHALMOLOGY

An ultrasound image shows detachment of the retina, arrow, a blinding condition that can result from CMV retinitis in patients with AIDS.

Although the implant is effective in the majority of patients, says Ray Gariano, M.D., Ph.D., chief of the retinal service at Yale, it can cause retinal detachment or bleeding in the eye. Some patients develop resistance to the drug while others, with no systemic agent working against CMV, are left vulnerable elsewhere in the body, especially in the colon and lungs.

Even without the implant, retinal detachment occurs frequently among patients with CMV. Ophthal-

'We teach patients to see all over again'

If you're curious what it's like to read a book one word at a time, pay a visit to the Lions Low Vision Center at Yale.

I was and I did. With one end of a high-powered magnifier pressed against my eye, I placed the other end against a copy of *A Tale of Two Cities* then slowly moved the page sideways.

It. Was. The. Best. Of. Times.

It. Was. The. Worst. Of. Times.

Finding my visual sphere reduced to a circle of glass, I became impatient and soon gave up. I wondered how long it would take to read several hundred pages by grasping a word, instead of a sentence, at a time.

Others, out of necessity, are more patient. In fact, with time and support most people with visual impairment can regain a high degree of function, says David Parke, M.D., associate clinical professor of ophthalmology and a consultant in the low-vision clinic. "Many people with near-blindness live alone and are independent. You'd be surprised at how innovative people can be when they're motivated."

The center's staff trains people with impaired vision to use their remaining visual abilities to the fullest with magnification, glare control, proper lighting and special reading techniques. Telescopic devices, fitted to a pair of glasses, expand the field of vision, enabling a person whose peripheral vision has been lost to walk through a doorway without hitting the doorjamb or to shop for groceries without jostling people in the aisles.

Monocular telescopes, small enough to carry in a pocket or purse, help people with limited vision to spot a bus, read the writing on signs in a supermarket or watch television. Low-power magnifying glasses, used by people with moderately low vision, encompass a column of newsprint. Closed-circuit television units magnify print, pictures and maps up to 60 times their original size and can be equipped with voice output. The Lions Clubs subsidize the cost ofvisual aids for people living on small incomes.

Time is needed for the brain to process the limited information it receives from impaired eyes. It perceives the world in an entirely new way. The compensatory skills the patient must acquire are improved only by diligent, systematic practice, ac-

mologists are now able to correct the condition by surgically removing a portion of the vitreous humor at the back of the eye and replacing it with clear, silicone oil. The oil pushes the retina back against the inside wall of the eye and holds it in place. In 80 percent of the surgeries, the retina remains in place, and the patient's vision is improved.

"Despite the fact that we have these options, none is perfect," Dr. Gariano says. "We're always looking for less toxic, more effective anti-CMV medications than have been studied in the past."

One encouraging note is that with the partial success of a new generation of AIDS medications, better immune function has begun to offset the incidence of viral retinitis. Nowhere is this more apparent than among the youngest AIDS patients. Of 70 children with congenital HIV followed at Yale during the past three years, none has shown signs of viral retinitis.

cording to Dr. Parke. "Learning to realign their eyes correctly to avoid blind spots and to use subtle visual clues represents a new talent. We teach patients to see all over again."

In addition to evaluation at the Yale center, occupational therapists visit patients' homes and suggest improvements, like better lighting, to meet their needs. Mobility experts teach patients to move about with limited vision, and social workers refer them to other supportive agencies.

"Patients need to know that there will not be a return to the quality of vision they once enjoyed," Dr. Parke says, "but they must be encouraged to believe that their visual performance can be measurably improved."

—Julie Miller

Three thieves of sight

Retinal disease, macular degeneration and glaucoma are among the leading causes of blindness in the United States. Some statistics:

RETINAL DISEASE

- 14 million diabetics are prime targets for blinding disorders.
- 1.8 million have severe visual impairment from retinal disease.
- 700,000 diabetics are presently at risk of blindness.
- 100,000 have retinitis pigmentosa, a family of progressive inherited diseases that cause deterioration of the retina and blindness.
- 65,000 diabetics each year develop proliferative retinopathy, the most sight-threatening stage.
- 30,000 working-age Americans with diabetic retinopathy could preserve their vision by having timely laser therapy.
- 25,000 cases of retinal detachment are treated each year (7,000 suffer irreparable damage)
- 8,000 new cases of blindness are caused annually by complications of diabetes.

NATIONAL EYE INSTITUTE

Compared to normal sight (1), **glaucoma** (2) **causes the loss of peripheral vision as shown in these simulations. Diabetic retinopathy** (3) **causes vision to blur, while macular degeneration** (4) **attacks the center of one's field of view.**

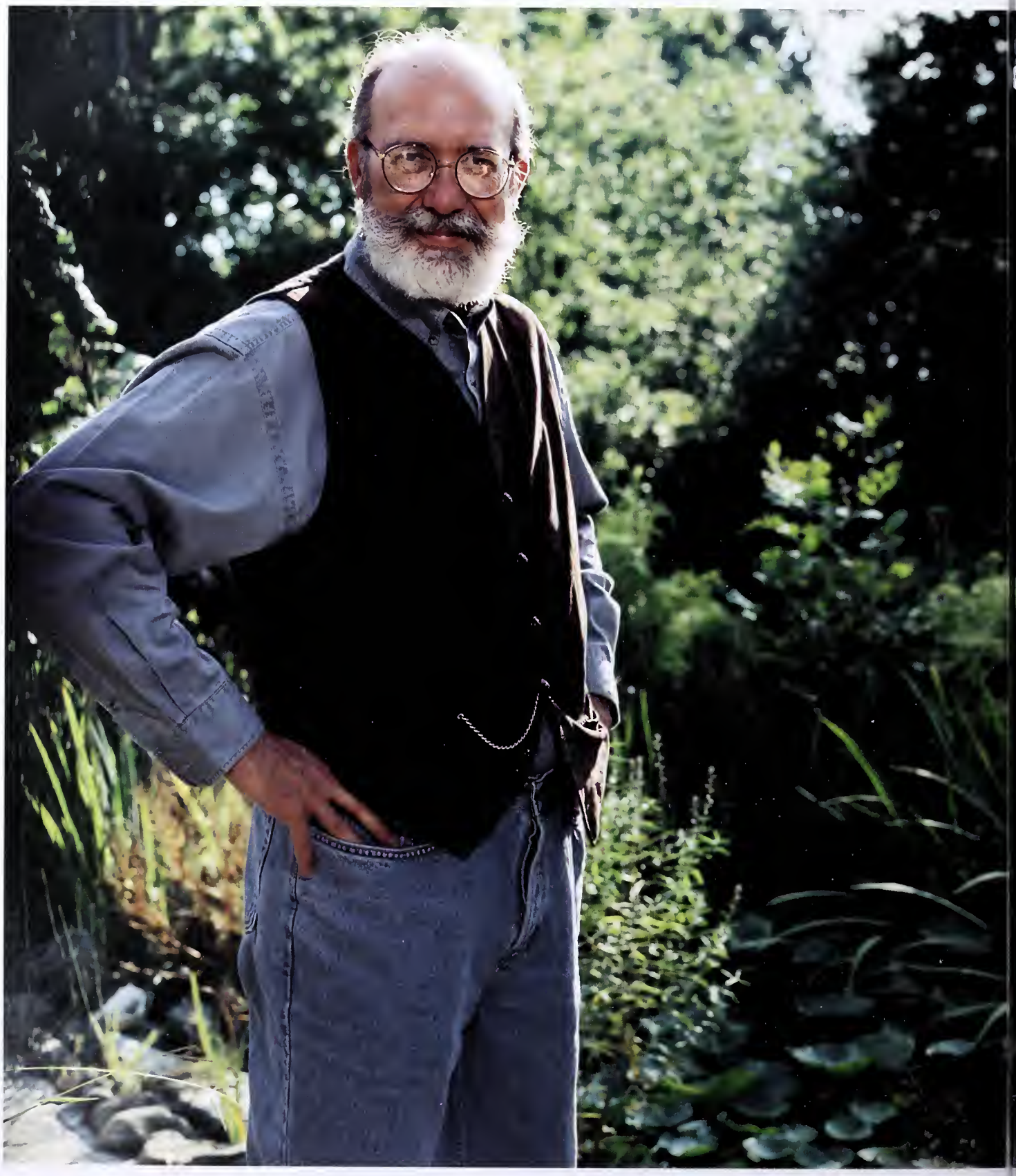
MACULAR DEGENERATION

- 21 million Americans (a third of those over age 50) are at risk of developing macular degeneration.
- 10 million suffer visual loss due to macular degeneration.
- 200,000 people develop neovascular macular degeneration each year.
- 104,000 are legally blind from the disease.

GLAUCOMA

- 10 million people have above-normal intraocular pressure that may lead to glaucoma.
- 2.6 million glaucoma-related office visits are made to doctors each year.
- 2 million are visually impaired by glaucoma; 1 million more have the disease but don't know it.
- 120,000 are presently blind from glaucoma.
- 5,500 become blind each year from the disease.

Source: Research to Prevent Blindness



Dennis Spencer

ROBERT LISAK

Since the first scalpel was applied to the brain in the late 19th century, neurosurgery has evolved in ways that are truly remarkable. The chair of Yale's newly established department talks about Harvey Cushing's legacy, the lessons of epilepsy and the view from a Harley.

Dennis Spencer, M.D., is a tall man with glasses and a thick beard. He laughs easily and looks comfortable in casual clothes, which often include a black leather vest and cowboy boots. The walls and shelves of his cramped office are lined with photographs and memorabilia reflecting his professional interest in the history of neurosurgery and a passion for Harley-Davidson motorcycles. His easy-going manner belies his prominence as one of the foremost neurosurgeons in the country and his position as the Harvey and Kate Cushing Professor and chair of the newly established Department of Neurosurgery. He has been at Yale since 1971, where he has pioneered surgical procedures that have now become standard in operations for treating severe epileptic and other seizure disorders. Shortly before the interview with Contributing Editor Marc Wortman began in the department's conference room, he had completed surgery on a 10-year-old boy with epilepsy and was awaiting the report from the recovery room.

Could you describe a bit of what you did in surgery today?
We operated on a young boy who has seizures that began in the areas of his brain controlling his left foot and leg and had then spread to the rest of his brain. Initially, we identified on an fMRI scan—functional magnetic resonance imaging—the relative positions of his motor and sensory cortex and then, using a grid of electrodes implanted beneath the skull, determined where the seizures were beginning. After we recorded a number of seizures in the epilepsy unit, we then stimulated between electrode contact points on the grid to more precisely localize movement and sensation—to determine precisely which square inch or so of brain tissue controls them. Then we mapped these regions relative to the area where

the seizures begin and where there are cortical developmental abnormalities. Those small sections of the cortex are what we removed during surgery today.

We performed an additional procedure called multiple subpial transection, in which we separate superficial layers of the brain, interrupting the connection so that the seizures can't spread. Seizures spread across the surface of the brain, or from cortical cell to cortical cell. By cutting these connections with a fine knife underneath the brain's surface, you interrupt the short connecting fibers and you destroy their ability to communicate. This interrupts the initial spread of the seizure.

In operating on the brain in this way, what sort of risks do you run of causing other problems? Regarding multiple subpial transections, the risks are primarily when operating in the language association cortex. Transections may cause some difficulties in naming things, but the extent of the loss varies from patient to patient. The younger patients are most likely to regain full function. For example, we have a few-month-old baby in our service right now who has a developmental abnormality of the entire brain. She has seizures that cause her to live in a dazed state. But they involve just one hemisphere, so we will actually remove the back half of the brain. If a baby has a stroke at birth or has developed a bad hemisphere before birth—or in fact any time up until the age of 1 year—all functions can transfer from one hemisphere to the other except for fine finger movement and toe movement. Up until the age of 1, you can transfer language, sensation and cognitive functions completely.

How did surgeons begin to think about cutting open the living brain to treat disorders? Much of what we understand about the human brain today has actually come from epilepsy surgery over the years. Other than now, I think the time to be alive in the history of medicine would have been the end of the 19th century. Until then, the brain was thought to be a rather homogeneous organ. How do you know how to parcel out a portion of the brain into a specific function or put those parcels together as more complicated functions? Nobody really did. They thought that the brain behaved in a holistic fashion because of animal experiments in which investigators would cut out pieces of the brain and the animal would still function fine. Then the development of electrical stimulation led scientists to stimulate the surface of an animal's brain. This caused movement on the opposite side of the body, and they found that there was an area of the brain that they could stimulate and elicit the same movement and reproduce the results. For the first time, they began to think about localization of function.

A famous English neurologist, Hughlings Jackson, thought that the effect of electrical stimulation was very much like focal seizures that he had seen in his patients. He thought that it probably represented the same kind of phenomenon that happened when somebody had a motor seizure of the hand, for instance. He speculated that the seizure probably represented a local area of the brain on the opposite side that was diseased and excitable. This is very logical today, but it was a revolutionary concept a hundred years ago. Sir Victor Horsley was the leading neurosurgeon in England at the time. Working with Jackson in the late 1880s, he operated on a patient who had a focal seizure. They had no way of knowing whether somebody had a specific disease of the nervous system and no way of knowing where that disease was located or how to get there. Horsley exposed the suspected motor area of the brain, found the tumor and removed it, and the patient's seizures went away. That was really the beginning, not only of thinking about surgery for epilepsy and a radical treatment for tumors, but it was also the beginning of learning about the brain and localization of function.

How did neurosurgery arrive at Yale? Not long after Horsley did his first operation, Harvey Cushing was an undergraduate at Yale. He became fascinated by brain physiology and, after graduation in 1891, went to Johns Hopkins to study medicine. Following up on Horsley's work, he began to explore neurosurgery in the United States. During his general surgery training at Hopkins, he started the first laboratory for the investigation of neuroscientific issues there. After he finished his training, he went to the Peter Bent Brigham Hospital in Boston, where he spent most of his active career. He removed many brain tumors during his career with a morbidity and mortality rate that rivals modern practice statistics. He's known in the United States as our father of modern neurosurgery.

Neurosurgery continued at Yale while Cushing was at Brigham. Sam Harvey was the first chairman of the Department of Surgery here in 1924. He had been trained by Cushing as a neurosurgeon, but like all of the early neurosurgeons, he was a general surgeon too. He was the first neurosurgeon to head a general surgery department, however, and so the first surgery department at Yale trained individuals in both disciplines. One of his first students, Bill German, also had spent a year training with Cushing in neurosurgery. Harvey appointed him the first chief of what would become the Section of Neurosurgery.

Didn't Cushing eventually come back to Yale? Yes, when he retired from the Brigham in 1934, he came to Yale

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as a professor of neurology and neurosurgery. He brought everything with him, all of his records and his collection of brains and tumors in bottles. Cushing photographed every patient whom he ever saw. There are 15,000 five-by-seven photographs stored here at Yale. They're really incredible pieces that document neurological disease and the early days of neurosurgery. Right now, we are procuring resources to again preserve all of the brains and to archive the photographs and to get them safely put away in a museum-like surrounding. The collection is housed in the John Fulton House, a mansion just outside New Haven that is provided by the Axion Foundation to the medical school library. Cushing was a bibliophile as well. He and Fulton, who was a famous physiologist at Yale at that time and a good friend of his, put their book collections together and began what is now the medical library's world-renowned historical library. They also started the first journal in the field here at Yale, *The Journal of Neurosurgery*, which is still our principal academic journal.

Bill Collins came to Yale in 1967 as the second chief of neurosurgery and put true academic credibility into the program. He began the process of subspecialization within neurosurgery, started a basic laboratory in the study of pain, and obtained the first spinal cord injury grant, which is still ongoing in the department. I came as a resident in 1971 and became a faculty member in 1977. Ten years later, I became chief of the section.

Dennis Spencer, center, in the operating room during epilepsy surgery. Advances in imaging, combined with increased knowledge of the brain, allow surgeons to operate on areas of the brain linked to specific anatomical and metabolic functions.

Researching the whole brain

The father of neurosurgery in America, Harvey Cushing, was a Yale undergraduate who returned to New Haven to join the medical school faculty late in his career. He brought with him a vast collection of papers, case records, photographs, medical illustrations—even tumor specimens and bottled brains accumulated during his years at the Peter Bent Brigham Hospital in Boston. Cushing brought not only a wealth of knowledge but also an appreciation for inquiry and research in neurosurgery. The recently established Department of Neurosurgery at Yale, which had been a section within the Department of Surgery, is regarded as one of the world's premier research centers.

Under the leadership of Charles Greer, Ph.D., vice chairman for research, the department's numerous research programs have followed a general principle of studying how the brain and spinal cord respond in both restorative and pathologic ways to trauma and disease. Dr. Greer himself is a leader in spinal cord research. Along with colleagues Anthony van den Pol, Ph.D., and Carole LaMotte, Ph.D., and others from around the medical school, he has been looking at pathways and projections of the central nervous system and how specific connections can be functionally altered. The work holds promise for developing new ways to help spinal cord injury patients regain function.

Beyond his regular administrative and teaching duties and surgical schedule, Dr. Spencer directs the department's epilepsy research program, working with investigators Anne Williamson, Ph.D., and Nihal de Lanerolle, Ph.D. The program is unique in the world for its studies of the human tissue surgically removed to treat epilepsy. Dr. Spencer says, "Anatomical and electrophysiological study of this tissue is beginning to unravel the mechanisms of how seizures are maintained in humans."

Many of the department's research areas have an emerging common theme in molecular genetics, including gene therapy. "This field," says Dr. Spencer, "will be of critical importance to the understanding of basic disease mechanisms, which must precede rational therapy." The department recently added a new faculty member, Murat Gunel, M.D., an alumnus of the department's residency program who is internationally recognized for his genetic analysis of cerebrovascular malformations.

One of the most technologically complex fields, neurosurgery is constantly dealing with and evaluating new equipment. Part of the department's research efforts include studying and applying new technology in the operating room. Clinical vice-chairman, Joseph Piepmeier, M.D., directs the state-of-the-art neuro-oncology program. Issam Awad, M.D., heads the neurovascular program, dedicated to the epidemiology of hemorrhagic stroke and basic research on angiogenesis.

Gene and cell replacement therapy is one of the most challenging fields in medicine. The department's cellular transplant program, supported by the basic research of D. Eugene Redmond Jr., Ph.D., who is also a professor of psychiatry, completed the first organized approach to cell transplants for Parkinson's disease. Recently, the department launched a clinical trial to replace the gene missing in the fatal childhood disease of Canavan, with Charles Duncan, M.D., chief of pediatric neurosurgery, providing neurosurgical support.

The section of neurosurgery separated completely from the Department of Surgery last year and became a free-standing department. Why did that happen? Departmental status has historically emerged from a specific discipline's academic maturity. The ways of treating and researching nervous system disease has wandered far from general surgery principles and stands more as an interdisciplinary field, sharing a knowledge base primarily with the basic neurosciences, neurology, psychology and psychiatry. Our section had received national and international recognition in clinical and basic neuroscience, NIH funding, for example, growing 10-fold over a 10-year period. Our vision, therefore, required more freedom to form the interdisciplinary programs essential to caring for patients with diseases of the nervous system. Thus, with solid support by the Department of Surgery and the academic and clinical deans, we became a department in January of 1997.

Subspecialization seems to be an even more important professional pathway in neurosurgery than other specialties. Why is that? It's clear that patients gain the most and do the best with individuals who do the same tech-

nologically difficult things every day. Subspecialization is a natural evolution in neurosurgery, which seems so subspecialized in itself, yet is enhanced when concentrating on subdivisions of the very complicated nervous system.

Your subspecialty is epilepsy. How has that developed as a field? The study and treatment of epilepsy have much of their origins here at Yale, in the late 1960s and 70s. One of the first epilepsy monitoring units in the world was established by Richard Mattson at the VA hospital in West Haven, where cameras were placed to study the behavior of patients, coupled with electrodes that had been locally constructed and then implanted in the brain. We could then watch a spontaneous seizure and correlate that with the electrical source. We began to identify that in certain of these patients we could find scars, tumors, vascular lesions and other abnormal areas that were sources of seizures.

Magnetic resonance imaging, or MRI, came along in the mid-1980s. Early on, we adapted the computer to our imaging systems. Two Yale undergraduate students worked with Greg McCarthy and me to design the first computerized imaging work station anywhere in neurosurgery. We wished to replace our old system, which was based on plain X-rays coupled with injecting air into the brain's fluid cavities and

Harvey Cushing photographed every patient who came to him, collecting a life's work of images that not only tell the story of modern neurosurgery but reveal Cushing's skill as a visual interpreter. His illustrations, left, sketched from surgery, were elegant as well as finely detailed.

THE COMPUTER MUSEUM

A neurosurgical operating room at Yale-New Haven Hospital is represented in this exhibit at The Computer Museum in Boston, recreating the occasion in 1972 when a DEC PDP-8 computer was used to guide a procedure. For the first time, a programmable lab computer was small enough to put on a cart and wheel into surgery.

dye localization of cerebral arteries. Combining stereotaxy with the MRI using the computer, we could then create a virtual image of where our electrodes were to go along specific trajectories within the brain. MRI also allowed such detailed anatomical views of the brain that more subtle brain developmental abnormalities could be viewed as easily as the more discrete lesions, such as tumors and vascular anomalies.

We've made enormous advances since then. Now, we can see epileptogenic developmental and atrophic areas of brain. Many patients no longer even have electrodes implanted at all. They can have an image correlated with scalp recordings and then go directly to surgery. It all goes back to what we talked about originally, localizing function of the brain. Now we have better localization techniques, but electrical stimulation has remained the best technique for identifying brain function. It's not very long ago, 1978, that we were injecting air into people's heads to identify structures and to help place homemade electrodes. Boston has a computer museum in which our original operating room from the 1970s has been set up to illustrate the first utilization of computers to localize function in brain surgery.

What attracted you to work on epilepsy? Epilepsy surgery is my passion. I spend all my clinical and research time with these patients. Epilepsy affects one percent of the population. It's a chronic problem, primarily in young people. It destroys their lives. They can't work, they can't drive. Often, it destroys their socialization, so they don't establish normal relationships and often don't get married, maintaining dependency on their families. It's estimated that there are 250,000 to 300,000 patients in the United States who could be helped with the surgical treatment of epilepsy. This is a group of patients in whom you can identify the source of the seizures and, by removing it, can cure their epilepsy. You may cure epilepsy overnight. It is the only chronic disease that can be cured in the operating room.

Imaging is an increasingly important part of neurosurgery. What are its advantages? Imaging is absolutely critical for growth in neurosurgery right now. We're still in an experimental stage. Jim Duncan, senior physicist in the Department of Diagnostic Radiology, and I have formed the Laboratory of Image-Guided Neurosurgery. It brings together the investigators from spectroscopy, functional MR, neuropsychology, linguistics and physicists to provide graphic analysis. Through interdisciplinary methods, we can enhance learning about brain functions and real-time imaging during brain surgery. We're still at the beginning of what we envision as a long-term collaboration. We are combining the MR image with measurements of the brain in the operating room so that we can more precisely predict dynamic changes during brain surgery. We can do a variety of anatomical, metabolic and functional localizations that were never possible before. We need to superimpose all of those images and data when we go to the operating room so that we know what to resect and how to operate without harming critical brain structures. The purpose is to make neurosurgery safer and less invasive. You can minimize cranial openings if you know your position precisely before you have to open the skull. That greatly decreases morbidity and costs.

What's on the horizon for neurosurgery? We think that regional brain perfusion of drugs or genes or stimulation is going to be the next step for delivering treatment to patients. One of the problems with drug treatments for nervous system diseases is that drugs are relatively non-specific in many instances. Drug treatment of a convulsive state slows the entire brain. Not only does it help suppress the seizure focus, it suppresses many normal activities. Now that we're able to localize diseases

within regions of the brain, our next step is to develop a probe system that will allow us to sense and measure biochemical changes, and then to provide focused, measured delivery of therapies. It may be delivery of genes or drugs or electrical stimulation for instance, but through an implantable source that is varied and that doesn't require being connected to the outside. We're working on such a device that can regionally deliver these drugs without affecting the rest of the brain. Then the next step might be to deliver a gene that will help regulate that cell so that it would behave itself.

Your wife, Susan Spencer, is a neurologist. It is interesting that you two work together so closely. Yes. We both began our work at about the same time. For 20 years we've been publishing papers together. She is the medical co-director of the epilepsy program and now the director of the monitoring unit that we have in the hospital. In fact, beginning July 1999, she's the next president of the American Epilepsy Society. She sees most of the epilepsy patients when they come in and establishes who needs new drugs and who may be a candidate for surgery. We have a two-hour conference in the Department of Neurosurgery every Monday afternoon, to which we bring patient histories and their relatively complicated evaluations involving PET and SPECT scans and readings from depth electrodes and such. We have about 25 people who come representing psychiatry, neuropsychology, neurology, etc.

You've got what sounds like an incredibly demanding life, between the stress of surgery and the demands of research and running a major medical department. How do you manage? On the back of a Harley, a hog. Dr. Greer, Charles Greer, the department's vice chairman for research, and I spend occasional Sunday mornings terrorizing the Connecticut countryside.

You drive a motorcycle? That's not the typical image of a brain surgeon. No. I recently gave a talk to the Hospital's Board of Trustees, where Joe Zaccagnino [President and Chief Executive Officer of Yale-New Haven Hospital] introduced me to this roomful of prominent officials, as the Harvey and Kate Cushing Professor of Neurosurgery, chairman of the department and so on. Then he added that I was the only person who showed up at our hospital retreat in full leathers on a Harley. It was really not the introduction that I expected. My love before Harleys is actually my children, the mystery and wonder of raising them—and water lilies. I have two ponds, and in the summertime what I like to do is gardening—gardening and riding hogs.

As a brain surgeon, you deal with the core of what makes us humans and individuals. That must be a heady experience. Neurosurgeons have a tendency to be prima donnas because of what they do, but the residents we train and the patients we treat do more to humanize us than anything else. The patients whom we take care of, in my case, the epilepsy patients, make us focus on giving back health. We all become more human in the process. We have the smartest and most talented resident staff of any neurosurgical department in the country. Every time you make a clinical decision or touch a patient, the headiness disappears and is replaced by the responsibility of mentoring the next generation and helping another person in grave need. You cannot be selfish and do that job well. YM

ROBERT LISAK

The brain surgeon in a resting state, on the back of a hog.

High honors for psychiatric research

Mental health awards recognize cutting-edge work.

Nine School of Medicine researchers have been awarded grants from the National Alliance for Research on Schizophrenia and Depression (NARSAD). Two of the researchers are among 16 scientists around the world to receive the 1998 Distinguished Investigators Award, NARSAD's highest honor. Seven of the Yale researchers are among 130 scientists worldwide to receive the 1998 Young Investigators Award from NARSAD. The non-profit organization, based in Great Neck, N.Y., funds research into the causes and potential treatments of mental illness.

George R. Heninger, M.D., professor of psychiatry, and **Robert H. Roth Jr.**, Ph.D., professor of psychiatry and pharmacology, were awarded the 1998 Distinguished Investigators Award, which supports their work with $100,000 for one year. Dr. Heninger's research aims to identify the immune abnormalities in some patients with schizophrenia. Dr. Roth is studying the psychiatric symptoms associated with marijuana abuse.

Additionally, NARSAD announced in May that Gerald A. Conway and his wife Martine, trustees for The Fairfax Foundation, have pledged to support NARSAD and Yale with a cumulative gift totaling $30,000. The funds are to be applied toward the support of a 1999 Young Investigator conducting research at the School of Medicine.

Recipients of the 1998 Young Investigators Award will receive $30,000 for two years to help support their research. The winners and their research projects are:

John P. Alsobrook, Ph.D., associate research scientist in the Child Study Center, will analyze genes that may be associated with obsessive-compulsive disorder.

Noboru Hiroi, Ph.D., associate research scientist in psychiatry, will study ways of reducing the side effects of drugs used to improve the voluntary motor skills of schizophrenic patients.

Sheena Josselyn, Ph.D., postdoctoral associate in psychiatry, will investigate the neural basis of inhibition of fear and/or anxiety.

Karen Y. Mechanic, M.D., postgraduate year IV resident in psychiatry, will examine the relationship between cocaine dependence and depression.

Marc N. Potenza, M.D. '94, Ph.D. '93, postgraduate year IV resident in psychiatry, will study the link between the response to stress and the onset of mental illness.

Alexander A. Stevens, Ph.D., postdoctoral associate in diagnostic radiology, will map areas of the brain responsible for language to gain a better understanding of how schizophrenia affects language processing.

Pathology chair becomes department's first Yesner Professor

Jon S. Morrow, M.D., professor and chair of pathology, and professor of molecular, cellular and developmental biology, has been named the Raymond Yesner Professor of Pathology. Dr. Morrow has led pioneering studies to define the structure and function of the membrane-associated cytoskeleton. His work led to an understanding of the origin of several inherited blood diseases of children. In addition, his studies on the regulation of cell-cell adhesion receptors have revealed molecular mechanisms

Jon Morrow

fundamental to an understanding of fetal growth and development, as well as cancer causation and metastasis control. Other research he has conducted has implications for understanding brain disorders and for treating neonatal brain injury, epilepsy, Alzheimer's disease and AIDS dementia and other disorders.

Active in the field of medical informatics, Dr. Morrow has been an advocate of the early translation of basic science advances to clinical medicine. He headed the team that designed the pathology department's computerized patient information system, and established the medical school's Critical Technologies Program, which facilitates physicians' access to basic science advances and assists basic scientists in the extension of their studies to problems of human relevance.

Nancy Angoff named associate dean for student affairs

Nancy R. Angoff, M.P.H. '81, M.D. '90, H.S. '90-93, an assistant clinical professor of medicine who began her career in medicine after raising a family and working as a teacher and guidance counselor, has been named associate dean for student affairs.

Dr. Angoff specializes in treatment of patients with HIV and will continue to see patients at the Nathan Smith Clinic. She joined the faculty in 1993 after completing her residency here. She obtained a degree in public health from Yale in 1981 and her medical degree, also from Yale, in 1990. She has served as course director of integrative clinical medicine, chaired a working group on death and dying, co-chaired a working group on end-of-life care and co-taught a course in medical ethics at the divinity school. She has been an attending physician at Yale-New Haven Hospital and the Nathan Smith Clinic.

In 1990 she received the Miriam Kathleen Dasey Award, presented to the student who, by strength of character, personal integrity and academic achievement, gives promise of fulfilling the ideal of the compassionate physician. Highly regarded for her clinical knowledge and compassionate treatment of patients, she has three times received the Meyer Etkind Prize, awarded by house staff to the physician who embodies those qualities.

"Like many Yale students her background is not traditional," said Dean David A. Kessler, M.D., as he announced Dr. Angoff's appointment at a luncheon for second-year students in September. "She was a working mother when she went to medical school and did her residency. She knows Yale from the inside out, from a number of different vantage points—as a student, as a resident, as a practitioner, as a teacher."

In her remarks after Dr. Kessler's announcement, Dr. Angoff described her path to medicine. "I grew up," she said, "at a time and in a family when women didn't become doctors. They married doctors but they didn't become doctors. I was told that I should become a teacher, that I would have something to fall back on when my kids were in school."

PETER CASOLINO

Nancy Angoff

She graduated from Case Western Reserve University in 1968 and received a master's degree in education from the University of Cincinnati in 1971. Although she started out in education, her interest in medicine led her into public health in 1981. A few years later a lunchtime conversation with a colleague provided the spark for her career in medicine. When her colleague asked what she truly wanted to do, Dr. Angoff said she wanted to study medicine, then ticked off a list of obstacles. "I was too old. It cost too much money. I had kids. I had never taken a science course in my life," Dr. Angoff recalled telling her colleague, who answered, "You haven't told me one reason why you can't." Her husband, Ronald Angoff, M.D., a pediatrician on Yale's clinical faculty, also encouraged her medical studies.

Dr. Angoff's appointment concludes an internal search that began earlier this year when the duties of Robert H. Gifford, M.D., H.S. '67, then associate dean for medical education and student affairs, were divided into two jobs. Dr. Gifford became the school's first deputy dean for education on July 1. As associate dean for student affairs, Dr. Angoff handles student needs and concerns. Her duties include counseling, writing recommendation letters for students, organizing events such as Match Day and Commencement, working with student organizations and handling disciplinary problems.

"From the moment I set foot here I have been devoted to this place. It's an incredible institution. It's home for me," she told students, who greeted her appointment with a standing ovation. "If I can help any of you to love medicine as much as I do, I will have fulfilled my duty."

Judah Folkman speaks at Grand Rounds

Speaking to a standing-room-only audience in Fitkin Amphitheater in June, angiogenesis pioneer Judah Folkman, M.D., second from right, described the application of his discoveries about blood vessel formation to the treatment of certain cancers. Dr. Folkman delivered the Massimo Calabresi Lecture in the Yale Cancer Center as well as a talk titled *New Directions in Angiogenesis Research* during Grand Rounds in the Section of Cardiovascular Medicine. A cancer researcher at Children's Hospital in Boston who teaches anatomy and cell biology at Harvard Medical School, Dr. Folkman was the Farr lecturer at Yale in 1997 and gained worldwide attention earlier this year when news of his successful anti-cancer experiments in mice were reported. Among those attending the lecture were Dean David A. Kessler, left, a former student of Dr. Folkman at Harvard, and Paul and Guido Calabresi, in whose father's memory the lecture series was established.

JOHN CURTIS

FACULTY NOTES


Richard Antaya

Richard J. Antaya, M.D., an authority in skin disorders affecting children, joined the faculty of the departments of Dermatology and Pediatrics in September. Dr. Antaya received his B.S. degree in chemistry from Rensselaer Polytechnic Institute in 1985, and received his M.D. degree at Tufts University in 1989. He completed his residency training in pediatrics at Tripler Army Medical Center in Honolulu in 1992, and spent the following three years practicing general pediatrics in the Army at Fort Polk, La. There he served as chief of the pediatrics service and chief of the department of medicine. Dr. Antaya completed a second residency in dermatology at Duke University, where he worked closely under the direction of the internationally recognized pediatric dermatologist Neil S. Prose.

Michael B. Bracken, Ph.D., M.P.H. '70, professor and head of chronic disease epidemiology and professor of neurology, obstetrics and gynecology, gave the keynote speech at the 37th annual meeting of the International Medical Society of Paraplegia in June in Brazil. The theme of the talk was current and future prospects for the pharmacologic treatment of acute spinal cord injury.


GALE ZUCKER

Yale Cancer Center Director Vincent T. DeVita Jr., H.S. '66, professor of medicine, epidemiology and public health, received an award from David S. Rosenthal, M.D., president of the American Cancer Society, during the 13th Annual Excaliber Round Table, held in New Haven and Greenwich in August. The jade glass work was in honor of Dr. DeVita's efforts on behalf of the round table and the cancer society. During the three-day symposium, researchers discussed various topics including dendritic cells, peptidomimetic therapy and thyroid cancer.

Erol Fikrig, M.D., associate professor of internal medicine, was a recipient of a $750,000, five-year grant from the Burroughs Wellcome Fund. The Clinical Scientist Awards were given for the first time this year and went to 10 U.S. and Canadian researchers to foster the transfer of knowledge between basic research and the treatment of patients.


Heidi Gaspary

Heidi L. Gaspary, M.D., Gilbert Glaser Fellow in Epilepsy and chief resident in neurology at Yale-New Haven Hospital, has been named the 10th annual winner of the Hugh Dwyer Award. The award, presented by Dr. Dwyer's widow, Dorothea Peck, M.D. '43, is given each year to a senior resident who consistently demonstrates characteristics exemplified by Dr. Dwyer: dedication, sound judgment, sharp diagnostic skills, compassion, the pursuit of continuing education and achievement in practicing the art and science of medicine.

An international, multicenter study headed by **Roberto J. Groszmann**, M.D., F.R.C.P., professor of medicine at Yale and chief of the digestive disease section at the VA Connecticut Healthcare System, will be funded by a $2.5 million grant from the National Institute of Diabetes and Digestive and Kidney Diseases. The five-year grant will support continuation of a study of the prevention of esophageal varices by beta-adrenergic blockers. Co-investigator for the project is Guadalupe Garcia-Tsao, M.D., assistant professor of medicine (digestive diseases). Robert Makuch, Ph.D., associate professor of public health (biostatistics) and a Cancer Center member, is in charge of statistical analysis for the study.

Joseph F. Hoffman, Ph.D., Eugene Higgins Professor of Physiology and a member of the faculty since 1965, was honored for his work studying membrane transport and cellular physiology in April with the Yale Science and Engineering Association Award for the Advancement of Basic and Applied Science.

Peter J. Hotez, M.D., associate professor of epidemiology and pediatrics (infectious diseases), was named visiting professor at the Peking Union Medical College in Beijing in February. In 1996 he was also named visiting professor at the Institute of Parasitic Diseases, Chinese Academy of Preventive Medicine. Dr. Hotez, an expert on hookworm infection, is working to develop a vaccine against the parasite, which is prevalent in China.

Dean **David A. Kessler**, M.D., has accepted an invitation from the Mayday Fund to serve as honorary chair of its newly formed National Advisory Committee. Mayday, a New York-based philanthropy, is dedicated to reducing the profound human problems associated with pain and its consequences. In his role as honorary chair, Dr. Kessler will advocate increased attention to the undertreatment of pain in the United States by working with medical professionals and public policy leaders whose intervention could help alleviate unnecessary pain for millions of Americans.

Associate Clinical Professor of Medicine **Siegfried J. Kra**, M.D., F.A.C.P., was a guest lecturer at the Trumbull College Fellows Luncheon in April. His talk entitled *Ill and Deranged Leaders That Changed Our World,* is also the subject of his 13th book which is in preparation. He also toured the country in late 1997, discussing his book *What Every Woman Must Know about Heart Disease,* published in 1996 and now available in paperback.


Marc Lorber

Marc I. Lorber, M.D., professor of surgery and chief of the section of organ transplantation and immunology in the Department of Surgery, was elected in June to serve a two-year term on the board of directors of the United Network for Organ Sharing (UNOS). A private, nonprofit organization, UNOS unifies transplantation activities nationwide by establishing policies to govern organ procurement, distribution and transplantation. Dr. Lorber also serves as treasurer of the American Society of Transplant Surgeons.

Frederick Naftolin, M.D., D.Phil., professor and chairman of obstetrics and gynecology, and director of the Center for Research in Reproductive Biology, was admitted to Britain's Royal College of Obstetricians & Gynaecologists in September. Dr. Naftolin was also elected president of the North American Menopause Society in September.

Eric J. Nestler, Ph.D. '82, M.D. '83, HS '83-87, the Elizabeth Mears and House Jameson Professor of Psychiatry, Pharmacology and Neurobiology, was one of three recipients of the 1997 Robert J. and Claire Pasarow Foundation Medical Research Award. Recipients received a $35,000 prize from the Beverly Hills-based foundation and delivered a lecture at a ceremony and scientific symposium held at the University of Southern California's health sciences campus in June. Dr. Nestler was recognized for his research into neuropsychiatric disorders. In a talk entitled *Towards a Molecular Psychiatry*, Dr. Nestler spoke about his current research into the connection between neurobiology and behavior.

Two Yale researchers, **Robert Rosenheck**, M.D., clinical professor of psychiatry and **Rani A. Hoff**, M.P.H. '91, Ph.D., postdoctoral fellow in the Child Study Center, received the 1997 Excellence in Women's Health Research Award from the National Center of Excellence in Women's Health (NCEWH), for a series of studies on how women veterans use Veterans Administration mental health services. **Carolyn Mazure**, M.D., director of research for the women's health program and the NCEWH at Yale, presented the awards.


Sally Shaywitz

The Society for the Advancement of Women's Health Research gave Professor of Pediatrics **Sally Shaywitz**, M.D., the 1998 Clinical Service Award for her work in the science of reading and for her advancements in the scientific understanding of gender differences in brain organization and function. Dr. Shaywitz is co-director of the National Institute of Child Health and Development-Yale Center for the Study of Learning and Attention and founder and director of the Yale Learning Disorders Unit. The award was presented at a ceremony in Washington in June.

Stephen G. Waxman, M.D., Ph.D., professor of neurology and pharmacology and chair of the Department of Neurology, was elected a member of the Connecticut Academy of Science and Engineering (CASE) on the basis of his internationally recognized research. He is an authority in the molecular architecture of nerve fibers and the glial cells that surround them, and the mechanisms by which nerve fibers in the brain and spinal cord adapt to injury. CASE is a private, nonprofit public-service institution chartered by the Connecticut General Assembly in 1976 and patterned after the National Academy of Sciences. Dr. Waxman also serves as director of the PVA/EPVA Neuroscience Research Center in the VA Connecticut Healthcare System in West Haven.

Barry L. Zaret, M.D., the Robert W. Berliner Professor of Medicine, professor of radiology and chief of cardiovascular medicine, received the 1998 Solomon A. Berson Medical Alumni Achievement Award in Clinical Science from his alma mater, New York University School of Medicine. The award ceremony was part of the school's April alumni day celebration. In February, Dr. Zaret was a guest lecturer at the 25th anniversary of the Egyptian Society of Cardiology in Cairo. He spoke on *Clinical Relevance of Myocardial Perfusion Imaging* and *Mental Stress and Myocardial Ischemia.* Dr. Zaret was also a guest speaker at the XVII Congress of Nuclear Cardiology which was held in June in Rosario, Argentina.

Daniel Zelterman, Ph.D. '83, professor of medicine (EPH), was elected a Fellow of the American Statistical Association in August. This honor recognizes his development of models of human longevity and his continuing service to the statistical profession. Fewer than one third of one percent of all members of the American Statistical Association can be elected fellows in any year.

Gordon Shepherd, M.D., D.Phil., professor of neuroscience in the section of neurobiology, has been elected editor-in-chief of the *Journal of Neuroscience*, published by the Society of Neuroscience. He will begin his five-year term as editor on Jan. 1. The journal is published every two weeks in both printed and electronic versions, comprising some 10,000 pages annually. On the Yale faculty since 1967, he has previously served as editor-in-chief of *The Journal of Neurophysiology.*

'Do some good in the world,' dean exhorts Class of 1998

As the 106 members of the Class of 1998 received their medical degrees in May, Dean David A. Kessler, M.D., urged them to think back to the altruism that guided and propelled them as they made the decision to become doctors. "You wanted to do some good in the world," he said, "and you were able to say those words flat out, without any embarrassment or hesitation."

The 1998 Commencement was Dr. Kessler's first at Yale and the first in recent memory to be conducted in pouring rain, which drove graduates and their families under a tent on Harkness Lawn. After ceremonies on the main campus, graduates followed bagpiper Glenn Pryor as he led the class along College Street to the medical school Commencement under the tent.

"This is a teacher's dream," said Dr. Kessler, "a last chance to exhort, challenge and inspire." His own exhortation was that students remain true to the idealism that comes with being a healer. "You are a healer when you understand that the amount of health you can actually promote is relatively small when weighed on the scale of human mortality," he said. "You are a healer when you throw away that scale and fight for every inch of health, against the odds, as if immortality were embedded in your fingertips. And you are a healer if you know when it's time to quit."

In closing, Dr. Kessler offered the graduates warm wishes for the future. "I wish you mornings of great promise," he said, "evenings of pleasant weariness and nights filled with the sleep that comes to those who have done their best. ... The most fortunate among you will be able to say, 'I occupied some space on Earth and I did some good. I was a healer.' "

1) **Three generations take to the podium at Commencement. Katherine Auerswald, holding her daughter, Cecilia, receives her diploma accompanied by her father Benjamin Bunney, psychiatry chair.** 2) **Jennifer Eras smiles under the tent.** 3) **Banner-bearer Merle Carter leads the procession with bagpiper Glenn Pryor.** 4) **Deans David Kessler and Robert Gifford speak before the ceremony.** 5) **Sydney Butts and Merle Carter applaud during the ceremony.**

Before the presentation of diplomas, students and faculty received awards for work of distinction in research, education and clinical care.

FACULTY AWARDS

- Bohmfalk Prizes: Stuart D. Flynn, M.D., associate professor of pathology, and Richard J. Gusberg, M.D., professor of surgery
- NBI Humanism in Medicine Faculty Award: Jack Van Hoff, M.D., associate professor of pediatrics
- Dean's Medical Education Farr Prize: Ervin E. Jones, M.D., associate professor of obstetrics and gynecology
- The Leah M. Lowenstein Award: Ronnie A. Rosenthal, M.D., associate professor of surgery
- The Francis Gilman Blake Award: Richard Belitsky, M.D., assistant clinical professor of psychiatry
- The Betsy Winters House Staff Award: Anju Nohria, M.D., instructor in medicine

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STUDENT AWARDS

- Parker Prize: Hahnah J. Kasowski
- The Miriam Kathleen Dasey Award: Michelle A. Barton
- The Norma Bailey Berniker Prize: Matthew H.T. Bui
- The Dean's Prize for Community Service: Heather J. Lynch
- NBI Healthcare Foundation Humanism in Medicine Student Award: Lynda S. Kauls
- The Campbell Prize: Russel C. Huang
- The Perkins Prize: Russel C. Huang
- Merck Book Awards: Lynda S. Kauls and Ellen A. Komisaruk
- Lange Book Award: James F. Borin
- M.D./Ph.D. Award: Matthew H.T. Bui and Charles C. Hong
- Connecticut Society of American Board of Obstetricians and Gynecologists Prize: Ellen A. Komisaruk
- New England Pediatric Society Prize: Daniel T. Coghlin
- The Society for Academic Emergency Medicine Award: Kevin P. Daly
- Connecticut Society of American Board Surgeons Prize: Hahnah J. Kasowski
- Peter A.T. Grannum Award: Sydney C. Butts, Merle A. Carter and Olivia I. Okereke
- Lauren Weinstein Award: Joanne M. Quinones
- The Winternitz Prize in Pathology: John Tilton
- Endocrine Society Medical Student Achievement Award: Christi M. Cavaliere
- William U. Gardner Thesis Prize: Alan Cheng
- Louis G. Welt Prize: Jeffrey T. Reynolds
- American Cancer Society Prize: John P. Forman
- Peter F. Curran Prize: Nirit Weiss
- M.D./Ph.D. Thesis Prize: Nicole Ullrich
- Association for Academic Surgery Research Award: David J. Chang
- The Dr. Louis H. Nahum Prize: Helen M. Chun
- The Harold H. Lamport Biomedical Research Prize: Robert M. Kalus
- The Ferris Prize: Kent Kwasind Huston
- The International Health Prize: Kent Kang Hu
- The Nicholas J. Giarman Prize: James D. O'Holleran
- Transfusion Medicine/Laboratory Medicine Award: Tobias T.P. Lee
- Vernon W. Lippard Prize: Samir S. Shah
- The John P. Peters Prize: Katherine B. Auerswald
- The Keese Prize: Naomi S. Donnelley

Health is a global affair, EPH graduates are told at Commencement

People entering the field of public health face issues that are becoming more complex by the day, journalist Laurie Garrett told graduating students at the EPH Commencement Day in May. "Your work will by necessity be global. It will probably have to be executed with fewer resources than you have today."

Ms. Garrett, a medical writer for Newsday and author of *The Coming Plague: Newly Emerging Diseases in a World Out of Balance,* won the 1996 Pulitzer Prize for explanatory journalism for her coverage of the Ebola virus outbreak in Africa. She began her Commencement remarks by citing the optimism that reigned in public health 20 years ago. There was hope, she said, that many diseases would be eradicated, changing the role of public health workers. "For the last 20 years at least one aspect of that scenario has become true," she said. "It is the loss of the traditional role of public health. Government no longer wishes to pay for it."

And in that time, she said, health problems have become more complicated as the population ages, HIV continues to spread and illness travels with ease across the globe, which is fast becoming "one massive, human petri dish." Public health workers will also find themselves dealing with people whose native languages are spoken by only a few thousand people in remote pockets of the Third World. "How do you say 'push' to a woman in labor who just came to San Diego from a small village in Guatemala?" she asked. "Spanish won't do. No matter how many languages you speak, it isn't enough."

Graduates cheered and applauded when she criticized the federal government's refusal to fund needle exchange programs. Students taped syringes to their mortarboards in a gesture of support for the programs.

As they advance in their careers, she said, graduates will absorb foreign languages and cultures, learn how government works, teach people about public health and learn to survive "monsoons" like the one that blew in during Commencement. Graduates, friends and families gathered under a tent on the lawn for the ceremony.

Echoing Ms. Garrett's thoughts, Dean Michael H. Merson, M.D., said, "This is a time when challenges to our profession have never been so many and the needs so great."

In her class address, student

Above **Commencement speaker Laurie Garrett chats with professors Lowell Levin and Elizabeth Claus after the ceremony.**

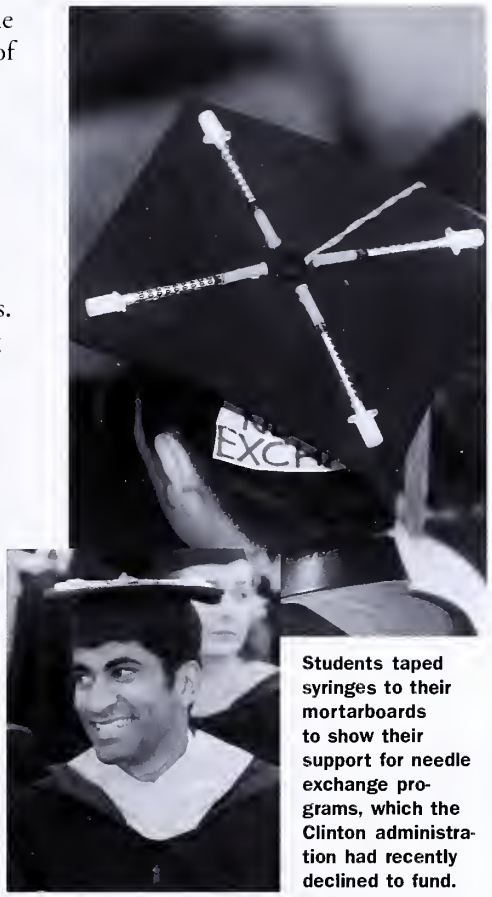
Right **Speaker Laurie Garrett.**

Below **Susie Tanefo receives her diploma from Dean Michael H. Merson, M.D.**

speaker Andrea Kim stressed what she considered to be the unique quality of the class. "There is a feeling of camraderie and respect among all of us," she said as she urged her classmates to abandon "comfort zones" and try get to know others. "Sometimes we completely miss the opportunity to get to know someone because of the walls we build around us. Public health is a field where relating to people is essential."

Some graduates are continuing their education and plan to obtain M.D. or Ph.D. degrees. Others have obtained jobs in health care management consulting firms, managed care firms or organizations such as the Inter-American Development Bank and Centers for Disease Control.

In addition to 107 M.P.H. graduates, two students received doctor of public health degrees and 10 students received Ph.D.s. The graduates honored Elizabeth Claus, Ph.D., M.D., with the award for excellence in teaching.



Students taped syringes to their mortarboards to show their support for needle exchange programs, which the Clinton administration had recently declined to fund.

Physician associates celebrate

JOHN CURTIS

Thirty-two graduates of the Physician Associate Program celebrate in late August in Harkness Auditorium. U.S. Rep. Nancy Johnson, a Republican who represents Connecticut's 6th district, urged the new practioners to use their knowledge to transform themselves and their communities. She also urged them to treat the whole patient, not a person with symptoms. "Restoring a holistic approach is extremely important," she said. "We are struggling with it as a society even to the point where Congress is legislating—always a dangerous sign."

Smiles of relief after the boards

JOHN CURTIS

Strawberries and champagne greeted members of the Class of 2000 in June as they emerged from their board examinations in Harkness Auditorium. The refreshments, and a barbecue that followed on Harkness lawn, were gifts from the Class of 2001.

In doctor's black bag, decades of family history

In choosing a medical career, many budding physicians receive friendly bits of advice and the occasional keepsake from established physicians hoping to encourage them in their pursuits. When Alison Days received just such encouragement as a second-year medical student in the form of a battered old medical bag last year, she also got a piece of her own family's past. How she came to receive the bag involved a remarkable series of coincidences.

When Ms. Days' grandfather John Langdon, M.D., a Providence pediatrician, died more than 40 years ago, his wife gave his black medical bag bearing the initials JL to Providence ophthalmologist Frank Dimmit, M.D. In 1954, Dr. Dimmitt passed the bag on to a young family friend who then was beginning medical school at Yale. The student, Gerard N. Burrow, eventually would become dean of the School of Medicine from 1992 to 1997.

When Dr. Burrow's daughter, Sarah, entered medical school, he handed the bag down to her. She later returned it to the Dimmitt family in Providence, entrusting the bag to her father's childhood friend, Sterling Dimmitt, the son of Frank Dimmit.

Mr. Dimmit, not a doctor himself, recalled that the granddaughter of the original JL was herself an aspiring pediatrician. He decided that Alison Days should have the bag. So, the historic, much traveled medical bag returned to its original family and Ms. Days now guards the family treasure.

PETER CASOLINO

Alison Days with former Dean Gerard Burrow and her parents, Ann R. Langdon and Drew S. Days III.

STUDENT NOTES

A team of three Yale Physician Associate students took first prize in the medical challenge bowl playoffs held in March at the annual American Academy of Physician Assistants (AAPA) Northeast Regional Meeting on the campus of the University of Medicine and Dentistry of New Jersey. The meeting was sponsored by the New Jersey State Society of Physician Assistants and the Northeast Consortium of PA Programs. Teams from 14 regional PA programs competed. The Yale program was represented by first-year students **Tony Barrett, Broheen Elias** and **Debra Strigun** and by a second-year team composed of **Aviva Asnis, Grace Barresi** and **Joe Castro**, who were last year's champions. The Barrett-Elias-Strigun team took first place against a team from Rutgers University and moved onto the annual Student Academy of the AAPA/Searle National Medical Challenge Bowl in Salt Lake City, where they reached the semi-finals May 24.

The Yale champions, from left: Strigun, Barrett and Elias

Shannon Turley was presented the 1998 Richard K. Gershon Pre- and Postdoctoral Fellowship Award. This award in the amount of $16,750, will support her research project *Functional Pathways of Antigen Processing in Dendritic Cells.* She is a graduate student in the laboratory of Ira Mellman, Ph.D., in the Department of Cell Biology.

Holding on to idealism

A Yale medical student surveys her classmates and finds that cynicism is actually on the wane.

By Rachel Engers

"If you anticipate that you can save every patient, you're bound to be disappointed."

— A medical school professor

For decades, medical educators have wrestled with a phenomenon that goes to the core of training young physicians. Most, if not all, enter medical school filled with youthful idealism and the desire to help others. Many leave four years later more cynical about medicine and their ability to make a difference.

One might think, in this cost-conscious era in health care, that cynicism would be on the rise. But the current generation of medical students has baffled the conventional wisdom. Comparing attitudes in the 1990s to opinions recorded in 1955 and 1957 surveys at Yale, Lisa Sanders, M.D. '97, found cynicism to be in fact declining.

Mental illness, suicide and chemical dependency occur in higher frequency among physicians than in the general population. Studies at Yale and elsewhere have shown that the medical school experience promotes cynicism among at least a portion of the student body. Leonard D. Eron, Ph.D., now a professor of psychology and a research scientist at the Institute for Social Research at the University of Michigan in Ann Arbor, studied the topic in depth while on the Yale psychology faculty during the late 1950s. His survey analysis showed not only that medical students became increasingly cynical over the course of their education, but also that the phenomenon was peculiar to the discipline. Nursing and law students tested at the same time by Dr. Eron did not exhibit increased cynicism.

How did he explain it? "Students just defended against the anxiety of seeing all these sick people," Dr. Eron said during a telephone interview from his home, in Michigan. "But it was not a successful defense, because they became more anxious, more cynical and less humanitarian."

When Dr. Sanders entered medical school in 1993, she had some concern that the experience would harden her. "One of the things everyone going to medical school hears about is what it does to you—that it is this intensely molding experience," she recalled. Her faculty advisor, Alvan R. Feinstein, M.D., encouraged her to make the subject her thesis topic. She presented her work at Student Research Day in 1997.

From the start, Dr. Sanders assumed her classmates would be much more cynical than the students tested in Dr. Eron's study, because she believed cynicism to be more prevalent in American culture today than it was in the 1950s. She expected that beliefs such as *When you come right down to it, medicine is a business, and it's up to the doctor to sell his skills for as much as the market will bear* might be more common sentiments now than 40 years ago.

Her results showed little difference in the average level of cynicism between students in 1957 and 1995. But statistically, her survey indicated that most tended to become either slightly more cynical or much less cynical in 1995. Dr. Eron's 1957 study, on the other hand, showed the opposite trend: Most students then became either much more cynical or slightly less cynical. Dr. Sanders' reaction? "I was astonished."

Dr. Eron wasn't. "I would expect them to be less cynical," he said, "because medicine has made so much progress in the last 40 years."

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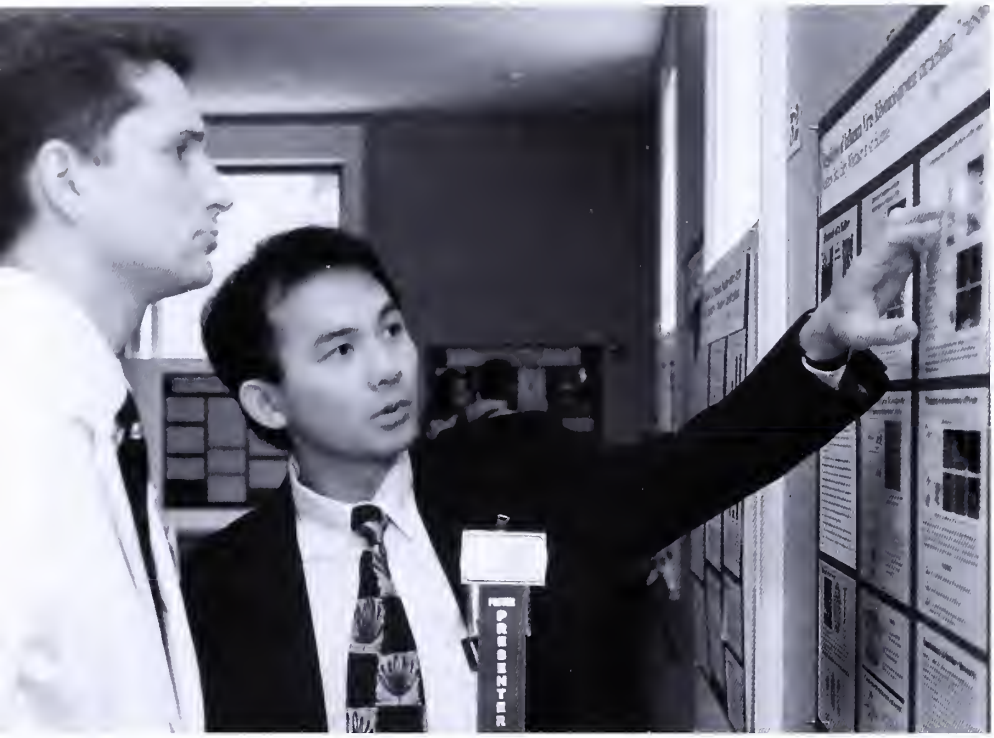
Nobelist returns to New Haven for Student Research Day



Growing up in New Haven as the son of a Yale pharmacologist, Alfred G. Gilman, M.D., Ph.D., recalls feeling at home in the laboratory from an early age. "My father was spectacularly good at showing me the joy of science," said Dr. Gilman, who also pursued a career in pharmacology and in 1994 won the Nobel Prize for his research into G proteins. He discussed research into the proteins, his own and that of other scientists, during the 11th Annual Lee E. Farr, M.D., Lecture on Student Research Day, in May.

"G proteins mediate everything from sex in yeast to cognition in humans," said Dr. Gilman, the Raymond and Ellen Willie Distinguished Chair in Molecular Neuropharmacology, Regental Professor and Chairman, Department of Pharmacology at University of Texas Southwestern Medical Center in Dallas. The proteins have been likened to a switchboard operator who receives messages and makes sure they reach the proper recipient. Failure in that task can cause disease. Researchers have linked malfunctioning G proteins to alcoholism, diabetes, cancerous tumors and cholera. Dr. Gilman and Martin Rodbell, Ph.D., a scientist emeritus at the National Institute of

Above **Matthew Bui explains his research *The Regulation of Nuclear Transport of Influenza vRNPs* to Eric Hughes.**

Left **For her paper, *Motherhood and Medicine: A Study of Women from Yale School of Medicine 1922-1999*, Ruth Potee, M.D., '99, researched women who balanced the demands of careers in medicine with their roles as mothers.**

Below **Sydney Butts explains her research *The Correlation Between the Glutomate Receptor GluR2 and Calbindin D-28K in the Developing Gerbil Cochlear Nucleus* to Alfred Gilman, who received the 1994 Nobel Prize for his research into G proteins.**

Environmental Health Sciences in North Carolina, shared the Nobel Prize for identifying G proteins and their role in the signaling process.

John N. Forrest Jr., M.D., director of the Office of Student Research, said the day "celebrates 159 years of a tradition unique in American medicine." Yale requires medical students to write a thesis on a research project in order to graduate. "The value of the thesis," Dr. Forrest said, "is not the concept of trying for a scientific career, but to teach that all physicians are scientists."

"This is the day that a lot of us look forward to," said Dean David A. Kessler, M.D., "because it really defines us as a school."

"Being in a laboratory situation and working with a leading scientist in the field of interest is really a critical part of my medical education," said Jeffrey Reynolds, one of five students who won awards for their theses. "I feel that, having done this project, I have access intellectually to most of the things I can read in the literature. Without it, I wouldn't really be able to look critically at the literature."

"It changes your perspective when you're in a clinical situation to have that research perspective," said Nicole Ullrich, another award-winning student.

This year students prepared 63 posters showing the results of their studies. Five students made oral presentations of their award-winning theses. They were: Dr. Reynolds, *Phenotypic Expression of Glucorticoid-Remediable Aldosteronism in a Large Kindred* (Internal Medicine); Alan Cheng, *JAK3 and the Pathogenesis of Severe Combined Immunodeficiency: Insights into Structure and Function* (Immunobiology); John Forman, *Recombinant Vesicular Stomatitis Viruses Expressing HIV-1 Gag and Env Genes Generate HIV-Like Particles and Elicit Anti-HIV Immune Responses in Mice* (Pathology); Nirit Weiss, *Carotid Body Chemoreceptors: Mechanisms of Neurotransmitter Release* (Pediatrics); and Dr. Ullrich, *Properties and Function of Chloride Channels in Human Glial Tumors* (Neurobiology).

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In addition, the advent of managed health care and falling physician incomes may serve as a screening mechanism, scaring off those who would enter medicine for less than altruistic reasons. "Knowing that the field has some problems and still wanting to make a difference—is there a better definition of idealism than that?" Dr. Sanders says of her classmates.

Still, her research showed that the majority of graduating medical students continue to believe that they have become more cynical in the course of their education. Of the 72 students (or 77 percent of the class) participating in her study, 49 reported increased cynicism.

Now a resident in internal medicine at Yale-New Haven Hospital, Dr. Sanders hopes next year to further study the connection between cynicism and blame-laying. In the survey, she found that the class of 1995 showed a disturbing tendency to blame the patient for the illness. "Students," she wrote, "seem to have both unrealistic expectations of patients and excessive faith, not currently supported by scientific evidence, in the efficacy of lifestyle changes."

Dr. Sanders' research also showed that students became less discouraged and more humanitarian with increased teaching from attending physicians. She herself became less cynical during her studies at Yale and attributes this in part to what the study of medicine taught her about evaluating problems and to simply growing up. "Adulthood is a decynicizing process," Dr. Sanders says. "The essence of cynicism is a suspicion of 'them'—them as being different from you. The process of adulthood teaches us how similar we really are."

Rachel Engers is a free-lance writer.

Atlas on the Surgical Anatomy of Laryngeal Cancer by John A. Kirchner, M.D., professor emeritus of surgery (otolaryngology), Singular Publishing Group Inc. (San Diego/London) 1998.

The Beach by Lena Lencek and Gideon Bosker, M.D., assistant clinical professor of surgery (emergency medicine), Viking (N.Y.) 1998.

The Bends: Compressed Air in the History of Science, Diving, and Engineering by John L. Phillips, M.D. '92, Yale University Press 1998.

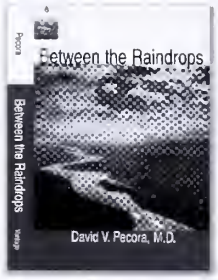
Between the Raindrops by David V. Pecora, M.D. '41, HS '49, Vantage Press, Inc. (N.Y.) 1998.

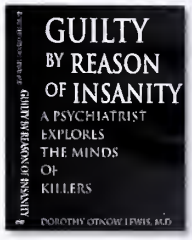
Clinical Electrocardiography: A Simplified Approach by Ary L. Goldberger, M.D. '74, HS '77, Mosby (St. Louis) 1998.

Guilty by Reason of Insanity: A Psychiatrist Explores the Minds of Killers by Dorothy O. Lewis, M.D. '63, HS '65, Fawcett (N.Y.) 1998.

The Power of Hope: A Doctor's Perspective by Howard Spiro, M.D., professor of medicine, Yale University Press 1998.

The Surgeon's Surgeon: Theodor Bilroth (1829-1894) volume IV by Karel B. Abolson, M.D. '52, Kabel Publishers (Rockville, Md.) 1998.





The Program for Humanities in Medicine

1998-1999 LECTURE SERIES

Lectures, free and open to the public, begin at 5 p.m. in the Beaumont Room, 333 Cedar Street. Refreshments at 4:30 p.m. For information call Howard Spiro or Clara Gyorgyey at (203) 785-5494.

DECEMBER 10
The Human Encounters in Medicine
The McGovern Lecture
John Stone, M.D.
Professor of Cardiology
Emory University School of Medicine

DECEMBER 17
Covert Communication in Clinics, Classrooms, Corporations & Courtrooms
The Bayer Lecture
Robert Rosenthal, Ph.D.
Edgar Pierce Professor of Psychology
Harvard Medical School

JANUARY 7
Conflict In Classical Arabic Medicine
Dimitri Gutas, Ph.D.
Professor of Arabic Languages & Literature
Yale University

JANUARY 21
From Quarantine to Condoms: HIV Control in Cuba*
Helena Hansen, MS
M.D./Ph.D. Candidate
Yale University School of Medicine

JANUARY 28
My Brother, Madness & Survival: Memoir
Jay Neugeboren, Ph.D.
Professor of English/Writer in Residence
University of Massachusetts

FEBRUARY 4
Hygeia Revisited: Lessons to Comfort
Michael Berman, M.D.
Clinical Professor of Obstetrics & Gynecology
Yale University School of Medicine

FEBRUARY 11
Young Cushing: The Right Stuff
Robert M. Crowell, M.D.
Professor of Neurosurgery
University of Massachusetts Medical School

FEBRUARY 25
Match Day: Stories of Adoption & Reunion
Morris A. Wessel, M.D.
Clinical Professor Emeritus of Pediatrics
Yale University School of Medicine

Diana K.R. Jowdy, MA
Ph.D. Candidate
American Culture
University of Michigan

MARCH 4
Cultural Competence? Immigrant Patients American Doctors
The Robert Penn Warren Lecture
Anne Fadiman, BA
Editor of *The American Scholar*

MARCH 18
Eye of Doctors: Enhancing Observational Skills With Fine Arts
Irwin M. Braverman, M.D.
Professor of Dermatology
Yale University School of Medicine

APRIL 1
Meeting the Challenge of Alternative Medicine
Joseph J. Jacobs M.D., MBA
Former Director
Office of Alternative Medicine at NIH

APRIL 15
When a Patient Wants to Die
Charles F. McKhann, M.D.
Professor of Surgery
Yale University School of Medicine

APRIL 29
Forty Years of Medical Education at Yale
Howard Levitin, M.D.
Professor of Internal Medicine
Yale University School of Medicine

MAY 6
Carlo Levi, MD & the Italian Anti-Fascist Movement
Harvey Mandell, M.D.
Retired Internist

David Ward, Ph.D.
Associate Professor of Italian
Wellesley College

MAY 13
A Surprise
Jacques Pépin, MA
Master Chef, Columnist, Author, Teacher
PBS-TV Host

Note: *Lectures marked by an asterisk (*) are co-sponsored by the Office of Multicultural Affairs.*

CLASS NOTES

'40s

Hunter H. Comly, M.D. '43, retired from practice in 1992 following the death of his wife, Mary Ellen, and moved to San Diego. He reports doing some *locum tenens* work and six days per month of child psychiatry. He travels regularly to see theater and opera in Oregon and Utah and returned to New Haven in June for his 55th reunion. He writes: "Hope to see more classmates for the 60th!"

Connecticut College awarded **Morris A. Wessel**, M.D. '43, an honorary doctor of science degree for his long, multifaceted career as a pediatrician. Retired from practice since 1992, Dr. Wessel remains a clinical professor of pediatrics at Yale.

Richard W. Breck, M.D. '45 wrote with news of his classmates. **James R. Mason,** M.D. '45, of Ormond Beach, Fla., was evacuated for several days during the wildfires of early summer that came within 100 yards of his home. A tornado also came close to his home this year. **Elliot R. Reiner,** M.D. '45, and his wife, Catherine, traveled on a Smithsonian-sponsored tour to Scotland and England in June 1997. **Alice Shepard Carey,** M.D. '45, retired from medical practice in Japan and now lives in Oakland, Calif. She returned three times to Japan during the past year, and traveled to Turkey as well. Six 1945 classmates attended the John P. Peters, M.D., Symposium, June 5 and 6, during their reunion. *(See related article in Reunion section.)* **Richard Peters**, M.D., '45 son of the Yale professor, came from California and provided reflections on his father's life as an early advocate of socialized medicine who was attacked by conservatives during the late 1940s and early '50s. Others attending included **Roger Hollan**, M.D. '45 from Texas, **Charles McLean**, M.D. '45 from Cape Cod. **William Jenney**, M.D. '45, and his wife Marge came from Massachusetts as well, while **Dick Breck,** M.D., '45 came from Connecticut.

'50s

Asa Barnes Jr., M.D. '59, HS '65, reports hearing from missionary and medical colleagues in Nairobi, about the bombing of the U.S. Embassy there. Dr. Barnes, who retired in 1995 after 18 years as clinical professor of pathology at the University of Californ2ia at Irvine, has made three trips to Kenya on behalf of the World Medical Mission. While there he serves as pathologist for the Kijabe Medical Center, which analyzes specimens for 42 hospitals in countries along Africa's eastern coast. "The hospitals, including Kijabe, were packed with patients and bodies," says Dr. Barnes, who heard about the bombing from his colleagues in Africa by e-mail. He has also traveled to Vietnam, where he arranges exchange trips for American physicians and donations of used medical equipment such as cardiopulmonary bypass machines and pediatric respirators. When not traveling, Dr. Barnes and his wife, Jean, live on their ranch on the East Fork of the Gila River in New Mexico.

'60s

Charles A. Dinarello, M.D. '69, professor of medicine at the University of Colorado School of Medicine in Denver, was elected to the National Academy of Sciences in April. Dr. Dinarello is a world expert in cytokines, clinically important molecules that regulate the immune and inflammatory responses. He was one of the first scientists to work on the molecular biology and cloning of cytokines. The Institute for Scientific Information listed him as the world's third most cited life scientist. He has trained over 25 young investigators, many of whom are recognized experts in their fields. Dr. Dinarello was the winner of the Borden Undergraduate Research Award in Medicine in 1969 for his medical school thesis.


RALPH GRECO

Chief of surgery at the Robert Wood Johnson University Hospital in New Brunswick, N.J., **Ralph S. Greco**, M.D. '68, HS '73, keeps his hands and eyes nimble by producing abstract and representational art in stone and wood. His work was exhibited in the spring at the Quietude Gallery in East Brunswick. He has shown at several other galleries and in the Johnson & Johnson Worldwide Corporate Headquarters.

'70s

Richard D. Bey, M.D. '79, was named outstanding teacher for 1998 by the residents in family medicine at Wake Forest University Medical School, Winston-Salem, N.C.

Robert B. Diasio, M.D. '71, chair of the department of pharmacology and toxicology and director of the division of clinical pharmacology at the University of Alabama (UAB) School of Medicine, was one of 55 physician-scientists elected recently to the Association of American Physicians. Dr. Diasio was also recently named associate director for basic science research in the UAB Comprehensive Cancer Center.

Edward C. Halperin, M.D. '79, has been named the L.R. Prosnitz Professor of Radiation Oncology at the Duke University Medical Center, where he chairs the department of radiation oncology and is professor of pediatrics. The third edition of *Pediatric Radiation Oncology*, which he co-authored with three colleagues, will be published this year. The first Russian language edition will be published in 1999.

Jesse B. Jupiter, M.D. '72, director of the Orthopaedic Hand Surgery Service at the Massachusetts General Hospital, has been named professor of orthopaedic surgery at Harvard Medical School.

Professor of Psychiatry **Charles "Chip" F. Reynolds III**, M.D. '73, was appointed senior associate dean at the University of Pittsburgh School of Medicine overseeing faculty affairs and monitoring the development of the curriculum. He is also director of the Sleep and Chronobiology Center and of the NIMH-General CRC on Late-Life Mood Disorders.

'80s

Kathleen M. Craig, M.P.H. '85, of Bronxville, N.Y., recently became director of consulting services for NewSolutions Inc., an information services company serving the health care industry in New Jersey, New York and Pennsylvania. She is the past president of the New York Society for Health Planning, an organization of health professionals in the greater New York area.

Burlington psychiatrist and University of Vermont College of Medicine clinical associate professor **David Fassler**, M.D. '82, received the 1998 Annual Exemplary Psychiatrist Award from the National Alliance for the Mentally Ill (NAMI). The award was presented at the American Psychiatric Association's annual meeting in Toronto in June. Dr. Fassler is clinical director of Otter Creek Associates, an outpatient group practice, and the co-author of seven books for children and parents.

Eric P. Winer, M.D. '83, HS '87, B.A. '78, was named director of the Breast Oncology Center at Dana-Farber Cancer Institute/Brigham and Women's Hospital in Boston. For the previous six years, Dr. Winer served as co-director of the Multidisciplinary Breast Program at Duke University Medical Center in North Carolina.

'90s

Michael C. Brown, M.D. '93, married Melissa A. Brown in March in New York City. Dr. Brown is a gastroenterology fellow at the University of Washington Medical Center. His wife is a television news producer.

Imtiaz A. Chaudhry, M.D., Ph.D., HS '94-98, has been accepted as a fellow in oculoplastic-surgery in the Department of Ophthalmology at Baylor College of Medicine in Houston.

Andreas Eicher, M.P.H. '96, M.F. '96, director of Disha, which means "direction" in Hindi, a community health and development program, works out of the Nav Jivan Hospital in Bihar in eastern India. He was visited recently by classmates **Bindo Mahanti**, M.P.H. '96, and **Rachel Salks**, M.P.H. '96.

It was a May wedding for **David L.S. Morales**, M.D. '95, and Mary Elizabeth Collins in Saddle River, N.J. Dr. Morales is a resident in general surgery at Columbia-Presbyterian Medical Center in New York. His wife is a pediatric case manager in AIDS health services at the Jersey City Medical Center.

Before recently moving to New York City, **Donfeng Tan**, M.D., HS '94-98, and Hong Zou, M.P.H., had a baby daughter, Christina. Their first daughter, Connie, was also born in New Haven. Dr. Tan, newly board certified in pathology, is now an oncological pathology fellow at Memorial Sloan-Kettering Cancer Center.

First it was marriage and then graduation for **Amy E. Taylor**, M.D. '98, B.A. '93, and **Jaimie D. Nathan**, M.D. '98, B.S. '93, who married in Buffalo in early May before their graduation from the medical school at month's end. Dr. Taylor began a residency in pediatrics at the University of North Carolina Hospital and Dr. Nathan began a general surgical residency at the Duke University Hospital.

Marc A. Weinstein, M.D. '93, and Kristine M. Mellina married in March in West Orange, N.J. Dr. Weinstein is a resident in orthopedic surgery at Yale-New Haven Hospital. His wife is a senior account director at Pharmadesign, a pharmaceutical marketing firm.

Associate professor of surgery and public health sciences at the University of Toronto, **James G. Wright**, M.P.H. '91, has been awarded the 1998 Annual Gold Medal for Research in Surgery of the Royal College of Physicians and Surgeons of Canada. He was also recipient of the 1998 J. Edouard Samson Award of the Canadian Orthopaedic Foundation/Canadian Orthopaedic Association (their highest research award), and a five-year Scientist Award of the Medical Research Council of Canada.

FRANK R. ALLEN

Frank R. Allen, M.D. '51, of Wolfeboro, N.H., died in Huggins Hospital on July 17. He was 76.

Dr. Allen graduated from Yale School of Medicine after serving as a pilot in the Naval Air Corps during World War II. He practiced family medicine in Wolfeboro for 38 years and was chief of medicine at Huggins Hospital. In 1984, he was voted Wolfeboro's Citizen of the Year. Retiring from family practice in 1986, Dr. Allen moved to Tucson, Ariz., where he practiced emergency medicine at the Davis-Morrison Air Force Base Hospital until 1991. He returned to Wolfeboro in 1992 to full retirement.

ALBERT S. ATWOOD

Albert S. Atwood, M.D. '45, of Stonington, Conn., died Aug. 8. He was 77 years old. He was active in medical school alumni affairs until his death, serving on the executive committee of the Association of Yale Alumni in Medicine and as secretary for his class.

Raised in West Hartford, Conn., Dr. Atwood attended the University of Connecticut, where he played football and held the rank of captain in the ROTC. In 1945, he graduated from the School of Medicine and went on to serve in the United States Medical Corps in Japan. He did his orthopaedic surgery residency at Grace-New Haven Hospital and practiced orthopaedics at Charlotte Hungerford Hospital in Litchfield County, Conn., for 25 years.

In 1977, he was named the first chair of the Department of Rehabilitation at Lawrence and Memorial Hospitals in New London. After retiring from practice in 1987, he worked as a surveyor for the national organization, the Joint Commission for the Accreditation of Hospitals.

MELVIN J. COHEN

Professor emeritus of biology Melvin J. Cohen, Ph.D., died Feb. 22 in Berkeley, Calif. A member of the National Academy of Sciences, he was 69 and had been affiliated as a neurobiologist with Yale for 29 years.

Dr. Cohen joined the Yale faculty in 1969. His research focused on elements influencing the shape of nerve cells and the pattern of synaptic connections between them, especially in injured neurons. His work has demonstrated that axonal die-back following spinal injury is caused primarily by excess amounts of calcium ions, which can be blocked by direct electric current.

EDWARD F. EDINGER

Considered one of the leading Jungian analysts in America, Edward F. Edinger, M.D. '46, HS '51, died of cancer on July 17 at his home in Los Angeles. He was 75.

Dr. Edinger published numerous books on the interplay between symbols and psychology, drawing on the concepts of Carl Jung. Dr. Edinger was a supervising psychiatrist at Rockland State Hospital in Orangeburg, N.Y., and later was a founding member of the C.G. Jung Foundation in Manhattan and the C.G. Jung Institute of New York. He was president of the institute from 1968 until 1979, when he moved to Los Angeles. There, he continued his practice and his writings until shortly before his death.

ARAM GLORIG

Aram Glorig, M.D., HS '46-47, a leading expert on the effects of workplace noise and a former Yale faculty member, died June 22 at the South Coast Medical Center in San Clemente, Calif. He was 92.

Dr. Glorig helped develop smaller and more effective hearing aids and set standards for noise levels on the job. He was the founder, in 1973, of the American Auditory Society, an association of professionals working to improve understanding and treatment of hearing and ear disorders. Following service in the Army during World War II, Dr. Glorig was an assistant professor at Yale, leaving in 1948 to set up a hearing disorders center at Walter Reed Army Hospital.

HARRIET P. LEACH

Harriet P. Leach, M.D. '35, died at the Shaughnessy-Kaplan Rehabilitation Hospital in Salem, Mass., on May 25. She was 93.

Dr. Leach was a general practitioner in private practice in Chelmsford and Billerica, Mass., for nearly 50 years before retiring a decade ago. When she opened her practice in 1940, she found herself covering for numerous physicians in her area who had gone on to service during World War II. According to the nephew with whom she lived at the time of her death, she ran her practice out of her own house and charged very modest fees. Dr. Leach was associated with Lowell General Hospital, St. Joseph's Hospital and St. John's Hospital, all in Lowell, Mass. An active member of the Appalachian Mountain Club, she climbed 40 of the 48 4,000-foot mountains in New Hampshire. She also never lost her interest in zoology, which was her undergraduate major at Smith College.

ROBERT A. MACKEY

Robert A. Mackey, M.D. '71, died April 19 in York, Maine, where he had lived for 22 years. He was 52.

After completing his residency at University Hospitals in Cleveland, he served as a major in the U.S. Air

Force, as a pediatrician. Dr. Mackey then set up a pediatric practice and was on the medical staff at York Hospital. An avid sports enthusiast, he was nicknamed the "Voice of York" for his work as the sports announcer for York High School.

JOHN G. MARTIN

John Garthwaite Martin, M.D. '33, B.S. '29, of Scotland, Conn., died at Windham Hospital on May 3. He was 90.

After completing medical school at Yale and interning at Hartford Hospital, he began a family practice in West Hartford, Conn., in 1933, which he continued, except for service as a medical officer in the Army Air Corps from 1942 to 1946. Dr. Martin retired in 1983 and pursued his varied interests in gardening, bird watching, photography and his grandchildren.

CLIFFORD B. REIFLER

Clifford B. Reifler, M.D. '57, died at Strong Memorial Hospital in Rochester, N.Y., on May 12. He was 66.

Dr. Reifler served as director of the University Health Service at the University of Rochester from 1970 until his retirement in 1994 and held several positions at Strong Memorial Hospital including that of medical director from 1983 to 1985. He was considered a leader in helping to establish a public health model for college health services, directing resources toward prevention and improving the living and working environments of students. Dr. Reifler served as president of the American College Health Association for 1977-78. He was senior editor of the *Journal of American College Health* from 1983 to 1996.

W. ADAMS STANDISH

Welles Adams Standish, M.D. '25, B.A. '22, died on May 29 in West Hartford, Conn. He was 98.

After completing a surgical residency at Barnes Hospital in St. Louis, following his studies at Yale, Dr. Standish joined the surgical staff at Hartford Hospital, where he spent his entire career, except during World War II when he served in the Navy. He started the surgical residency program at the hospital and served as director of surgery. He was former president of the New England Surgical Society.

KENNETH C. STEELE

Kenneth C. Steele, M.D. '45, HS '46, M.S. '42, died July 11 at St. Luke's Memorial Hospital Center in New Hartford, N.Y. He was 79 years old.

Following his graduation from Yale, he served as a Captain in the U.S. Army Medical Corps. In 1956, he established a surgical practice in Utica, N.Y. After retiring from practice, he served as medical director of Mohawk Valley General Hospital.

ROBERT L. STEIN

Robert L. Stein, M.D. '54, died of cancer at his home in Pleasant Hill, Calif., on May 10, 1997. He was 68.

While at Yale, he was the only medical student in the Yale Marching Band, playing the clarinet. Dr. Stein did a straight surgical internship at the University of North Carolina in Chapel Hill. He spent 12 years in the Army as a general practitioner. After resigning his commission with the rank of lieutenant-colonel in 1967, he spent a year as a National Institutes of Health fellow in neuroradiology at the University of California, San Francisco. Following two years as a radiologist at the VA hospital in San Francisco, he began private practice in radiology, which he continued for 16 years until his retirement in 1994.

BERNARD ZUGER

Bernard Zuger, M.D., HS '32-33, died of a stroke on April 19 at the age of 92.

Dr. Zuger was born in Russia and emigrated to New York City at age 8. He received his bachelor's degree from Columbia College and a medical degree from the College of Physicians and Surgeons of Columbia University. Dr. Zuger did his residency training in pediatrics at Yale-New Haven Hospital and the Brooklyn Jewish Hospital, and in psychiatry at Bellevue Hospital.

In addition to maintaining a private practice in child and adult psychiatry in New York City, he was staff psychiatrist at Roosevelt and Bellevue hospitals and for 30 years at the Greenwich Hospital in Connecticut. Dr. Zuger was a pioneer in the study of male homosexuality, arguing for 30 years that the condition is present from birth, the result of innate biochemical or genetic factors. Much of his work on gender identity has since been validated by more sophisticated studies.

IN MEMORIAM

The School of Medicine has received notification of the death of the following persons:

Stanley M.K. Chung, M.D. '60
April 21, 1998

Aram Glorig, M.D., HS '46-47
June 22, 1998

Sumner Goldenthal, M.D. '51
April 24, 1998

William P. Koughan Jr., M.P.H. '71
April 6, 1998

Robert A. Mackey, M.D. '71
April 19, 1998

John G. Martin, M.D. '33
May 3, 1998

Rhoda M. Mickey, M.D. '31
February 3, 1998

Clifford B. Reifler, M.D. '57
May 12, 1998

John Keith Rose, M.D. '54
July 11, 1998

W. Adams Standish, M.D. '25
May 29, 1998

Charles F. Stroebel, M.D. '72
April 10, 1998

Douglas R. Wilkie, M.D. '43
May 21, 1998

Back on Cedar Street, 600 celebrate John Peters, the Yale System and reunions

By John Curtis

More than 400 medical alumni and friends and close to 200 public health alumni gathered in New Haven June 5 and 6 for a reunion weekend that featured a New England clambake, the roasting of retiring public health professor Lowell Levin, D.Ed., and a symposium on John P. Peters, M.D., a legendary Yale professor accused of disloyalty in the McCarthy era.

Alumni began trickling into the school Friday, June 5, for a series of lectures sponsored by the Yale Surgical Society in the Hope Building. Alumni also toured the historical library and Yale-New Haven Hospital. AYAM President Nicholas M. Passarelli, M.D. '59, opened the weekend with welcoming remarks in the Hope Building. Robert H. Gifford, M.D., deputy dean for education, made a presentation on *The Yale System, Its Evolution, Its Strengths and Problems.*

At a symposium Saturday morning, speakers described the life and achievements of Dr. Peters, known for his pioneering work in metabolism and his fight to clear his name during the McCarthy era, when his loyalty was questioned by a review board.

Before a buffet luncheon in Harkness Hall, alumni attended presentations on research at Yale by three professors who discussed new lines of inquiry in hypertension, women's health and molecular psychiatry.

PETER CASOLINO

Toby Appel leads alumni on a tour of the Historical Library.

IN THIS REPORT

JOHN CURTIS

Symposium honors a hero of metabolism research who fell victim to McCarthy

At a symposium on John P. Peters, M.D., speakers paid tribute to one of the nation's leading experts in metabolism who stood up to McCarthyism in the 1950s.

A nephrologist who taught at Yale from 1922 until his death in 1955, Dr. Peters came to national attention in the 1930s as secretary of the Committee of 430 Physicians, a group that advocated reforms that have become standard features of modern medicine. They believed that the health of the public should be a concern of government and that government should be involved in providing medical care. During the McCarthy era, Dr. Peters' views and his signature on open letters espousing liberal causes surfaced as evidence of his alleged disloyalty to the United States. Although loyalty boards twice dismissed the case against him, a third board found his loyalty questionable and he was removed as a member of a study section of the Division of Research Grants and Fellowships of the National Institutes of Health.

Dr. Peters was distinguished by his persistent efforts to apply scientific advances to the treatment of patients. "At the same time this was incorporated in a context of moral dignity so that the application of science to the patient was associated with kindness, with a great deal of concern and followup," said Donald W. Seldin, M.D. '43, Professor Emeritus of Internal Medicine at the University of Texas Southwest Medical Center, in his talk, *Reflections of a Student of Peters.* "The plain fact of the matter is that he was a courageous man and a morally dignified man. He did for the profession what the profession needs, self-criticism, self-policing. Now, hopefully, Dr. Peters' vision of medicine available to all the people and at high quality will be reinstituted."

Franklin H. Epstein, M.D. '47, discussed John P. Peters, whose image is in the background, and his contributions to the study of renal disease.

The discussion ranged from his medical contributions to his legal and moral battles. Catherine G. Roraback, LL.B. '48, a Yale-educated attorney who represented dissenters in the 1950s, noted that Dr. Peters became a target of loyalty boards not because he broke a law, but because he exercised his right of free speech and association. George D. Lundberg, M.D., editor-in-chief of the *Journal of the American Medical Association,* traced the longstanding acrimony between the Committee of 430 Physicians and the AMA, which vehemently opposed the reforms the committee proposed. Many of those reforms, he said, are now integral pieces of medical

PETER CASOLINO

More than a dozen members of Peters' family, including his son and two granddaughters, came to New Haven for the symposium in his honor.

practice in this country, such as federal support of medicine and programs such as Medicaid and Medicare.

Richard M. Peters, M.D. '45, one of Dr. Peters' sons, described how the loyalty hearings absorbed his father's final years and, his family believes, shortened his life. Close to a dozen family members traveled to New Haven including Dr. Peters' granddaughter, Barbara Ann Peters, M.D. '79.

Franklin H. Epstein, M.D. '47, professor of medicine at Harvard Medical School and Beth Israel Hospital, cited Dr. Peters' contributions to the study of renal disease, noting that Dr. Peters was interested in the chemical derangements of disease. "It was the measurement of the chemical constituents of body fluids that provided the first of three solid foundation blocks, the cornerstones of Peters' approach," Dr. Epstein said. "He understood and appreciated the importance of accurate, impeccable measurement."

Dr. Peters' most enduring technical achievement was the introduction into the clinic of the flame photometer, which made possible within minutes accurate measurements of sodium and potassium in serum or urine samples. He used those measurements, an exacting analysis of diet, urine and feces, to treat his patients. Colleagues and students marveled at his ability to take the raw data and synthesize it into a logical framework. "His associates might experiment on animals, but he preferred to concentrate on examining disordered physiology at the bedside with accurate chemical techniques and the power of logical inference," said Dr. Epstein.

According to Phillip Gorden, M.D., HS '61-66, the director of the National Institute of Diabetes and Digestive and Kidney Diseases, Dr. Peters' studies of body water, electrolytes, and acid-base balance were extremely important in the management of patients with diabetes mellitus.

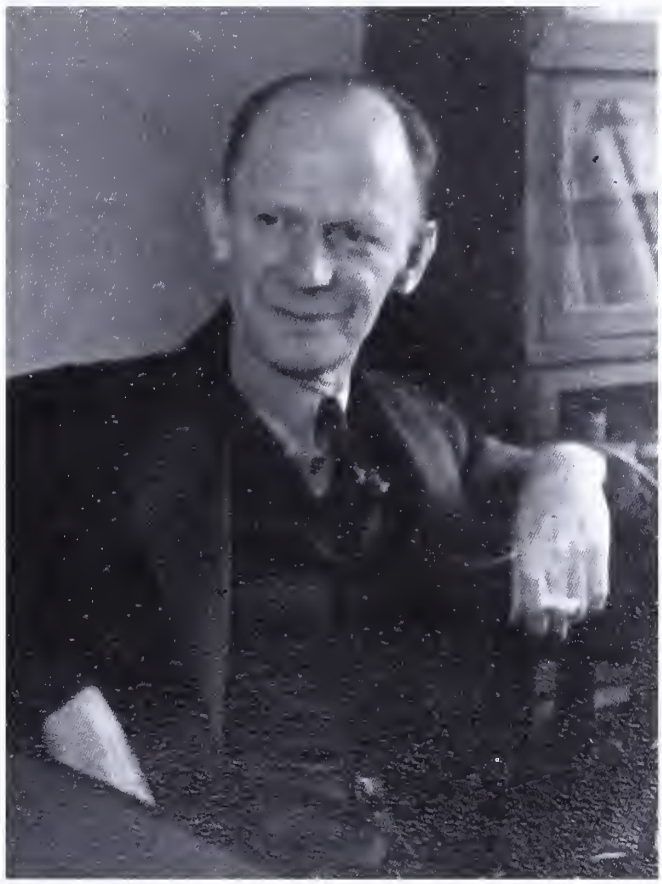
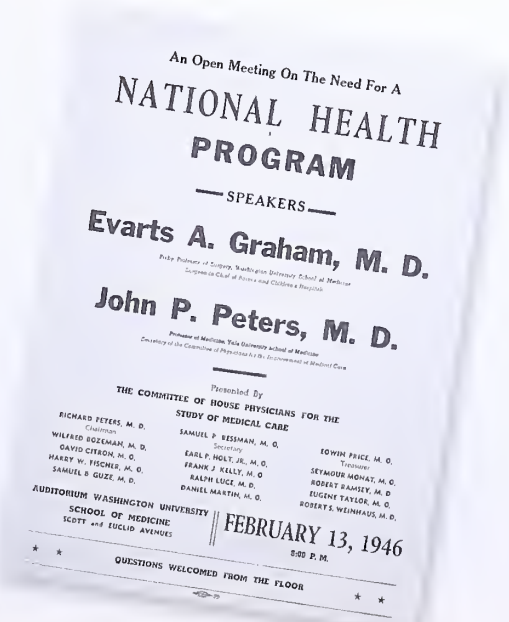


PHOTO COURTESY OF THE PETERS FAMILY

Dr. Peters was secretary of the Committee of 430 Physicians, a group dedicated to reforming their profession. They believed government should care for the poor and finance medical facilities, research and education. The committee felt that responsibility for health care fell on local, state and federal governments and volunteer agencies. With the advent of Medicare, Medicaid, Veterans Administration hospitals and the Food and Drug Administration, many of their goals have been realized.



An Open Meeting On The Need For A

NATIONAL HEALTH PROGRAM

—SPEAKERS—

Evarts A. Graham, M. D.

John P. Peters, M. D.

Professor of Medicine, Yale University School of Medicine
Secretary of the Committee of Physicians for the Improvement of Medical Care

Presented By

THE COMMITTEE OF HOUSE PHYSICIANS FOR THE STUDY OF MEDICAL CARE

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AUDITORIUM WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
SCOTT and EUCLID AVENUES

FEBRUARY 13, 1946
8:00 P. M.

QUESTIONS WELCOMED FROM THE FLOOR

PROGRAM COURTESY OF THE PETERS FAMILY

1938

Charles J. Petrillo

The Class of 1938 held its 60th reunion on June 5 and 6. Of the 48 students who matriculated in September 1934, 39 graduated in 1938. According to my records, eight are still living, and two were able to attend the reunion, **Ben Lyons** and **Charlie Petrillo.** At our 55th reunion, 15 were known to be alive. In the intervening five-year period, our class was reduced almost by half.

As usual the alumni office had arranged an excellent program of lectures, seminars, receptions, luncheons and tours. Congratulations and thanks to its staff.

No reunion activities had been planned for our class. The grand finale on Saturday night was the dinner at the Graduate Club hosted by the School of Medicine and the AYAM. Present were Ben and his wife Blanche, and Charlie with his daughter Terri Connolly.

Ben and I have attempted to contact those classmates who were not present. **Ed Roberge,** who has overcome several major medical problems, is presently doing well and keeps busy with gardening and numerous other garden and house chores. He regrets that he, and his wife, Genevieve, were not able to join us.

Lester Wallman reported that he is in good health, is on the admissions committee of the University of Vermont Medical School, gives an occasional anatomy lecture, and keeps an interest in medical history. He has a son who is a radiologist in California, two daughters and four grandchildren.

Ben is quite busy with many interests. He is one of six medical school delegates to the Association of Yale Alumni and in that capacity is in constant contact with the University and with the medical school. Ben also reports that he keeps his interest in the arts. He sings with a group of 25 retired people who give recitals at AARP and other senior gatherings. He has been a great help in tracking down our classmates. Many thanks Ben.

Charlie Petrillo, who married Mary Sullivan in 1995, likes to boast that between his and her families, he is now the proud grandfather of 23, and by the time this report appears in print, it could be 24. He is well and keeps busy with golf, gardening, bowling and entertaining grandchildren.

Jim Radcliff and his wife both have had open heart surgery and are unable to travel any distance. **Jack McGillicuddy** is in poor health and also unable to travel.

I hope to be able to give a more cheerful report next year.

1943
March

Dorothea Peck Dwyer and Lycurgus M. Davey

Ten members of the Class of 1943 March showed up and seven members brought their wives along. Transportation and escort services were provided in a timely and helpful fashion. In place of a class dinner for Friday night, we joined the other reunion classes for a superb clambake in the courtyard of the Harkness dormitory. Dean Kessler made every effort to meet and greet our returning alumni. On Saturday night we were included at the Friends of the 50th Dinner at the Graduate Club.

Highlighting our activities was the Friday afternoon seminar entitled *Our Second Life.* **Morris Wessel** started the conversation with a recital of his efforts both at the hospital and in the community to orient our medical students and house staff toward some of the more humanistic aspects of medical practice. **Bill Davey** then read, somewhat to Morris' embarrassment, the citation conferring an honorary degree of doctor of science to Morris from Connecticut College in May. Morris was also honored by the American Academy of Pediatrics with the C. Anderson Aldrich Award in Child Development. **Bill Davey** called attention to his own second career as a farmer, details of which were contained in a publication of the *Farm Credit Bank of Texas, Growing Grapefruit, Doctor-Turned-Farmer Pursues Childhood Dream.* **Dee Peck** spoke briefly about her limitations resulting from two lengthy hospitalizations in the past few months. She had been teaching Yale medical students basic principles of X-ray interpretation. **Lennie Kemler** said that he decided to give up his practice and has taken a position as medical director at Aetna Life Insurance. **Sophie Trent** has turned more seriously to her first love and obtained a master's degree in art from Central Connecticut State University. She is docent at the American Museum of Modern Art in New Britain, Conn. **Jerry Fountain** has turned to art as a form of expression and paints almost every day. He, too, is a museum docent but also has returned to his college major of languages.

Mark Sanford finally found the time to do creative woodworking, and **Hilly Spitz** is devoting his time to watching and helping his grandchildren in their athletic endeavors. **Hank Markley**, for the past few years, has been director of the home care department of Greenwich Hospital, an activity he started in 1956 on a part-time basis. **Stu Joslin**, after a successful career as a pediatrician, went back to school and has been a pediatric psychiatrist for the past 20 years. **Rocko Fasanella** has taken up the ideal golf game—no score and no rules. He has maintained interest in macular degeneration and blepharospasm. He reminded us of our teacher, Dr. Leon Stone, and his experiments of transplanting the eye of the salamander. He spoke of his concern about the long-term potential complications of refractive eye surgery. We were sorry to miss **John Brobeck** who had to cancel his trip at the last minute.

Hank Riedel felt that he wasn't up to making the transcontinental trip. **Bob Wyatt** has just moved to a new

condominium in Delray Beach, Fla. **Nick Stahl** has moved to Charlestown, R.I., where he is having some difficulty adjusting to medication to improve his eyesight, but is enjoying local staples such as lobster, fish and clams. **Bob Turner, Jess Goerner, Doug Lindsey** and **Phil Loge** wrote to say they were sorry not to be able to attend. **Edward Rabe** wrote to say that despite fractures of the hip and pelvis he was well enough to take a river trip in Central Europe with his wife, Emily.

After the Saturday seminar for John P. Peters, M.D., we assembled in front of the Sterling Hall of Medicine for our class photograph and then were off to the traditional Saturday luncheon on the Harkness lawn.

1943
December

Robert F. Bradley and Thomas L. Bucky

Five members of the Class of 1943 December attended the reception—**Hunter H. Comly** and Rita Iannaci; **Robert F. Bradley** and his son, David; **Donald W. Seldin** and Ellen Taylor; **Jane B. Cadbury**; **Thomas L. Bucky** and his wife, Doris. They report that the Friday evening clambake was lots of fun and the food was great.

1948

Paul B. Koehler

Beautiful, refreshingly cool weather on June 5 and 6 graced our 50th reunion. Those in attendance were: **George Batten** and wife, Barbara (Carmichael, Calif); **Edith Beck** (Greenwich, Conn.); **"Jock" Bishop** (Minneapolis, Minn.); **Al Bridge** and wife, Charline (Moreno Valley, Calif.); **Dick Buker**, and wife, Jean, and daughter, Candace Chang (Chester, Mont., and Boston); **Elizabeth Fuller Elsner** and husband, Bob (Ester, Ark. and Assonet, Mass.); **Al Fisk** and wife, Ruth (Sonoma, Calif.); **Tom Frei** and wife, Dori (Boston); **Julie Frieden** and son, Jeffrey (Larchmont, N.Y.); **Anne Godley St. Goar** and husband, Dr. Walter St. Goar (Brookline, Mass.); **Paul Goldstein** and wife, Betty (Branford, Conn.); **Paul Koehler** and wife, Margaret (Newbury, N.H.); **Bob Lempke** and wife, Mary (Indianapolis, Ind.); **Arden Miller** and wife, Helen (Chapel Hill, N.C.); **John Morrison** and wife, Gerry (Orange, Conn.); **Dave Morton** and wife, Kayo (Pueblo, Colo.); **Dick Peterson** (Stratford, Conn.); **Jane Rivers** (Columbus, Ga.); **Bud Rowland** and wife, Esther (New York, N.Y.); **Ben Rush Jr.** and wife Norah (Summit, N.J.); **Jerry Shapiro** and wife, Meredith (Boston); **Bill Sibley** (Tucson, Ariz.); and **Howie Simon** (Rye, N.Y.). Classmates were particularly grateful and appreciative that two members of the class, **Julie Frieden** and **John Morrison**, had made very special efforts to attend our 50th reunion.

Friday evening, our class dinner was held at the New Haven Lawn Club. For entertainment, each classmate, randomly selected, made an extemporaneous, two-minute talk on some humorous, sad or memorable event that had happened in their life following graduation from medical school, or during their four years of formal training at Yale. Most of those presentations were truly outstanding and entertaining.

Our Saturday morning was devoted to the symposium on John P. Peters, M.D. The reunion was climaxed by our final dinner at the Graduate Club, hosted by the Alumni Association and called the Friends of the 50th. A souvenir reunion booklet containing autobiographical sketches of 25 classmates, most with current, color photographs, was provided to each classmate. **Dick Hannah** and **Sylvia Preston Griffiths**, who could not attend, wrote interesting letters for this booklet.

In conclusion, the 50th reunion was informative and entertaining. **Anne Godley St. Goar**, class agent for many years and to whom we owe our sincere gratitude, will be succeeded by **Ben Rush Jr.** It was a memorable get-together, but we truly missed our 15 deceased classmates: **Russ Barrnett, Lee Brown, Art Coleman, Brad Colwell, Bob Downie, Vic Drill, Boy Frame, Al Green, Ray Johnson, Bob Lawson, Jim Leslie, Bob Maurer, Bernie Naab, Gerry Nowlis** and **Gabe Saviano.**

1953

Harold D. Bornstein Jr.

Our 45th reunion was almost identical in turnout to our 40th, and would have exceeded it except for a few last-minute cancellations due to illness.

PETER CASOLINO

Yale System thriving, says new deputy dean

Although it is alternately misunderstood, revered, tolerated and adored, the Yale System is alive and well, Robert H. Gifford, M.D., deputy dean for education, told alumni gathered in the Hope Building during reunion weekend. Dr. Gifford noted that "the wheel has simply come 'round again" and cited F.P. Underhill, who chaired the school's curriculum committee in 1922. "The student," Dr. Underhill complained at the time," has become the defenseless recipient of an overwhelming mass of facts."

Reaffirming the goals of Milton C. Winternitz, M.D., who served as dean of the medical school from 1920 to 1935, Dr. Gifford said, "Memorization of a 'mass of facts' was far less important than a well-rounded education in fundamental principles, training in methods of investigation and acquisition of the scientific habit of mind." Burdening the students with a heavy curriculum discourages independence and initiative and leaves little time for electives, independent thought or reading in the library, Dr. Gifford said.

Underlying the Yale System is the presumption that graduate students are mature individuals with a strong motivation to learn. As a result, attendance is not taken at lectures, small group teaching is emphasized and there are no grades or class rankings. Although examinations remain anonymous, a qualifying exam must be passed in every course and all students must write a thesis based on original research in order to graduate. According to Dr. Gifford, the school still adheres to these principles, but the number of lectures has gradually increased. And honor societies such as Alpha Omega Alpha, which recognizes only the top students in each class, have somewhat undermined the Yale System's traditional opposition to class rankings, he said.

PETER CASOLINO

Robert Gifford

The freedom accorded to students brings with it a responsibility that is at times ignored, Dr. Gifford said. He took students to task for what he described as a "cavalier" attitude towards small group seminars which depend on student to student interaction. Attendance, he said, tends to drop, particularly around the time of the second year show in February and national board examinations in the spring.

While most of the faculty support the system, he said, a minority "look at it with some derision as a way for students to slip by without academic rigor, to be self-indulgent, spoiled, entitled to do anything they want."

Dr. Gifford also took on the issue of payment of faculty who assume major teaching burdens. Most faculty, those who give lectures or moderate seminars, receive no remuneration, and that is appropriate. "But asking someone to be a course coordinator, to organize a new course, to chair a curriculum committee, to organize and run a new course is a very different matter," Dr. Gifford said, "and, in my judgment, should be accompanied by partial salary support." He proposed enlarging an educational fund so that those who shoulder unusual time commitments to teaching can receive a portion of their salary for their efforts.

Noting the curriculum requires attendance at too many lectures, Dr. Gifford called for more case-based conferences as an alternative.

What did the Yale System mean to you?

We're preparing an article for *Yale Medicine* on *The Yale System Through the Decades* and invite letters, thoughts and memories from alumni. In particular, we would like to explore which essential threads of Yale's approach to medical education have remained unchanged over the years, as well as the evolution of the tradition from generation to generation.

Letters should be brief, no more than 250 words, and touch on one major facet of the Yale System specific to the era in which the author experienced it as a student, faculty member or in some other capacity. Please send letters to Editor, Yale Medicine, P.O. Box 7612, New Haven, CT 06519-0612 [or via e-mail to ymm@yale.edu] and include a daytime phone number. A representative selection of essays will be published in a future issue.

PETER CASOLINO

Friday afternoon, we met for a spirited gabfest without a formal seminar. Friday's dinner, in what has become a tradition, was held at our home. There were 32 people in attendance: Manhattan's **Claude Bloch**; Maureen and **Hal Bornstein**, the hosts; Jeanne and **Remi Cadoret**, who always arrive from Iowa; Joan and **Al Chetrick**, now residing in Branford, Conn.; Phildelphian **Rex Conn; Lou Del Guercio** of Larchmont, N.Y.; Helen and **Don Etzwiler** from Minnesota; dependable Betty and **Tom Gentsch** from the mountains of North Carolina; Robin and **Bob Hamlisch** from Ithaca with their delightful son, Eliot; Barbara and **Dave Holman**, our travel champs from San Francisco; Carol and **Fred Lane** of New York City; Hyla and **Bob Melnick**, regulars also from Larchmont; New Jerseyites Betty Thompson and **Harvey Peck**; Joann and **Wick Potter**, who tooled down from Wellesley, Mass.; **Barbara** and **Irv Rosenberg** of Maine; Manhattanite **Ora Smith**; and Mary Lou and **Fred Young** from Lancaster, Pa. Maureen's dinner was superb, Hyla contributed delicious cookies, and conversation never ceased.

Our Saturday dinner was at the elegant Quinnipiack Club with cocktails and picture-taking in the library, followed by an excellent meal in the Board of Governors Room. Though the **Del Guercios** and the **Lanes** had to leave, we added Andrea and **Seth Abramson** from New York City and **Howie Smith** joined the rest of us. After dinner each attendee shared autobiographical comments with the assemblage. We had communications from **Claude Anderson, Bill Chaffee, Jack Doppman, Doe Dunn, Jack Durell, Irv Goldberg, Al Keroack, Dick Knowles** (who had planned to come), **Bob Nolan, Rhoda** and **Ed Powsner** (who also had hoped to attend), **Paul Quie, Jose Ramirez Rivera**, (normally a regular), **Matt Tandysh**, and **Bill Vandervort**. We look forward to an even larger gathering for our 50th in 2003.

1958

Michael Kashgarian

The 40th reunion of the Class of 1958 was an outstanding event. Some 26 members of our class attended, nearly 50 percent of those remaining from our class, which started out as 80 in the year we entered and was 72 in the year we graduated.

The reunion was a special one in many ways. The principal Saturday morning event was a symposium honoring John Punnett Peters. Our class was the last to have had contact with him as a teacher and it was fitting that the symposium was organized and moderated by **Jerry Burrow** and **Mike Kashgarian**. Jerry retired from the deanship last year and was the recipient of this year's Distinguished Alumni Service Award. After the morning formalities, the bridge Mafia of **Hartmann, Kislak, Muggia** and **Schlaepfer** retired to their ongoing series of bridge contests. Most of the rest of us boarded a bus loaded with box lunches and beverages and headed off to Mystic Marinelife Aquarium where aquarium trustee **Burrow** and staff took us behind the scenes of the operation and provided us with some close contact with bottlenose dolphins and beluga whales. The ability of these sea mammals to entertain us was such that we all felt they should be made honorary members of our class. Upon return to New Haven, we reassembled at the New Haven Lawn Club for our class dinner which was attended by **George Aghajanian, Don Amren, John Arnot, Gerard Burrow, John Creatura, Robert Donohue, Lawrence Dubin, Donald Duncan, Raymond Gaito, Ernest Hartmann, Michael Kashgarian, Jay Kislak, Marcia Kraft, Myron Lotz, Jack Love, William McClanahan, Andrew McGowan, Frank McKegney, Thomas Mauro, Richard Miller, Albert Muggia, Robert Neuwirth, Carol Phillips, William Schlaepfer, John Wood** and **Pauline Wood**. Also present in spirit but not in person were **Bill Radcliffe, Paul Rudnick** and **Ray Turner**, all of whom had written with good excuses for their absence.

The dinner ended with unveiling of the architectural plans of the Class of 1958 fitness center, which is part of the ongoing renovations of Harkness Dormitory, of which our class was among the first inhabitants.

1963

Jon Michael Fessel

The 35th reunion began where the 30th ended, with a discussion of the Yale System. Deputy Dean Robert Gifford, delivered an amusing and thoroughly reassuring discussion of the current health of the system. The Dean's recep-

At EPH reunion, a global perspective

Public health has become a global affair, John Ashton, M.D., told alumni of Epidemiology and Public Health who gathered for their annual reunion on June 5. Today's pressing issues—HIV and AIDS, drugs, food technology, genetic engineering—know no boundaries, said Dr. Ashton, the keynote speaker for the reunion. Although he is regional director of public health in Liverpool, England, Dr. Ashton said he felt like a "virtual alumnus" of Yale, because of his work over the past decade with Lowell Levin, M.P.H., '60, D.Ed., who retired this year.

Dr. Ashton made his reference to Dr. Levin during his talk, *Health Threats to Urban Life; Is It Too Late to Save Our Children?* "We need a public health response which is a global public health response," Dr. Ashton said, contrasting the present with the past. "The cities of 150 years ago could quite happily think of themselves as self-contained. We are now at the point where the majority of the world's people will be living in large cities and towns. Most babies are being born into large towns and cities for the first time." Increased speed of travel and the increased urbanization of the planet often divorce health issues from their local origins and deny public health workers local solutions, he said.

He noted a danger in the concentration in cities of large numbers of young men with no stake in their communities. "The events in Jakarta over the last two weeks are the tip of an iceberg which we have yet to see," he said, referring to riots in Indonesia in May. "Is it too late to save the cities? In many ways that is the wrong question. The fate of our cities is indivisible from the fate of the planet."

Many of those at the reunion had come to bid farewell to Dr. Levin, who started teaching public health at Yale in 1963 and plans to continue teaching part-time in his retirement.

"It's unfortunate that it takes Lowell threatening to leave that brings us all together," Dean Michael H. Merson, M.D., joked before turning reflective. "We would never want Lowell to leave us. He will be a major part of our school for many years, even though he claims to be retiring."

Friends and colleagues took turns telling tales about Dr. Levin at a Friday evening roast under a tent on the lawn in front of the EPH building. Dr. Merson described Dr. Levin's unorthodox approach to founding the school's international division. "There is no record of this division ever being created," the dean joked, noting that he can find no memos, no paperwork, nothing to trace the division's history. Mr. Levin simply created it, he said. "Lowell just took advantage of people being out of town and on sabbatical."

About 200 people came to the roast and reunion. "Maybe this time you've come to see if he's really going to do what he keeps threatening to do—say bye-bye to Yale," Joel Kavet, M.P.H. '67, master of ceremonies, told the

PETER CASOLINO

Public Health Dean Michael Merson, M.D., addresses alumni at a luncheon.

Lowell Levin receives a toast from colleagues and alumni to honor him at his retirement.

PETER CASOLINO

Samuel Korper, M.P.H. '69, was honored as this year's distinguished alumnus.

crowd. "We risk the prospect of turning Lowell Levin loose on an unsuspecting world."

Friday morning, alumni attended a series of seminars on a variety of public health issues, including HIV/AIDS, urban health, alcohol and asthma. In the afternoon, alumni panels described their experiences and discussed the relevance of programs to public health practice.

For many alumni, the reunion was more than a coming together of former classmates—many had crossed paths in their professional lives. "It's striking," said David A. Kessler, M.D., dean of the medical school, at a Friday afternoon luncheon for EPH alumni. "There are so many of you that I know and have grown up with."

Dr. Kessler singled out one alumnus who served as his mentor in Washington in the 1980s: Samuel P. Korper, MPH '69, Ph.D. '76, was honored as this year's distinguished alumnus. "I decided, on a volunteer basis," Dr. Kessler recalled, "to spend some time on the Hill. I walked in in 1981 and I knew nothing. I had no idea of how that town worked." Working as an unpaid aide to the Senate's labor and human resources committee, Dr. Kessler was assigned to reauthorize three programs. "I had no idea what to do. It was at that time I was fortunate enough to meet Sam." Dr. Kessler, of course, went on to become commissioner of the Food and Drug Administration. "I could not have been in a position to contribute and function in that town had I not been trained by Sam Korper. He has shown throughout his career such tremendous dedication to improving the health of our country."

Dr. Korper started his career as a Peace Corps volunteer in Nyasaland in central Africa. By the time he and Dr. Kessler met, Dr. Korper had been in Washington for about three years. Dr. Korper worked at the Department of Health and Human Services and the National Institutes of Health, where he was director of the division of legislative analysis. He now serves as senior advisor to the Substance Abuse and Mental Health Services Administration.

In his talk to alumni, Dr. Korper offered a mixed view of the state of public health in this country. Too few graduates are seeking long-term careers in the public health, he lamented. On the other hand, he added, "the opportunities in public health, in both the public and private sectors, from the molecular to the global, are truly breathtaking."

The ethos of public health, he noted, includes public service, usefulness and altruism. It is, he said, "a profession that has an incredible array of critically important responsibilities."

JOHN CURTIS

Karl Smith, M.P.H. '65, chats with Max Pepper, M.P.H. '59, during the reunion of public health alumni.

Surgical society meets during reunion

The Yale Surgical Society held its third annual spring alumni reunion in conjunction with the medical school reunions. The June 4 and 5 gathering included the second C. Elton Cahow Memorial Lecture given by Arnold Diethelm as part of the Grand Rounds schedule. All except emergency activities of the Department of Surgery were suspended on Friday, June 5, to permit attendings, house officers and medical students to participate in the day's events. These included papers honoring William Glenn, M.D., Charles Ohse Professor Emeritus of Surgery, and John Kirschner, M.D., past chairs of cardiothoracic and ear, nose and throat surgery respectively, and general papers and reports encompassing the entire department.

tion, which followed, gave us an opportunity to renew acquaintances with old faculty friends including Howard Levitin and Arthur Ebbert. After a Saturday of varied activities, we convened in the Captain's Room at Mory's for a collegial dinner and conversation. Attending the dinner were **Arthur** and Carol **Ackerman, David** and Cheryl **Cross, Michael** and Kathy **Fessel, David** and Carol **Fulmer, Alex** and Chris **Gaudio, Craig Llewellyn, Jay** and Farida **Pomerantz**, and **Helen Walsh**.

1968

Donald O. Lyman

Eight classmates gathered in New Haven for the 30th reunion of the Class of 1968. These included **Grace** and Larry **Boxer, Alan Finesilver, Richard** and Paula **Getnick, Peter** and Linda **Jokl, J. Allen** and Emily **McCutchan, Charles** and Bonnie **Post, Joseph** and Rosemary **Renda** and **Bruce** and **Lynn Wenger**. Sounds like things are pretty much status quo for most of us. **Peter Jokl** is now vice-chair of orthopaedic surgery at Yale, **Chuck Post** is a pilot flying here and there around the country, while **Bruce Wenger** and his wife still do body-heat related research for the Army in Massachusetts. **Frank Lucente** is now vice president of the American Academy of Otolaryngology—Head and Neck Surgery and vice dean for graduate medical education at SUNY Brooklyn in addition to his ongoing ENT responsibilities. Meanwhile on the West Coast, **Gordon** and Joanne **Sasaki** and **Donald** and Betsey **Lyman** joined the wedding celebration for **Harmon** and Edie **Michelson's** daughter Abby in Napa, Calif. We mourn the death of **Kevin Hennessey** of colon cancer.

1973

Thomas F. Sweeney

A small but enthusiastic group from the Class of 1973 gathered to celebrate our 25th reunion. The weekend began with a seafood feast held under a huge tent implanted in the Harkness lawn. The food was great, and renewing acquaintances was even better. Mary and **Victor Pappoe** were proud to announce that they have a daughter presently at the medical school. **Rick Boland,** and **Kip** and Maureen **Doran** all showed up looking younger than they did in 1973. They also showed us pictures of lots of beautiful daughters. **Chris Kull Walsh** dragged poor Shawn to yet another reunion.

Also up to their elbows in lobsters were **Lee Goldman**, Barbara and **Marvin Chassin, Lynne Liptay, Jane Ferguson**, and Sue and **Harold Mancusi-Ungaro**. It was great to have this time to chat after not seeing many for 25 years. Later we sipped champagne at the top of New Haven's new Omni Hotel. Harold suggested the bubbly and his taste has gotten more expensive since he became a plastic surgeon.

On Saturday people went off on various tours and seminars, all except for **Lee Goldman** who claimed he shot in the low 80s at the Yale Golf Course. Oh, and also **Joe Simeone**, who promised to come to the Saturday dinner if he could come to my two boys' baseball games that afternoon. He, along with my wife Anne and I cheered them both on successfully. Joe's Anne was left home preparing for their son's high school graduation on Sunday.

Karen and **Rob Sirota**, Sandy and **George Lister**, Rita and **Jim Sullivan, Carole Stashwick**, Laura, Eli and **Jerry Nagler, Rich** and Dotty **Young**, joined all of the above at the Graduate Club for our class reunion dinner. Dean Kessler stopped by and said hello. Many photos and lots of stories were exchanged. We partied to the wee hours and then the first 25 years were complete. Make your reservations early for the 30th.

1978

Seth M. Powsner

Managed care and missing classmates were roundly criticized during a select seminar Friday and Saturday, June 5 and

6. **Duke Cameron, John Wagner** and **Seth Powsner** presented themselves Friday evening outside Harkness Hall. There was much catching up and cholesterol. Saturday, John and Duke had to head home, but **Eric Einstein, Linda Hall, Marcia Wade**, and **Steve Schick** joined us for a dinner session at the Graduate Club on Elm Street across from New Haven's Green. For those of you who did not demonstrate a suitable mastery of the material, a make-up session is scheduled for June 2003.

1983

Judy Melin

One … singular sensation, Yale Medical Class of 1983 … Fifteen years later, and it still feels like just yesterday we were together for the first time in the Beaumont Room for our introduction to med school, to the Yale System and to each other. And then fast forward through the first anatomy lab, our first encounter with a patient, our unsurpassed second year show, boards part I, clerkships, subinternships, boards part II, our theses, our fourth year show and then goodbye for five, then 10, and now … 15 years!

Attending our 15th YSM reunion were **Elena Citkowitz**, M.D. (head of the cardiac rehabilitation and lipid programs and teaching attending at the Hospital of Saint Raphael, New Haven); **Rob Homer**, M.D. (pathology faculty, Yale); **Don Johns**, M.D., (neu-

Yale scientists offer glimpse of cutting edge research

"We are in the midst of one of the great revolutions in the history of medicine," Richard P. Lifton, M.D., Ph.D., told medical school alumni during the reunion weekend, referring to progress in charting the human genome.

Dr. Lifton, professor of medicine, genetics and molecular biophysics and biochemistry, was one of three faculty researchers who highlighted their work to alumni. Joining him were Carolyn Mazure, Ph.D., professor of psychiatry and director of the Donaghue Women's Health Investigator Program at Yale; and Eric J. Nestler, M.D., Ph.D., director of the molecular psychiatry program. Dr. Nestler studies genetic and biomedical links to addiction.

Dr. Lifton searches for genetic causes of diseases such as hypertension. Underlying the medical revolution he described are tools that include genetic maps of human chromosomes and the development of complete physical maps of the genome.

"With these tools we can begin to unravel the source of those diseases," Dr. Lifton said. "Ultimately it gives us some insight to develop new strategies to treat those disorders." He cited a family in which high blood pressure was identified in 23 members and was subsequently linked to a single gene, one of 10 genes he and members of his team have isolated that regulate blood pressure. After more than five years of exciting progress in this work, his lab is poised to apply the knowledge to more common forms of the disease affecting at least 50 million people in this country alone. "We can offer them specific treatment tailored to the genetic abnormality," Dr. Lifton said. "This has really accelerated the pace of biomedical research. We can apply those tools coming out of the Human Genome Project to the investigation of disorders such as hypertension."

Women, noted Dr. Mazure, live about six years longer than men on average but spend more time in the hospital. "We do need to know more about how to keep women healthy," she said. "We need more data for understanding and treating the disorders which women present."

Although federal regulations require the inclusion of women in federally-funded research projects, that was not always the case. "The assumption frequently was made that treatment and procedures which were developed for men also worked for women," said Dr. Mazure. "We now have a growing body of significant data to cause us to revisit those assumptions."

Dr. Nestler's laboratory, in a study of gene expression using transgenic mice, has found that turning on certain genes recreates biochemical and behavioral changes characteristic of addiction. Dr. Nestler is trying to understand lasting effects of addiction on the brain. Scientists believe these changes are regulated by gene expression in neurons in areas of the brain known as the mesolimbic dopamine system.

"We can examine an animal," said Dr. Nestler, "study molecular changes in specific brain regions, demonstrate that those changes are important for the behavior of addiction in our animal models, and then use that information to come up with ways to perturb that system in people." This information is critical to the understanding of relapse and recurring addictive behavior, and may very likely provide the basis for new treatments for addiction in the next five to 10 years.

Former dean recognized for alumni service


FRANK POOLE

Gerard N. Burrow, M.D. '58, the School of Medicine's 14th dean, received this year's Distinguished Alumni Service Award at reunion. "I am proud to acknowledge your many contributions to the medical school," said classmate Michael Kashgarian, M.D. '58, in presenting the award. "You have worked to preserve the Yale System of medical education in this chaotic period of change in the delivery of health care." The AYAM cited Dr. Burrow's service as dean from 1992 to 1997, his dedication as a mentor to students and his achievements as a biomedical investigator and authority on thyroid disease. Dr. Burrow now serves on the faculty and as a special advisor to Yale President Richard C. Levin. Dr. Kashgarian also noted that Dr. Burrow had a variety of interests outside of medicine, including, to the delight of the audience, the attainment of a black belt in judo. "You have demonstrated you are not a one-dimensional man," Dr. Kashgarian said.

rology faculty, Beth Israel Deaconess/ Harvard); **Lois Morton**, M.D. (psychiatry, Greenwich, Conn.) with husband Tony Alleva and son Christopher; **David Norton**, M.D. (pediatric practice and teaching, Baystate Medical Center, Massachusetts) with Claire Norton; **Dan Oren**, M.D. (psychiatry faculty, Yale); **Alan Reznik**, M.D. (orthopedics/sports medicine, Greater New Haven, and recent MBA, University of New Haven) with Liz Reznik; **Michael Tom**, M.D. (ear, nose and throat, Westchester County, N.Y.) with Linda Tom. And participating via remote (portable telephone, courtesy of Mory's) due to a spring flu was **Judy Melin**, M.D. (internal medicine, Lahey Clinic, and clinical faculty, Harvard Medical School).

Other classmates heard from, or at least about, recently (with hopefully recent location info) include **Peter Blier**, M.D., (pediatrics, Western Massachusetts); **April Chang-Miller**, M.D. (rheumatology, Mayo Clinic, Rochester); **Michael Choti**, M.D., (Johns Hopkins); **Tammy Harris**, M.D., (family practice, Southboro, Mass.); **David Helfgott**, M.D., (internal medicine, infectious diseases, New York City); **Elizabeth Nolan**, M.D., (software developer/ER game, writer); **Harlan Pinto**, M.D., (medical oncology faculty, Stanford); **Susan Seward**, M.D. (internal medicine, MGH, and faculty, Harvard Medical School); **Daniel Sosin**, M.D., (Centers for Disease Control, Atlanta); **Nancy Terrell**, M.D., (internal medicine clinical faculty, Columbia Presbyterian, New York City). You, too, may see your name in print if you write to Judith.A.Melin@Lahey.org. or Judy Melin, M.D., Medical Director, Managed Care, Lahey Clinic, Burlington, MA 01805.

We owe a special thanks to **David Helfgott**, M.D., co-reunion coordinator, William Jenkins, managing director of Office of Alumni Affairs, who oversees the entire event; Sharon McManus, who arranged all the details to make our reunion a success; and Claire Bessinger of *Yale Medicine*. Hope to see us all together at our 20th reunion in 2003!

1988

Michael Rigsby

Nearly 20 members of the Class of 1988 gathered in New Haven for our 10th reunion. For many of us, it was the first time we had seen each other since graduation, so there was a lot of catching up to do. Our class family is definitely growing. **Kathleen Carney-Godley** and **Lisa Murphy** both had children with them. (The dean offered Lisa's 10-year-old son a spot in the class of 2015.) Many others had stories and pictures of their youngsters. Finding ways to balance the demands of family and career seemed to be high on the minds of many like **Joi Barrett**, who shares a primary care practice with another medical mom in the Sacramento area.

Re-exploring old haunts in and around New Haven occupied much of the weekend for some out-of-towners. **Peter Merkel** and **Laura Dember**, both faculty members at Boston University, spent much of Saturday morning reacquainting themselves with Hope 110, where they attended the John Peters symposium. In case you didn't know, Laura and Peter are married and recently bought a home in Newton. **Nicole Davis** and **Alex Vukasin** are another married couple from within our class ranks. Nicole and Alex live and practice (gynecology and urology, respectively) in Princeton, N.J., and occasionally manage to operate together. Now there's a creative way of solving the problem of two-career families!

Many of our classmates have remained in the Northeast. **Lance Markbreiter** practices orthopedic surgery near the Jersey shore; **Rhonda Karol** has a solo dermatology practice on Long Island and **Robert Kim** has only gone as far as Fairfield County, Conn. **Martha Brochin**, **Leslie Jacobsen**, **Michael DiGiovanni** and I all remain in the New Haven area. Martha has a pediatric practice and two children of her own while the rest of us are all on the full time faculty at Yale.

We also heard some recent bulletins from class members who could not attend the reunion. **Sue Valley** wrote to say that she couldn't attend because of a family wedding, but that she still has her costume from the second year show and will wear it to our 15th. **Steven Dobscha** couldn't attend because he's busy moving himself and his family back to the West Coast (Oregon) after several years in Massachusetts. **Joi Barrett** brought pictures from a visit with **Peggy Liao** and **Terry Yee** at their home in Hawaii. Looks idyllic!

Also sighted at the clambake (which I could not attend) were **Steve Slovic** and his family. My apologies and best wishes to Steve and any others in town for the weekend whom I was not able to speak with for this report. Hope to see you all again at the next reunion.

Thanks to all who attended for helping to make this a memorable weekend.

1993

Michael Kaiser and Lisa Kotler

Five years after graduation, members of the Class of 1993 are seeking fellowships, completing their residencies or making the transition to attending physicians, obligations that kept many away from the reunion. Five members of the class met in New Haven for an off-campus reunion. **Michael Kaiser** is training in neurosurgery at Columbia-Presbyterian Medical Center in New York; **Dave Tendler** is at Beth Israel Hospital in Boston; **Stephen Solomon** is at Johns Hopkins; **Myles Greenberg** is an emergency room attending at Beth Israel; and **Ed Weaver** is a resident at Yale-New Haven Hospital. **Lisa Kotler**, a child psychiatry research fellow in eating disorders at Columbia-Presbyterian Medical Center in New York City, attended the reunion with her husband, Howard Shafer, who is an attorney. Also attending were **Stephen Marshalko**, a resident in internal medicine at Yale-New Haven Hospital, and his wife, **Lisa Amerino-Marshalko**, M.P.H. '91.

A _____
B _____
C _____
D _____
E _____
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Anesthesia Conference **C**
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Feb. 26-27
Friday-Saturday

Workshop on Positron Coincidence Imaging **D**
Course Directors: Chin Ng, Ph.D. and Holly Dey, M.D.
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March 6
Saturday

New Diagnostic Therapeutic and Assessment Approaches to Epilepsy in Children and Adults **E**
Course Director: Susan Spencer, M.D.
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March 12-13
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Autism **F**
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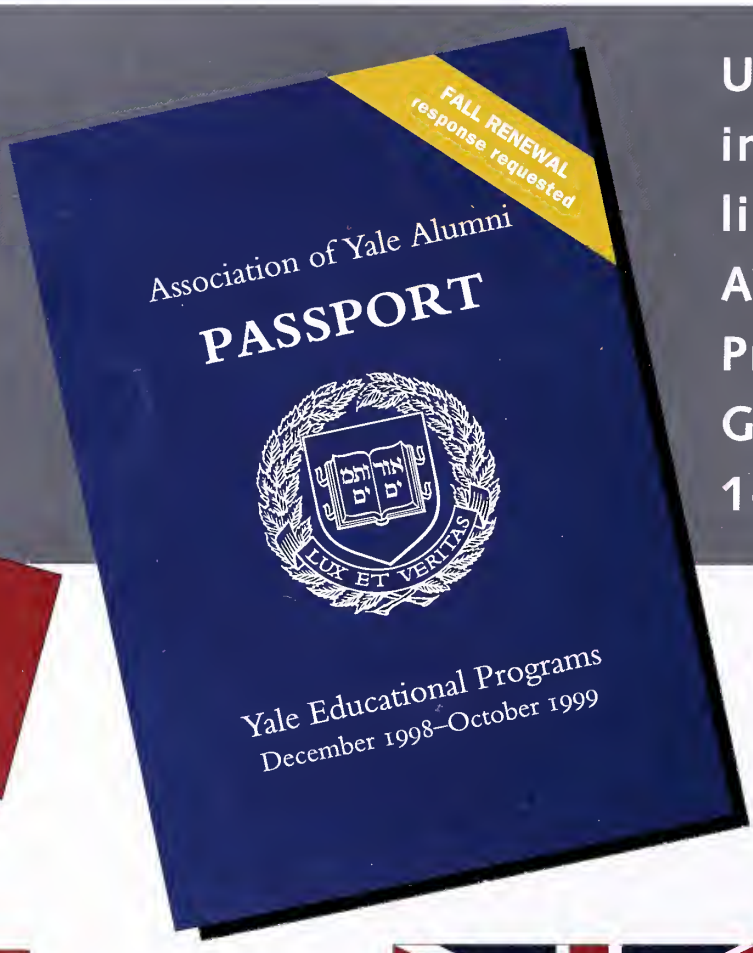

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