

2002

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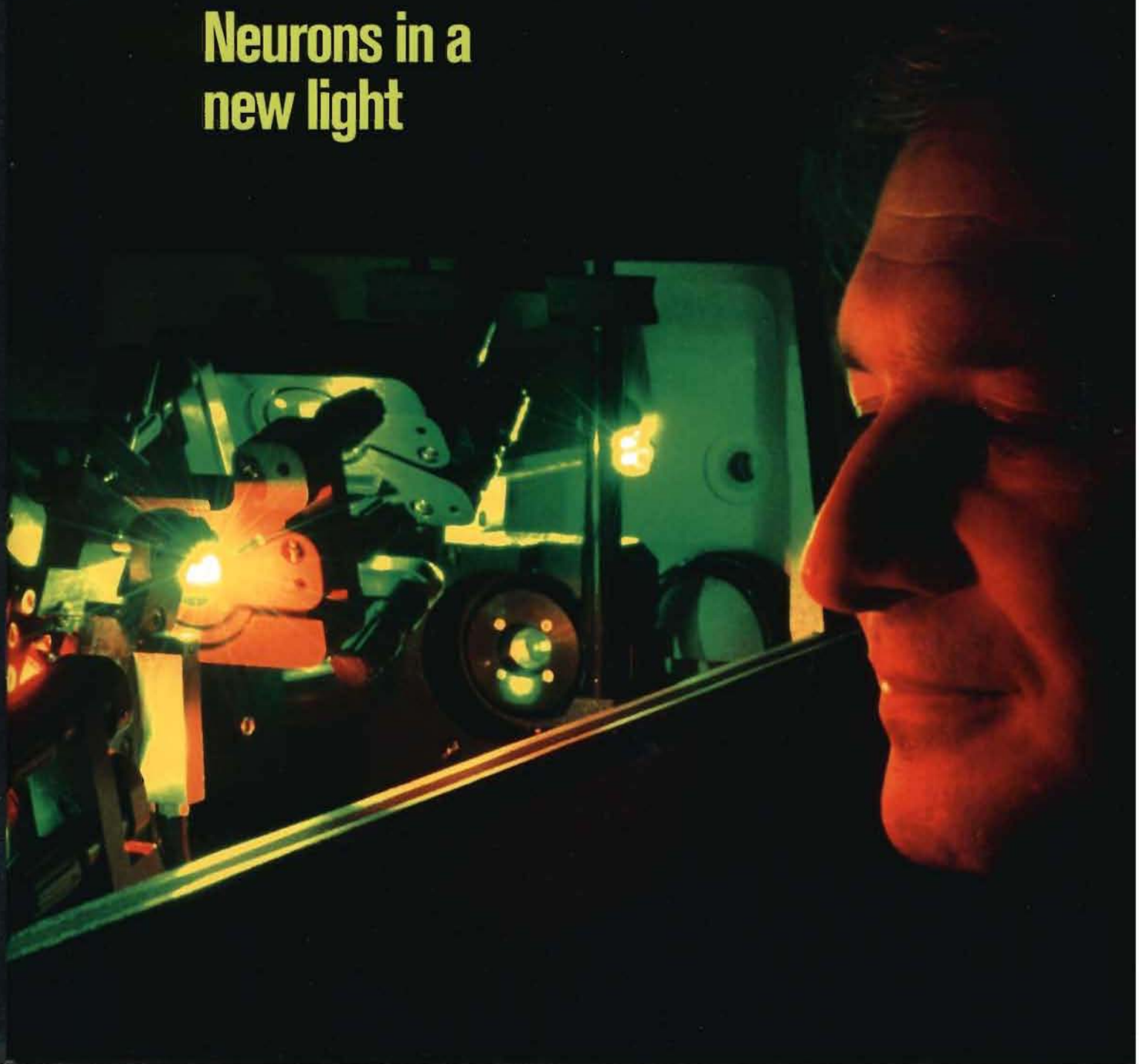
Outlook

SPRING 2002

 Washington
University in St. Louis
SCHOOL OF MEDICINE

CONVENIENT CARE
DOCTOR BUSINESS
CONTE CENTER

Neurons in a
new light





Outstanding employee Denise Rodgers, clinical research coordinator in the Department of Pediatrics, has been named the 2001 recipient of the Dean's Distinguished Service Award. Rodgers is the coordinator of the St. Louis site of the Childhood Asthma Management Program (CAMP), a National Institutes of Health-funded research project that follows lung growth and response to therapy in asthmatic children.



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Class Notes Update Yourself!

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Seeking Fixed Income?

See page 36

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Class Notes

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Outlook

Washington University School of Medicine
VOLUME XXXIX • NUMBER 1 • SPRING 2002

COVER The laser in a two-photon microscope illuminates the face of Jeff W. Lichtman, MD, PhD, professor of anatomy and neurobiology. Lichtman is among a consortium of researchers using innovative optical imaging techniques to conduct nervous system research. For more on this story, please turn to page 12.



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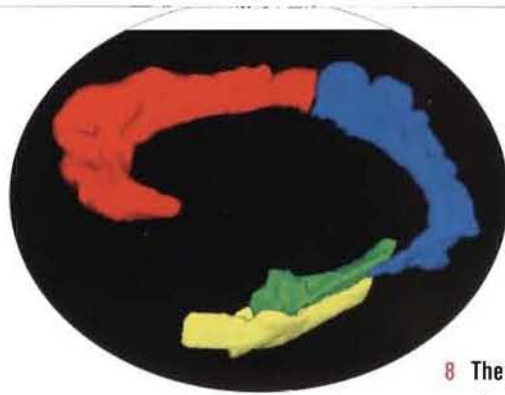
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Researchers at the new Silvio Conte Center study the brain's structure and function to better understand their roles in schizophrenia and other psychiatric disorders.

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New microscopic technologies and a collaborative approach aid researchers in their quest to unlock the secrets of neuronal development.

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Patients receive compassionate care in a comfortable, easily accessible outpatient setting at the new Center for Advanced Medicine. PHOTOS BY ROBERT BOSTON

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Today's physicians need business acumen as well as medical expertise to survive and thrive in the complex world of health care.

26 C. James Holliman, MD, and the world of emergency medicine



Clifford named head of Neurology

DAVID B. CLIFFORD, MD, has been named head of the Department of Neurology. He succeeds Dennis W. Choi, MD, PhD, who is now executive vice president of neurosciences at Merck Research Laboratories, but remains affiliated with the School of Medicine.

A search committee has been formed to select a permanent department head; Clifford will serve as department head throughout the search.

"As vice chairman of neurology, director of the residency training program and an active participant in faculty committees, David Clifford already has proven to be an effective and influential leader in the School of Medicine community," says William A. Peck, MD, executive vice chancellor for medical affairs and dean.

"He also is an exceptional clinician and researcher, and I am confident that the Department of Neurology will thrive under his direction."

Clifford also is a professor of neurology and the Melba and Forest Seay Professor of Clinical Neuropharmacology in Neurology. In addition, he has served as chief of neurology and president of the medical staff at St. Louis Regional Hospital.

Clifford's research has helped to advance the medical management of diseases such as epilepsy, multiple sclerosis and Parkinson's disease, and he now focuses on the neurological complications of HIV (human immunodeficiency virus) infection and AIDS.

To that end, he organized and now leads the Neurologic AIDS Research Consortium, a grant sponsored by the National Institutes of Health and designed to develop therapies to combat neurological complications of HIV infection. More than 20 centers across the country participate in the consortium.

Clifford also has begun developing outreach efforts to medical schools in Ethiopia, a country where AIDS threatens to disrupt both society and economics.

He is an active member of the American Federation for AIDS Research and has served on committees for many other prestigious societies.



David B. Clifford, MD



Occupational Therapy adds OTD degree

Kelly Chapman, right, develops a therapy plan for Carl Denzler, left. Chapman is one of the first doctoral students in the School of Medicine's Program in Occupational Therapy. The Doctor of Occupational Therapy degree, offered for the first time this year, provides training and experience for students who want to specialize in one of four areas: productive aging, pediatrics, social participation and the environment, or work and industry.

Pérez Fontán is Alumni Endowed Professor of Pediatrics

J. JULIO PÉREZ FONTÁN, MD, has been named the Alumni Endowed Professor of Pediatrics. The professorship, established in 1985, is supported by funding from School of Medicine alumni and former house staff.

"Julio is just the right person to be named to this position because of his commitment to scholarship, to education, to clinical care and to citizenship in this

medical center," says Alan L. Schwartz, PhD, MD, the Harriet B. Spoehrer Professor and head of the Department of Pediatrics.

In his research, Pérez Fontán studies the effect of denervation, or loss of nerves, on the function of airways in the lungs. His clinical responsibilities include directing pediatric intensive care services for St. Louis Children's Hospital.



J. Julio Pérez Fontán, MD

In that capacity, he oversees the pediatric intensive care unit as well as other inpatient areas involving cardiology, cardiothoracic surgery, and heart and lung transplantation services. He also directs the division of pediatric critical care medicine and serves concurrently as interim director of the division of pediatric cardiology.

New Rheumatic Disease Core Center funded; one of only seven in nation

A FIVE-YEAR, \$3 MILLION GRANT has been awarded to School of Medicine researchers to establish a Rheumatic Disease Core Center, one of only seven such centers in the nation.

The grant, from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, was awarded to Wayne M. Yokoyama, MD, the Sam J. Levin and Audrey Loew Levin Professor of Research in Arthritis, professor of pathology and immunology, and chief of the division of rheumatology in the Department of Medicine.

Twenty-nine faculty members in immunology, autoimmunity, inflammation, cell signaling, bone biology and virology research will be united in arthritis research.

The new core center will be an integral part of the recently established Center for Arthritis and Related Diseases and will build on a number of existing facilities to provide services to medical school faculty studying processes related to arthritis and autoimmune diseases. The core center also will foster the development of junior faculty by funding promising and innovative research.

RADIATION ONCOLOGY

Tumor size predicts survival in lung cancer patients given radiation

When people with lung cancer are treated with radiation therapy, the size of their tumor may be the best predictor of the treatment's success, rather than how far the tumor has spread within the lung.

This finding by School of Medicine researchers was published in the January 2002 issue of the *International Journal of Radiation Oncology, Biology and Physics*.

The study sought to identify the best predictor of therapeutic outcome for patients treated with three-dimensional conformal radiation therapy (3D-CRT). The therapy uses computers to visualize a tumor in three dimensions and then shape a radiation beam so that as little healthy tissue as possible is damaged during treatment.

Physicians typically try to gauge the likelihood of success of radiation therapy for lung cancer based on whether the cancer has spread to lymph nodes or other tissues, and they use this information to determine the tumor's stage.

"Cancer staging has been used to predict treatment outcome for patients with every kind of cancer and is useful for people undergoing surgery," says Jeffrey

D. Bradley, MD, associate radiation oncologist at Washington University's Mallinckrodt Institute of Radiology and the study's lead author. "But for a lung-cancer patient whose tumor isn't treated with surgery, the traditional staging system may not be the right approach."

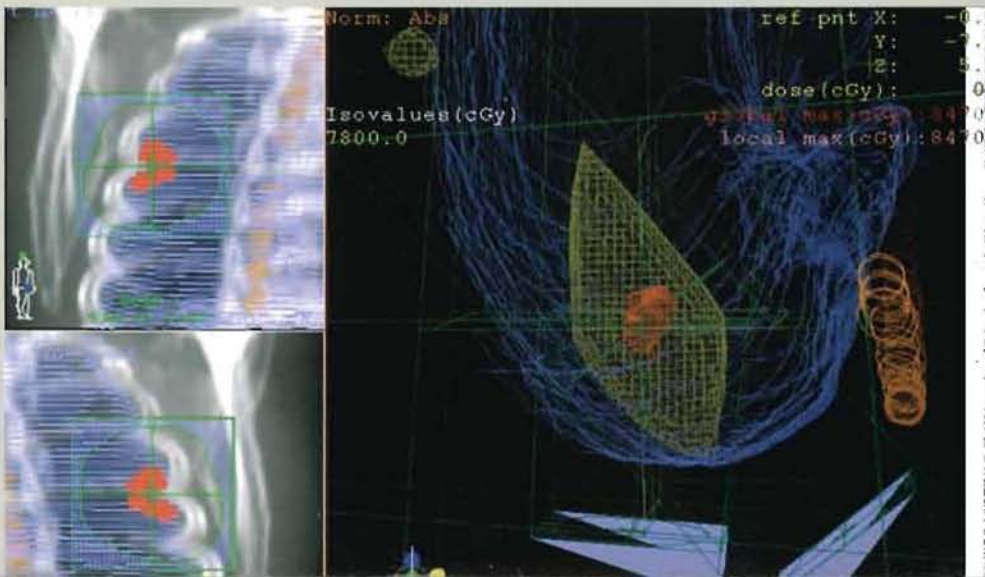
The study looked at data from 207 patients who were treated at Washington

University with 3D-CRT for inoperable non-small cell lung cancer. Researchers found that patients with small tumors—3 cubic centimeters or smaller—did much better than those with larger tumors.

Investigators identified a variety of factors thought important for predicting treatment outcome following radiation therapy. Their analysis included patient characteristics such as age, gender and race; tumor characteristics such as stage and type, and treatment parameters such as radiation dose or use of chemotherapy.

"When we analyzed the data," says Bradley, "characteristics such as age and tumor stage dropped out. The most important factor was gross tumor volume."

Left upper and lower: A lung cancer mass (red) within the chest. The green outline shows the area of the lung to be irradiated by a single beam. Right: A lung cancer mass (red) surrounded by a radiation dose cloud (yellow mesh) produced by three separate beams. The result is three-dimensional conformal radiation therapy.



Guze Symposium examines prevalence of college-age drinking

COLLEGE-AGE DRINKING was the focus of the 2002 Guze Symposium on Alcoholism, the second annual event dedicated to the memory of the late Samuel B. Guze, MD, a pioneer of the medical model of psychiatric illness and in the field of alcoholism research.

The Missouri Alcoholism Research Center (MARC) hosted the event, at which local and national experts discussed the prevalence of drinking on college campuses, challenges in its prevention and treatment, and short- and long-term outcomes for students who drink.

"We know that adults who develop alcohol problems tend to date the beginnings of those problems to their

high school and college years," says Andrew C. Heath, DPhil, director of the MARC and the Spencer T. Olin Professor of Psychology in Psychiatry. "That's why we are focusing on young drinkers and inviting experts from around the United States to share their expertise on those who might be at risk."

Created by a grant from the National Institute on Alcohol Abuse and Alcoholism at the National Institutes of Health, the MARC is one of 15 NIH-funded Alcoholism Research Centers. Among the centers, the MARC is unique in its focus on better understanding the causes of adolescent alcohol problems.

Caring for an aging population: Washington University establishes Center for Aging

To meet the needs of the increasing population of older Americans, Washington University in St. Louis has established a new, university-wide Center for Aging.

"The center's focus is on productive aging," says John C. Morris, MD, director of the Center for Aging and the Harvey A. and Dorismae Hacker Friedman Professor of Neurology. "Our goal is to enable older adults to remain engaged and live happier, healthier and longer lives."

The new center is made possible by a gift from Harvey A. and Dorismae Hacker Friedman. The Friedmans' past financial contributions, including an endowed professorship, and their more recent support of the research component of the Center for Aging, named in their honor, have facilitated the university's advancements in aging.

Representatives from each of the university's eight schools are involved in coordinating the center's efforts, and the project is financially supported by both the university and its schools.

According to the Centers for Disease Control and Prevention, the older adult population will more than double to 70 million by the year 2030, with one in every five Americans at the age of 65 or older.

The Center for Aging is organized around three main programs: research, education and service.

The Harvey A. and Dorismae Hacker Friedman Research Program will foster and support studies of aging, ranging from the molecular genetics of longevity to community initiatives that improve quality of life for older adults.

The center will award grants to university researchers from a wide range of disciplines for pilot studies on aging that can lead to larger grants from national agencies. It also will support aging-related programs already underway in the St. Louis community and will serve as a link between the university and these community organizations, fostering reciprocal opportunities.

The education program of the Center for Aging will facilitate learning opportunities for older adults and educate younger individuals about aging. One of the more visible service initiatives is the annual Friedman Lecture on Aging. The second annual Friedman lecture will be held on the Hilltop campus on April 9, 2002, and will feature John W. Rowe, MD, co-author of *Successful Aging*.



Consuelo H. Wilkins, MD, right, assistant professor of medicine, examines Robert Cole III as part of the Memory and Aging Project. Studies such as her research on osteoporosis in relation to aging and Alzheimer's disease will be encouraged through the new Center for Aging.

Leaders in medical education recognized with annual Goldstein awards

THREE OUTSTANDING EDUCATORS have received the 2001 Samuel R. Goldstein Leadership Award in Medical Student Education. The honorees are Glenn C. Conroy, PhD, professor of anatomy and neurobiology and of anthropology; Erika C. Crouch, MD, PhD, professor of pathology and immunology, and Alan L. Pearlman, MD, professor of neurology and of cell biology and physiology.

"When it comes to educating medical students, Drs. Conroy, Crouch and Pearlman represent the best of the best," says William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. "The Samuel R. Goldstein Leadership Award provides public acknowledgement of their very important contributions to training the next generation of physicians and scientists."

Conroy has been honored with teaching awards every year for the past 12 years. As coursemaster for Human Anatomy and Development, he guides students

through this medical school rite of passage in a powerful and positive way.

Crouch also has a decade of teaching awards to her name. As course master of second-year Pathology for the past four years, she integrates the latest technologies into a cohesive, year-long learning experience.

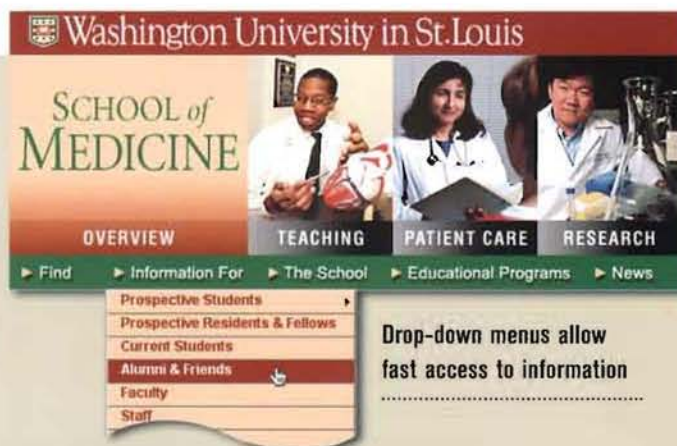
Pearlman's teaching abilities have been recognized

with an unbroken string of awards since 1987. He is a respected champion of curriculum integration, having successfully merged the nervous system material from two separate courses into second-year Diseases of the Nervous System, which he leads as coursemaster.

The Goldstein award, now in its second year, was established in memory of Samuel R. Goldstein, a long-time friend of the medical school. The award recognizes faculty members who have made outstanding contributions to medical student education. Recipients were selected by a committee of their peers after being nominated by faculty members or medical students.

"When it comes to educating medical students, Drs. Conroy, Crouch and Pearlman represent the best of the best."

WILLIAM A. PECK, MD



Come surf with us!

The revamped School of Medicine website is on-line and ready for visitors. The site's new look is the result of a collaborative effort among faculty and staff to determine the best way to present the school to web users. It features links to teaching, patient care and research, as well as a simple, easy-to-use menu that allows users quick access to the wealth of available information. medicine.wustl.edu

Medical students garner kudos

MORE THAN 30 STUDENTS were honored recently at the 2001 Student Awards Luncheon. Each year, students receive awards and prizes that reflect not only academic prowess but also the breadth of their experience and participation in both the medical school and local communities.

"We're very proud of the achievements of all our students," says Leslie E. Kahl, MD, associate dean for student affairs. "These special awards give us an opportunity to highlight specific academic and extracurricular accomplishments."

The Ruth Bebermeyer Award, new in 2001, honors her years of service to alumni and students and will go to students who exemplify extraordinary kindness and sensitivity to the needs of others. The 2001 recipient was fourth-year student John A. Martini.

Other awards included the Southern Medical Association Student Scholarship, bestowed on third-year student Christopher T. Arett, and the Dr. Helen E. Nash Academic Achievement Award, which went to fourth-year student Kabuiya R. Kimani.



Ruth Bebermeyer and John A. Martini

Carrying the fire within

Fourth-year medical student Clint Walker was a proud bearer of the 2002 Olympic torch as it passed through St. Louis on January 8. Fellow medical students Roberto Miki, Aimee Liou and Ragn Tadikamalla, left to right, were on hand to cheer him on. Walker, a regular runner, was selected for the honor after his parents nominated him through the Coca-Cola™ web site.



TIM HADNER

Gordon named first Glaser Distinguished University Professor

THE HONOR OF BEING THE FIRST to hold the newly established Dr. Robert J. Glaser Distinguished University Professorship has gone to Jeffrey I. Gordon, MD, head of the Department of Molecular Biology and Pharmacology, professor of medicine, and director of the university's Division of Biology and Biomedical Sciences.

The professorship is the 100th new endowed chair since the 1998 inception of the university's current \$1.3 billion capital campaign. Distinguished university professorships, a special distinction, are by tradition awarded to persons whose interests and activities enrich the academic community on a university-wide basis.

Chancellor Mark S. Wrighton announced the new professorship, which was made possible through a major gift commitment from Glaser and his children. Glaser,

a nationally recognized leader in medical education and biomedical philanthropy, is an emeritus trustee and former faculty member of the university.

"With this endowed professorship, Dr. Glaser's impact on the university, truly his legacy, assumes a new and enduring form," says Wrighton. "We are grateful for his signal contributions to the future of biomedical research and education here."

Among their numerous contributions to Washington University, Glaser and his late wife, Helen Hofsommer

Glaser, MD, a 1947 graduate of the School of Medicine, underwrote the gallery at the entrance of the History of Medicine Library in the Bernard Becker Medical Library, and they endowed a program of visiting professorships in the Department of Medicine. The Helen H. Glaser

Scholarship for Women Medical Students was established in her memory by Robert Glaser in 1999.



Jeffrey I. Gordon, MD

"It is particularly gratifying that Chancellor Wrighton has selected an esteemed member of the medical school faculty to be the first Robert J. Glaser professor," says William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. "Jeff Gordon, much like Dr. Glaser, has wide-ranging academic interests and accomplishments, coupled with great leadership abilities. He has distinguished himself as a member of the university community as well as the greater national community of biomedical and educational scholars."

Gordon joined the faculty in 1981. He is known for his research on gastrointestinal development and how intestinal bacteria affect intestinal function. Over the past 20 years, he has been a mentor to more than 30 PhD and MD/PhD students and an equal number of postdoctoral fellows.

"With this endowed professorship, Dr. Glaser's impact on the university... assumes a new and enduring form."

CHANCELLOR
MARK S. WRIGHTON

Deep brain stimulation offers relief from symptoms of Parkinson's disease

People with Parkinson's disease now have another option for alleviating the disorder's debilitating symptoms.

Neurological surgeons here are using a new method of deep brain stimulation—a procedure that delivers continuous, high-frequency electrical impulses to the brain—to disrupt the signals that cause some of Parkinson's most aggravating symptoms, including tremor, slowness of movement, stiffness and difficulty walking.

Previously used in the brain's thalamus to control tremor, the new bilateral usage of deep brain stimulation targets the subthalamic nucleus, one of the regions of the brain that controls movement and that is overly active in persons with Parkinson's disease. The new procedure, approved by the Food and Drug Administration (FDA) early this year, has proved successful in relieving not only tremor, but also the other symptoms of the disorder.



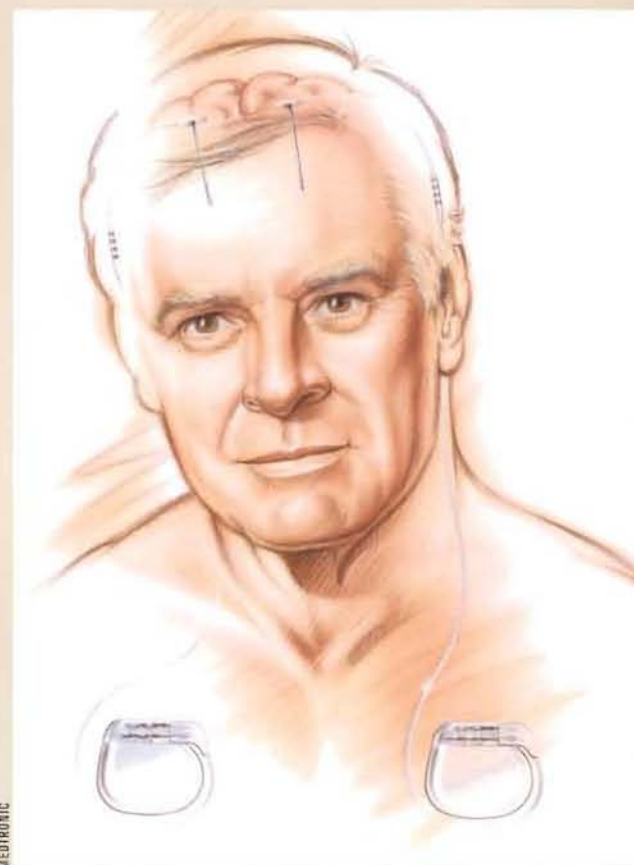
Bilateral deep brain stimulation delivers mild electrical current to precisely targeted areas on each side of the brain, relieving the disabling motor symptoms of Parkinson's disease. Neurostimulators, like the one pictured above, are implanted near the collarbone and generate electric signals that are delivered to the brain via thin, coiled wires with electrodes attached at their tips.

"This may be one of the best treatment options for selected patients with advanced Parkinson's disease," says Fredy J. Revilla, MD, a neurologist at the university's Movement Disorder Center. He notes that those patients who have undergone the procedure have shown dramatic improvement, but cautions that not all patients are good candidates for the surgery.

Joshua L. Dowling, MD, assistant professor of neurological surgery, and Keith M. Rich, MD, associate professor of neurological surgery, already have implanted the device in about 100 patients at Barnes-Jewish Hospital who have Parkinson's and other forms of tremor. Their hope is that this new surgical option will become more accessible to patients and that insurance companies will more readily pay for the procedure now that it has gained FDA approval.

"We've had remarkable success using this procedure in Parkinson's patients," says Dowling. "Many return to a relatively normal, active life, usually with a significant reduction in their medication."

Drugs help to "unfreeze" the muscular system, but often cause frequent, exaggerated, involuntary movements, limiting their functional benefit. Deep brain stimulation of the subthalamic nucleus provides good symptomatic relief with much lower doses of medication, reducing the side effects.



MEDTRONIC

Deep brain stimulation of the subthalamic nucleus provides good symptomatic relief with much lower doses of medication, reducing the side effects.

The device can be turned on and off or removed if necessary, and stimulation levels are adjusted according to individual needs.

In addition to its clinical uses, the deep brain stimulator provides a unique way to study the underlying cause and manifestation of Parkinson's disease. Researchers at the School of Medicine are combining imaging techniques with deep brain stimulation to find out more about the disease.

WHAT'S INSIDE SCHIZOPHRENIA?

One in one hundred young minds may develop schizophrenia.

That one brain is subtly different from all the rest— and knowing the difference could forestall a lifetime of psychosis.

BY JIM DRYDEN

Imagine you have just been diagnosed with schizophrenia.

If you're a typical patient, you are a 19- or 20-year-old man or a 21- to 22-year-old woman, and you've probably had active psychotic symptoms for about a year and a half. Maybe it was an individual voice or a peculiar thought at first. But that single, isolated symptom grew. The voices became louder and more numerous, the delusions more elaborate. Soon, you found yourself in the emergency room or clinic, and the diagnosis of schizophrenia was made.

For most patients, that's when treatment begins. John G. Csernansky, MD, would like it to start sooner. He'd like to find a way to prevent that first episode.

"As valuable as it is to understand how to prevent subsequent episodes, the key to really changing outcomes is to begin treatment before the first episode occurs," he says. "We need to find a way to predict who is going to become psychotic and treat them before they do."

Just less than one percent of the general population suffers from schizophrenia. After that first event and diagnosis, chances are that patients will relapse—especially if they stop taking medicine.

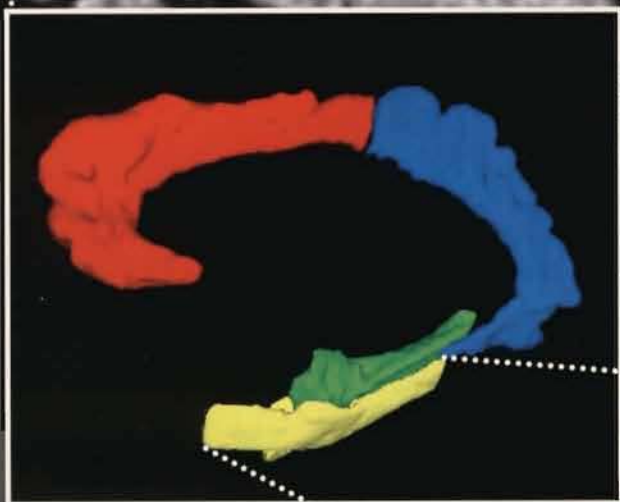
"Generally a second psychotic episode lasts longer and is more severe," Csernansky says. "It also can be more difficult to treat."

And each relapse tends to get a bit worse.

Somewhere between 10 and 15 percent of patients have frequent relapses. Often, they end their lives in institutions suffering with chronic psychosis. Even the best possible outcome—no future relapses or psychosis—still requires patients to take antipsychotic medications for the rest of their lives. After the initial event, something has happened in their brains that cannot be undone.

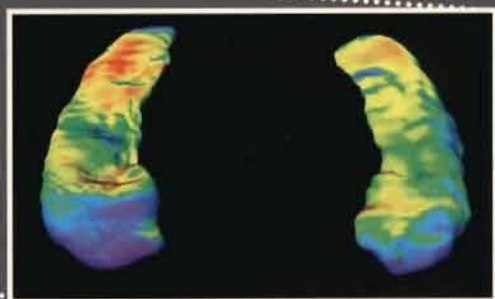
Csernansky, the Gregory B. Couch Professor of Psychiatry and associate professor of anatomy and neurobiology, spent the last half of the "Decade of the Brain" looking for ways to identify anatomical differences in the brains of patients with schizophrenia. Now, thanks to a grant named for the man who sponsored the congressional resolution that designated the 1990s as the "Decade of the Brain," he'll get a chance to expand that work.

Last fall, the National Institute of Mental Health awarded a three-year, \$2 million grant to launch a Silvio Conte Center at Washington University. Csernansky, the new center's director, will oversee several major projects that are attempting to locate and identify differences in the brains of patients with schizophrenia and similar psychiatric disorders.



SPOTTING SCHIZOPHRENIA

Three-dimensional images of the brain's limbic system (left) hold subtle clues that could predict schizophrenia. Comparing schizophrenic brains with control subjects, mapping software analyzes the dual hippocampus (below): Changes in the blue regions may signal the onset of psychosis.



MAPPING THE BRAIN

This pursuit began in 1995 as a collaboration between Csernansky's group in the School of Medicine's Department of Psychiatry and Michael I. Miller, PhD, who was then in the Department of Electrical Engineering on the university's Hilltop campus.

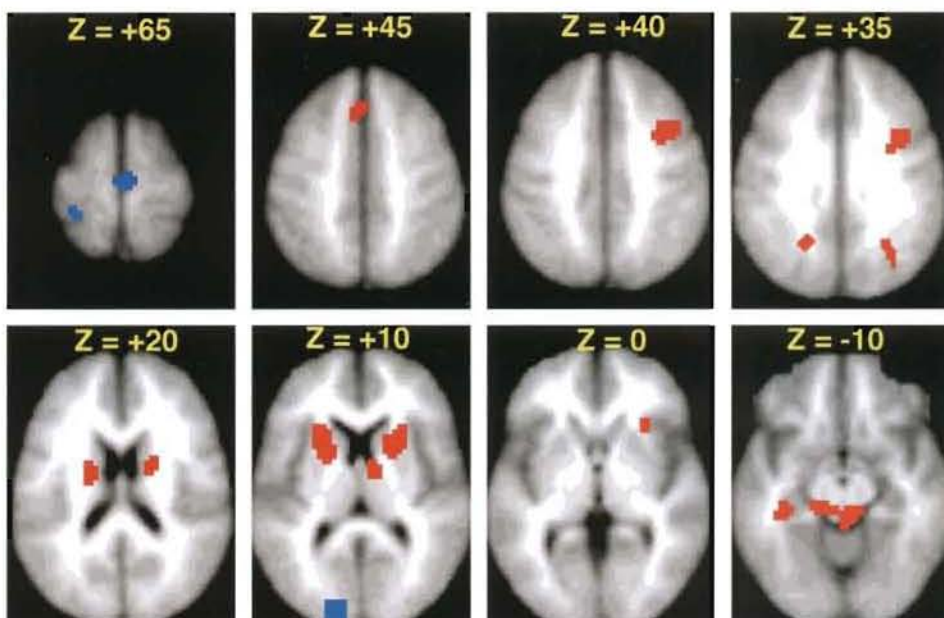
Miller now is a professor of biomedical and electrical engineering in the Whiting School of Engineering at The Johns Hopkins University in Baltimore. There he develops algorithmic metrics in the emerging field he terms "computational anatomy" that allow him to capture and measure the shapes and sizes of biological and anatomical structures.

In the context of the Conte Center brain mapping project, Miller develops computer algorithms that take brain scans and convert those two-dimensional images into three-dimensional models. Called high dimensional brain mapping (HDBM), the technique allows scientists to spot differences that might contribute to problems.

"You might compare the technique to tracing a pile of pictures of faces," Miller says. "If the pictures were stacked one on top of another so that all of the facial features lined up, we could trace a 'standard' face and then compare individual variations to that standard template. Our algorithms do the same kind of thing with the brain."

When the HDBM computer programs have worked their magic, it's possible for researchers to spot tiny differences in the size and shape of brain structures. Csernansky compares it to looking at a damaged car.

"In the past, the limitations in our imaging technology made it



Control subjects show cognitively related brain activation in the red areas; individuals with schizophrenia do not. Conversely, schizophrenic individuals show greater brain activity in the blue areas, compared to controls.

necessary for the car to be missing a door or an entire fender before we could spot a difference," he explains. "What Mike Miller's group has given us is the ability to see scratches in the paint or hail damage, things that were undetectable before."

The idea that there may be anatomical differences in the brains of people with schizophrenia is not a new one. Since the 1970s, some neuroscientists have argued that such changes might contribute to schizophrenia and other mental illnesses, but the complexity of brain mapping and the amount of variation between individuals made it nearly impossible to prove.

Until now.

Using Miller's computer algorithms, Csernansky has identified small but distinct deformities in shape in the hippocampus and other brain structures, even in newly diagnosed patients. As research progresses at the new Silvio Conte Center, the investigators hope to identify other differences between the brains of patients with schizophrenia and those who don't have the disease.

IDENTIFYING RISK

Working with C. Robert Cloninger, MD, the Wallace Renard Professor of Psychiatry and professor of genetics at the School of Medicine, Csernansky will conduct imaging studies of patients just diagnosed with schizophrenia, their younger siblings, and age-matched controls.

Taking advantage of Cloninger's expertise in genetic influences on psychiatric illness, the project will use detailed family histories to determine whether siblings of some patients might have a genetic risk of developing schizophrenia. In theory, those at risk might have the same anatomical differences as their affected siblings. By making brain scans, the researchers hope to find anatomical markers related to risk.

If people who don't have schizophrenia have similar brain anatomy to their siblings who do, they may be at risk. The presence of some abnormal anatomy in siblings may help determine whether some structural changes are a coincidence or whether they actually contribute to the development of schizophrenia.

Cloninger and Csernansky will focus on a particular group of brain structures—those of the temporal lobe and the frontal lobe and the pieces that connect them. In particular, they will look for abnormalities in the thalamus, a part of the brain important to the exchange of information between the two lobes.

While Csernansky's team seeks anatomical abnormalities, a second project will look for functional differences. Using functional magnetic resonance imaging (fMRI) scans, a team led by Deanna M. Barch, PhD, assistant professor of psychology, and Randy L. Buckner, PhD, associate professor of psychology in Arts and Sciences, will ask subjects to perform a variety of tasks while in a scanner to learn whether patients with schizophrenia use their brains in different ways than healthy subjects.

John G. Csernansky, MD, right, discusses results with Lei Wang, PhD, research associate in psychiatry, and Deanna M. Barch, PhD. Imaging systems and sophisticated mapping software help reveal the characteristics of the schizophrenic brain.

The fMRI scans reveal changes in brain activity. Barch and Buckner hope to learn how different types of memory are affected by schizophrenia and how the brains of patients with the disease function differently—especially in areas such as the prefrontal cortex, the hippocampus, the anterior cingulate and the thalamus.

“We expect these tasks will demonstrate that schizophrenia is associated with specific changes in how well people perform both working and episodic, or long-term, memory tasks,” Barch says. “In both areas, we expect individuals with schizophrenia will not do as well as healthy controls. We also would predict reduced functional activation—or at least altered activity—in the brain structures that we’ll be looking at. We hope to learn whether the unaffected siblings also have reduced behavioral performance and altered activity in these brain regions.”

If some siblings don't do as well on the tests, or if their brains function in similar ways to their siblings who have schizophrenia, it could mean that they also are at risk for developing schizophrenia.

TESTING AN ANIMAL MODEL

A third Conte Center project will attempt to verify the results of the structural and functional imaging studies using animal models.

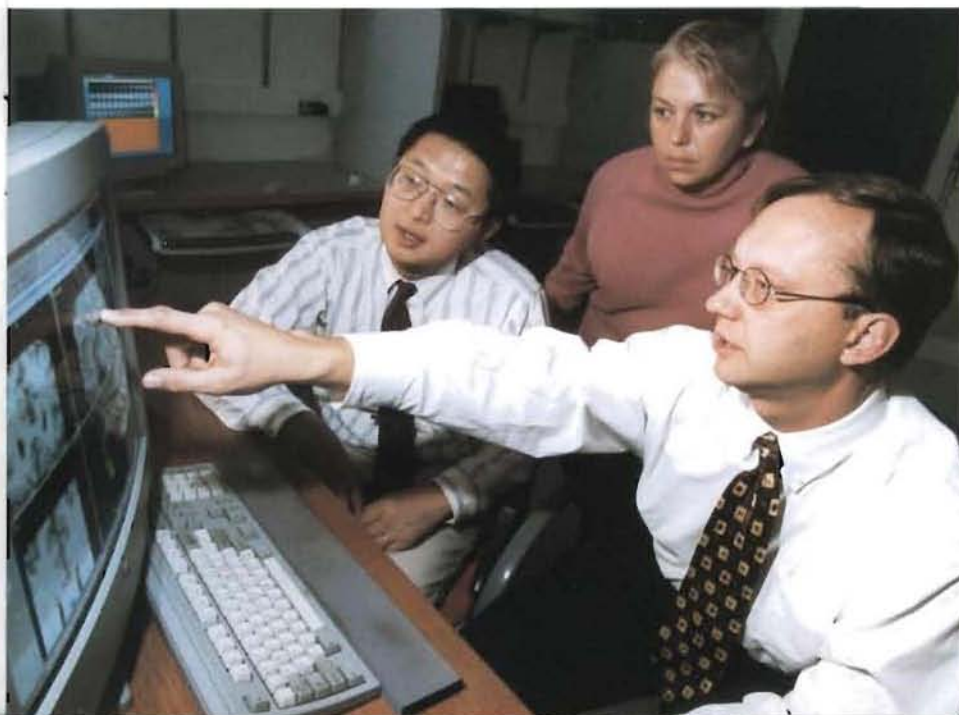
Researchers at Yale University have developed a model of schizophrenia by exposing pregnant animals to X rays during the time at which brain cells in the thalamus are formed.

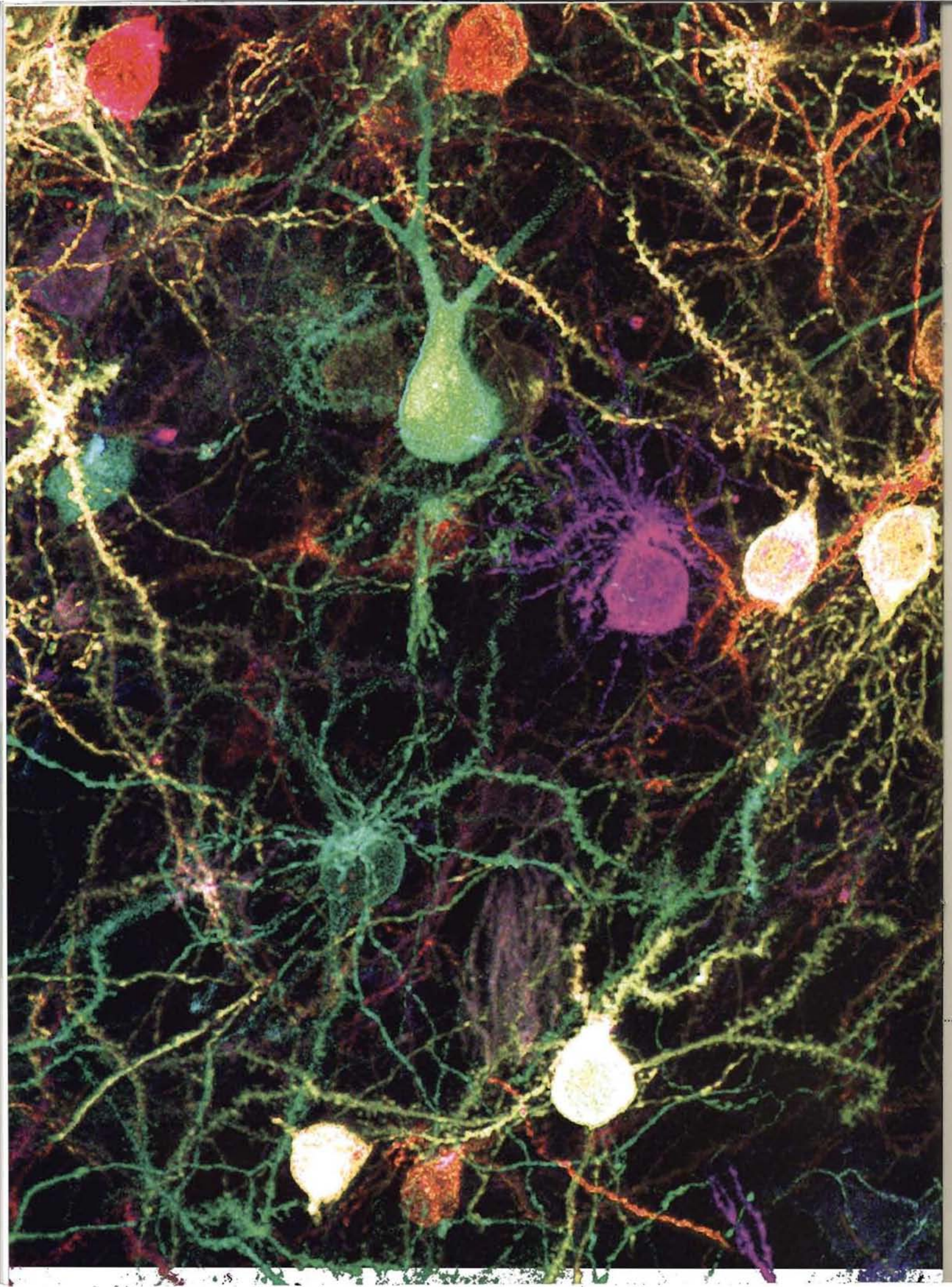
Because they know the animals have damage in the thalamus, the researchers will be able to compare the animal scans to human scans of the thalamus to determine if similar anatomical abnormalities exist.


Although it's impossible to determine whether an animal hears voices or hallucinates as it matures, animals exposed to X rays *in utero* do develop cognitive difficulties.

“They exhibit an adult-onset deficit in the ability to perform a spatial memory task that is generally thought to reflect function in the prefrontal cortex,” says Lynn D. Selemon, PhD, associate research scientist in neurobiology at Yale School of Medicine. “This is interesting to us because the onset of behavioral changes and cognitive decline in schizophrenia generally occurs in late adolescence or early adulthood. When they were younger, these animals performed this task as well as normal infants, but as adults, those who were exposed to radiation don't do as well.”

As time goes on, Csernansky hopes to add more projects, but at present, he hopes the new Conte Center can determine whether structural and functional brain changes can predict risk of schizophrenia and, if so, whether it will be possible to intervene. □







SECRETS OF NEURAL NETWORKING REVEALED

Individual neurons
stand out from the
nervous system crowd
with new imaging
techniques

BY GILA Z. RECESS

A cell-labeling technique called DiOlistics—invented by postdoctoral fellows Wen-Biao Gan, PhD, and Jaime Grutzendler, PhD, and faculty members Rachel O.L. Wong, PhD, and Jeff W. Lichtman, MD, PhD—distinguishes individual cells in the brain using seven different colors.

LIKE A COMMUTER NAVIGATING RUSH HOUR TRAFFIC, each nerve cell, called a neuron, must find its correct destination in the chaos of the developing brain. But unlike the commuter, each neuron also projects branches to multiple sites. The neuron faces the added challenge of deciding which connections to maintain and which to eliminate.

“What’s fascinating about the nervous system is that not only are there such a vast number of connections, but somehow they all figure out the correct patterns of connectivity,” says Joshua R. Sanes, PhD, the Alumni Endowed Professor of Neurobiology.

He is one in a consortium of four highly collegial anatomy and neurobiology researchers who have been trying to uncover how cells know where to latch onto other cells and when to detach—a challenge recently made easier by the burgeoning field of optical imaging.

With billions of neurons, each projecting a multitude of spindly “arms,” it is difficult to pick out a single neuron from the crowd, particularly within the complicated context of an intact brain.

But new techniques in optical imaging and molecular biology allow researchers to color and illuminate individual cells and, for the first time, watch interactions between neurons in their natural context, a living animal.

“The big revolution in cellular and molecular biology is the ability to label living cells,” says professor Jeff W. Lichtman, MD, PhD. “This is the birth of a new field which, in my view, will improve the quality of virtually all biology-related pursuits from physiology to chemistry.”

The School of Medicine team has developed and successfully launched these new tools in the laboratory. Now they are taking them one step further: In addition to watching neurons, researchers are using optical imaging and its results to manipulate cellular activity and isolate the genes responsible for each stage of the connectivity process.

And, if none of the existing techniques can answer a particular research question, they invent a new one.

In the same way that ultrasonics uses sound, optical imaging employs light as a means of capturing an image.

In the late 1990s, biologists discovered that the protein that makes certain jellyfish luminescent also could be used to generate fluorescent cells in other species. Soon, four variations had been developed, each one emitting a different color—green, red, yellow and cyan (greenish-blue)—when excited by light.

By shining a light on a living transgenic mouse engineered to contain the genes that encode these jellyfish fluorescent proteins (FPs), researchers can watch cellular activity over time through a microscope.

Peering inside living animals requires new kinds of imaging devices. Fortunately, two promising tools—confocal and two-photon laser microscopes—had just been developed when researchers began to experiment with FPs in mammals. These sophisticated optical microscopes enable researchers to capture three-dimensional images of biological structures deep within an animal, without damaging the tissues of interest.

Such techniques are particularly valuable to neuroscientists, who have the daunting task of understanding what is arguably the most intricate, complex and sensitive organ in the body—the brain.

“Neurobiology has been the frontier for the development of many new techniques,” says Lichtman. “Because we still know so little about the workings of the nervous system and it is so difficult to study, we are pushed to try new methods in the hope of getting a better glimpse of this enigmatic system.”



A collaborative team in developing new means to probe the mysteries of neural connectivity: Joshua R. Sanes, PhD; Rachel O.L. Wong, PhD; Ann Marie Craig, PhD, and Jeff W. Lichtman, MD, PhD.

THE CELLULAR/ MOLECULAR CONNECTION

Neurons communicate with each other across small gaps called synapses. According to Lichtman, a standard approach used to deduce how synapses form and mature—comparing images of different synapses at various developmental stages—is like a foreigner trying to figure out the rules of American football by putting together a sequence of still photos from various games.

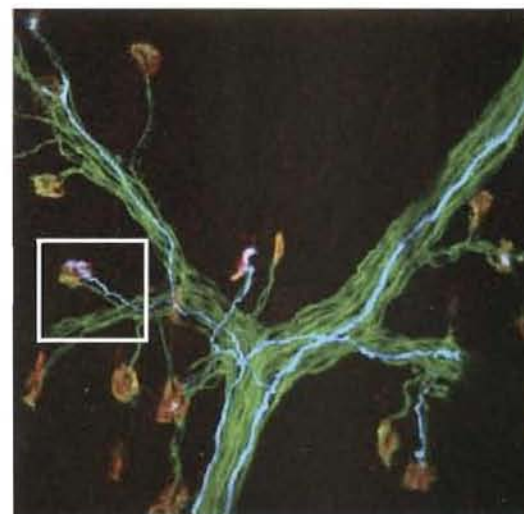
“In biology, like football, there’s a huge amount of uncertainty in interpreting an image if you don’t know what happened immediately before and after your snapshot,” he says.

As one of a few groups in the country studying neurons in living animals, the Washington University researchers were primed to test fluorescent proteins. Lichtman, Sanes and postdoctoral student Guoping Feng, PhD, were the first to show that FPs successfully label whole neurons in living mice without harming the fluorescent cells or the animals. To their surprise, in some of the transgenic

lines of mice, the FPs labeled highly specific subsets of neurons. By mating mice with different labeling patterns, the team produced animals with only a few neurons labeled one color on a background of nerve cells labeled another color, providing a clearer picture of the connections between individual cells.

The team uses these fluorescent mice to study the most accessible mammalian synapse, the neuromuscular junction (where neurons connect to muscles). They already

Using confocal microscopy to view neurons in fluorescent transgenic mice, the Lichtman and Sanes laboratories zero in on neurons competing for position at a neuromuscular junction.



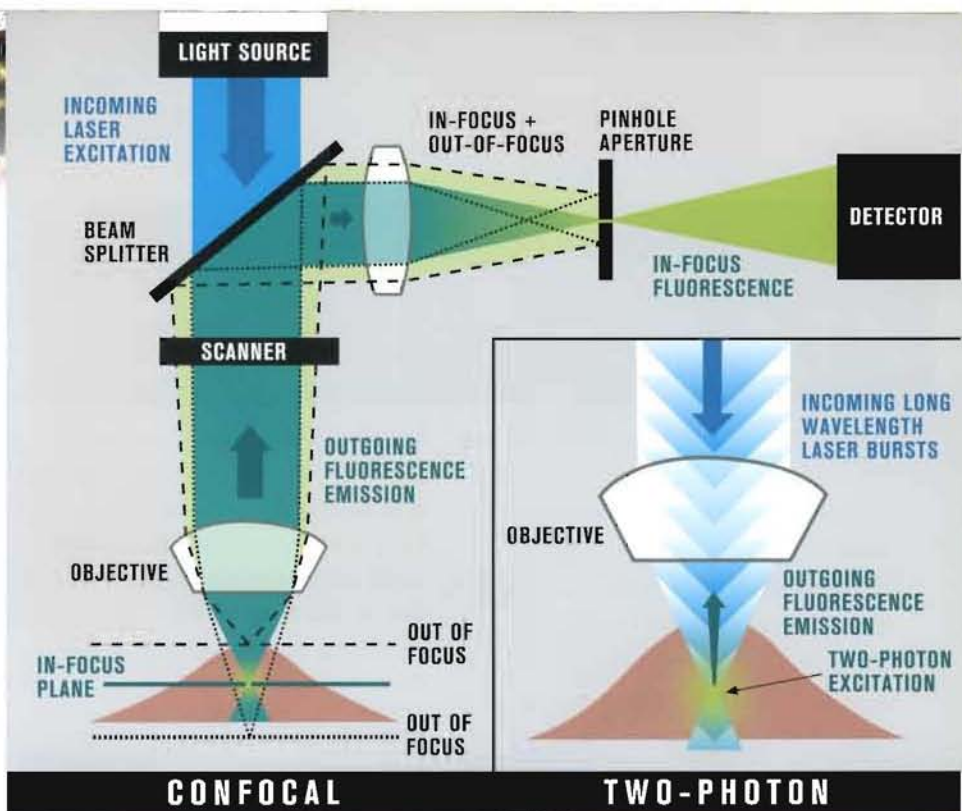
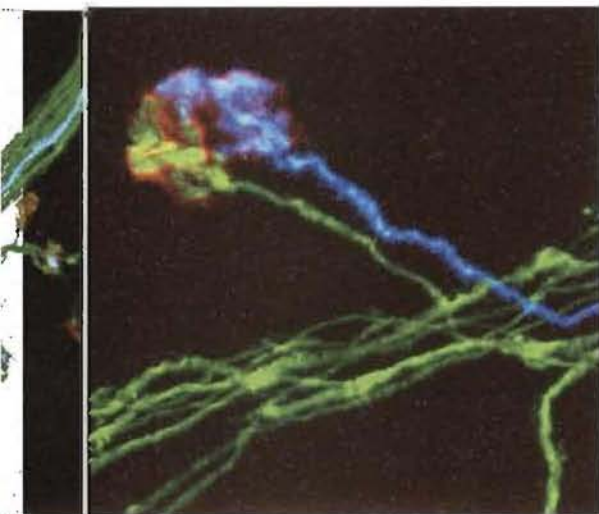
**“WE ARE PUSHED
to try new methods
in the hope of getting
a better glimpse of
this enigmatic system.”**

JEFF W. LICHTMAN, MD, PHD

have discovered that neurons touch fewer and fewer muscle cells during the first few weeks of life, proving the theory that synapses are rapidly eliminated during development. Optical imaging allows them to watch in high resolution as neurons compete with each other to determine which branches disconnect from synaptic targets and which persevere.

The use of FPs to study cell development is an example of how cellular biology has benefited from molecular biology: By using the latter's techniques to identify a specific gene responsible for fluorescence in jellyfish and adapting that gene for use in mammals, scientists now can examine changes in the structure of mammalian neurons and other cells.

In turn, FP-assisted cellular observations are contributing to the advancement of molecular pursuits. Sanes has identified several genes important for the development of initial synapses using more traditional molecular methods. But those techniques can only measure the end point—whether or not a healthy synapse formed. They cannot isolate which step of the process requires a given gene.



Neurons in a new light

"Trying to view neural elements deep in brain tissue with a standard microscope is like trying to see an object below the surface of a muddy pond by shining a flashlight into the water," says Jeff W. Lichtman, MD, PhD. Now, two groundbreaking techniques are helping to clear the water.

Not great-grandpa's microscope

Standard microscopes reveal too much of a good thing: Light scatters throughout the specimen, degrading the image. The late 20th century development of confocal microscopy changed all that by "pinpointing" the center of interest, delivering a "planely" better image.

Rather than allow the illumination to spread, the confocal system aims the waist of an intense, hourglass-shaped light beam at a thin plane of focus. Light fluorescing off this point is refined one step further by means of a pinhole aperture, eliminating nearly all out-of-focus light.

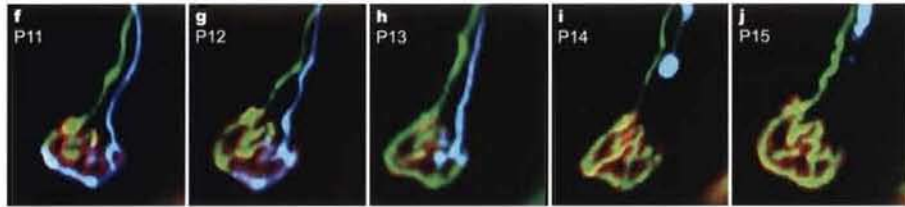
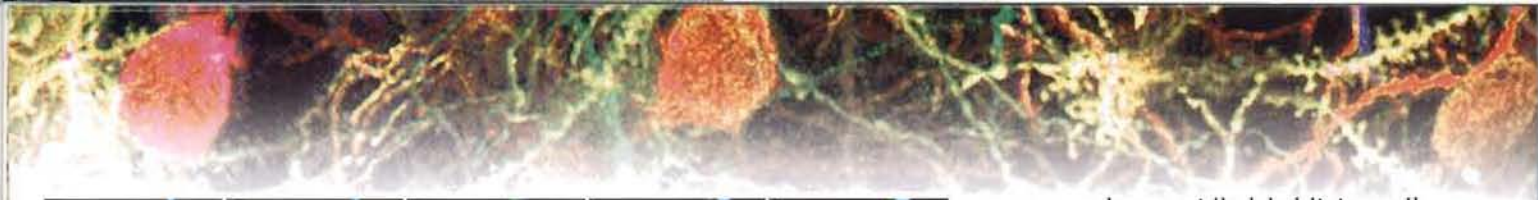
The result is an extraordinarily clear, though tiny, image. Assembling rows of these snapshots in a computer, along with successive layers above and below within the specimen, gleans three dimensions worth of data.

Less is more

Restricting the light a little helps a lot. Control the light particles still more and the story gets even better. Another enhancement, two-photon microscopy, is like the wedding album of two photons that chanced to meet at the focal plane.

Fluorescent molecules turn "on" when hit by one photon of the correct wavelength. Yet two near-simultaneous, half-strength photons work just as well. This time the laser beam pulsates; once again the high density of light at the waist of the hourglass-shaped beam works its magic: It's now the likeliest spot for a single half-strength photon to meet another at a fluorescent molecule.

This process creates no out-of-focus light and "sees" deeper into living tissue as the laser pulses 100 million times per second. If not pulsed, says Lichtman, the beam would require tremendous energy—and burn through anything in its path.



Using Sanes' transgenic mice, Sanes' and Lichtman's laboratories now can take a closer look at the neuromuscular junction. They mate the fluorescent-stained mice with those that lack a suspect gene. The resultant offspring have a few fluorescent neurons that, at some point during development, will not proceed as expected. The group monitors the neurons to detect when the glitch occurs, thereby obtaining a better understanding of the gene's role.

INTO THE BRAIN

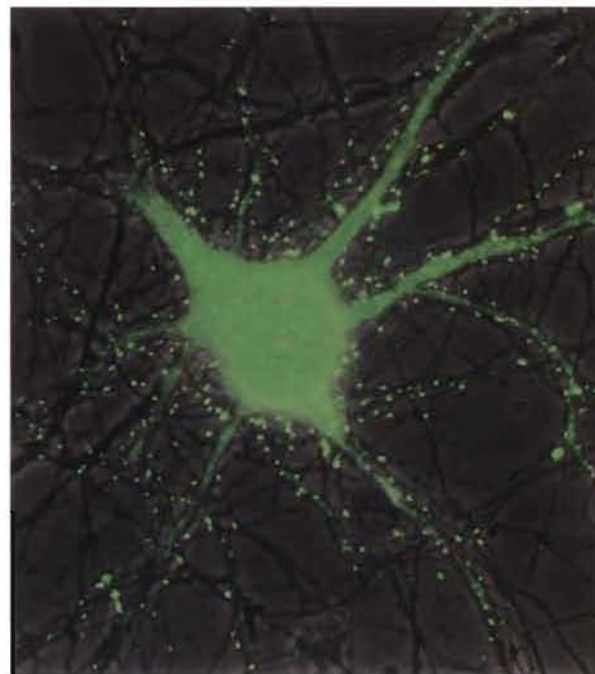
The new optical imaging tools not only work well in the study of the neuromuscular junction, they also provide a unique opportunity for examining synapses in the brain. Associate professor Ann Marie Craig, PhD, investigates synapse formation between nerve cells taken from the hippocampus, a small structure in the center of the brain.

For example, Craig grows hippocampal nerve cells in a dish and watches how they make, break and modify synapses. By attaching FPs to receptors that sense chemical signals exchanged between neurons, her group, working with Wong and Lichtman, follows the movement of FP-labeled receptors across synapses.

Rachel O.L. Wong, PhD, associate professor, also studies the brain's

Above Using optical imaging techniques, Mark Walsh, MD, PhD, and Lichtman picture the same neuromuscular junction at different stages during its development. The sequence above reveals the unpredictability of synaptic dynamics: After five days of "competition," the "underdog" green neuron triumphed, while the previously strong blue neuron detached.

Below The bright green spots along a hippocampal neuron's branches reveal its many synaptic links, as captured and isolated by F. Thomas Crump, PhD, and Ann Marie Craig, PhD.



synapses, though in a slightly more accessible region—the eye's retina.

To study how developing neurons communicate with each other, Wong needs to simultaneously label many cells in the living retina and monitor their activity.

Teaming with Wen-Biao Gan, PhD, and Jaime Grutzendler, PhD, postdoctoral fellows in Lichtman's laboratory, Wong developed a new

approach to rapidly label living cells with many colors: By using a "gene-gun" in a new way, tiny metal particles coated with different color dyes are delivered to the tissue, instantly labeling neighboring cells and their branches with one of seven colors. This technique, called DiOlistics, paved the way to study potential interactions between nearby neurons as they contact each other.

Together with Gan, Wong also helped to pioneer a related technique called Calistics. Using dyes that sense calcium levels inside the cell, Wong can watch signaling between neurons in the retina as they form and establish contacts during development.

Because connections between the many types of neurons are highly specific, Sanes and Wong believe that retinal neurons have different genetic makeups that affect their choice of synaptic partners. They are testing this idea by using Sanes' FP mice to determine which genes are active in certain cell types. These genetic profiles are obtained using relatively new cDNA micro-array technology.

According to Wong, the team's fusion of new scientific tools and varied research perspectives is a creative means toward the more important end—understanding how the nervous system makes accurate connections during development.

By employing these new techniques and collaborating to pool their expertise, these researchers are beginning to shine new light on the intricate activities of living neurons, a world that until now has been largely out of view. □

Where innovation meets convenience



A dramatic, curved facade greets visitors.

A pioneering concept, the new Center for Advanced Medicine opens—providing a comprehensive solution to meeting diverse health care needs.

IT'S TWENTY-FIRST CENTURY MEDICINE—a “one-stop shop” for the best in health care. A cooperative effort of Washington University School of Medicine and Barnes-Jewish Hospital, the Center for Advanced Medicine groups specialties into multidisciplinary clinical centers, affording patients handy access to the very latest medical innovations and technology. The new 14-story, 650,000-square-foot facility provides a single location in which ambulatory patients can park conveniently, see their physicians, and receive diagnostic testing and ancillary care services.

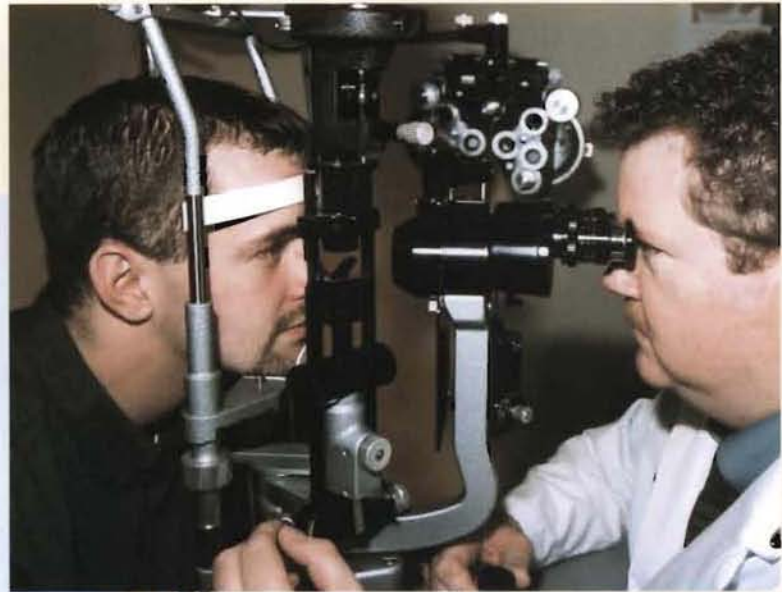


Hundreds of physicians in one location.

PHOTOS BY ROBERT BOSTON



Chemotherapy treatment suites were among the first Alvin J. Siteman Cancer Center components to open in the new facility.



Above The Eye Surgery Center is one of many outpatient services offered at the Center for Advanced Medicine. By May 2002, more than 750 Washington University physicians will relocate their clinical practices to the new building. **Left** Spacious common areas allow patients and their families to wait in comfort between appointments with specialists.





Above The Center for Advanced Medicine lights up the night.

Left The bright, airy atrium enhances the architecturally beautiful building's patient-friendly atmosphere.

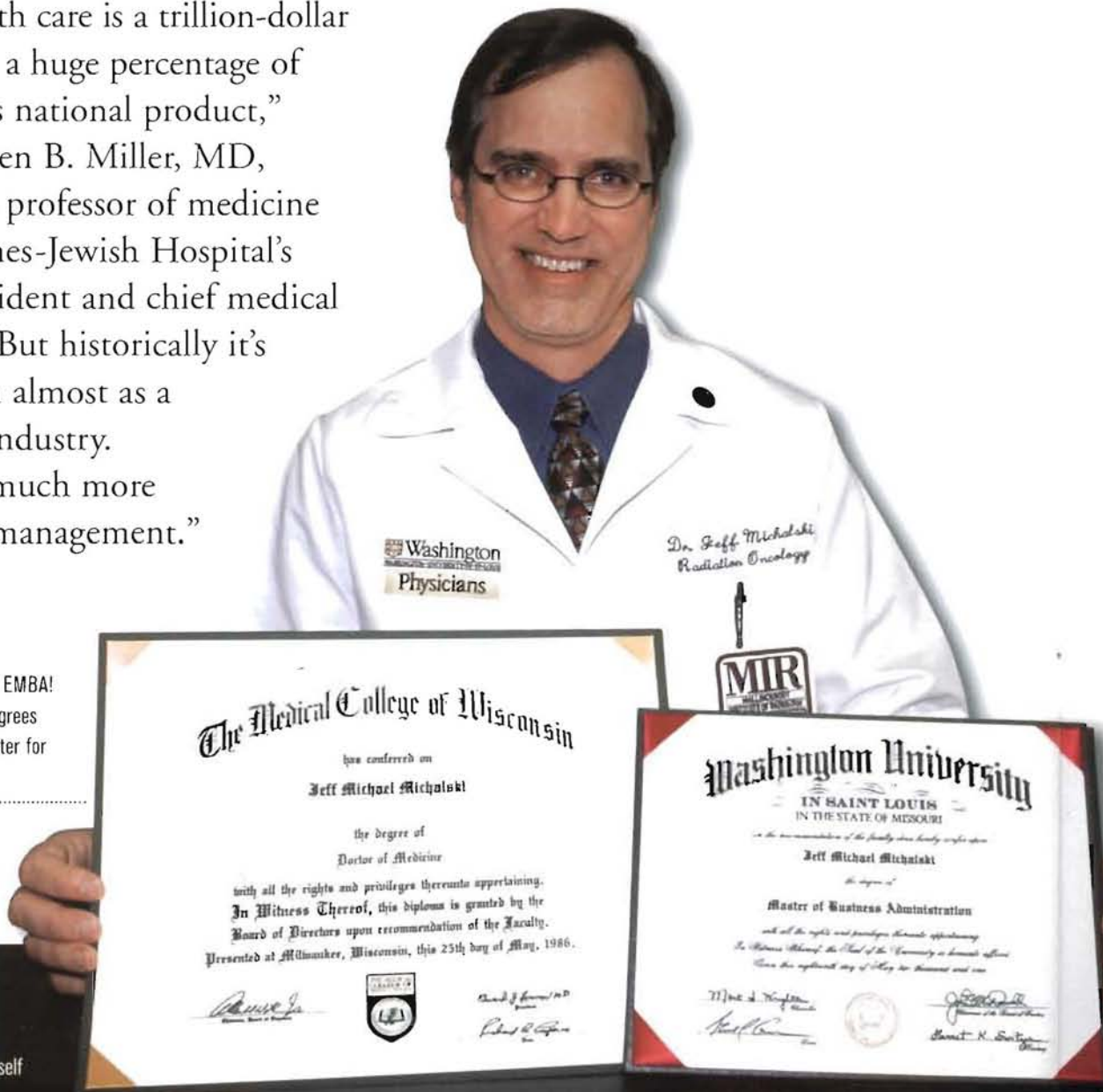
Below The upper floors of the new facility provide a contemplative, bird's-eye view of the Medical Center and surrounding city.



"IN MEDICAL SCHOOL I was taught to care for the patient," observes Jeff M. Michalski, MD. "In business school I was taught to care for thousands of patients."

The distinction that Michalski sums up so succinctly—and the critical need for management skills in medicine—are increasingly noted in the medical community, where growing numbers of physicians and other health care professionals are turning to business education to help them cope with escalating costs and expanding complexities in health care delivery.

"Health care is a trillion-dollar industry, a huge percentage of our gross national product," says Steven B. Miller, MD, associate professor of medicine and Barnes-Jewish Hospital's vice president and chief medical officer. "But historically it's been run almost as a cottage industry. It takes much more capable management."



Jeff M. Michalski—MD, and EMBA! Michalski is framing both degrees for his office in the new Center for Advanced Medicine.

RAY MARKLIN

Health professionals have an invaluable partner in the Olin School of Business at Washington University in St. Louis. In collaboration with the School of Medicine, Olin has tailored non-degree programs and a health services management concentration in the executive master of business administration (EMBA) degree program to help doctors and others navigate the business world. Physicians also often pursue an EMBA without the health care focus.

Michalski, an assistant professor of radiation oncology, is clinical director of the division of radiation oncology and medical director of the clinical trials office at the Alvin J. Siteman Cancer Center. As he sees it, physicians must acquire contemporary business skills if they are not to lose control over treatment decisions.

"We need to be just as wary of costs as insurance companies," he says. "If we can work with them to keep costs down, we'll be much more credible to work with."

Michalski, who completed his EMBA with a health services management concentration in March 2001, is one of a growing number of physicians who are using business tools to achieve new efficiencies and deliver better care. His Olin classes in operations, for instance, have helped him streamline patient services. "Operations showed me how to deal with sorting people into different

queues for different types of treatment, ensuring that physicians can see the types of patients they need to see without schedule conflicts, managing complex groups of individuals." These measures eliminate overlapping services, save time for patients, and improve the bottom line.

Containing costs has an even broader significance, according to Ronald J. Chod, MD, who enrolled in the EMBA program last fall. "Clearly, medical cost inflation is once again escalating," Chod points out. "Simultaneously, the population is aging, new and expensive therapies are evolving, and an increasing number of businesses are walking away from providing health insurance. Yet provision of care is still highly fragmented, and potentially wasteful.

"The economy will only be able to support limited expenditures on health care. It's going to be extremely important that we harness all of our resources to provide science-based treatments and preventive therapies," Chod continues. "Having a broader understanding of all the business components that are part of health care is very important for helping to shape its future."

Miller puts it very simply. "No margin, no mission," he says. "If we do not break even or better, we can't fulfill our mission. We have to be responsible stewards of health care resources."

Physician, manage thyself

Having accepted a personal mission when first they donned their white coats, doctors now find it takes business acumen to fulfill that mission. It's time to hang another diploma...from the Olin School of Business.

BY BETSY ROGERS

Once a researcher in renal medicine with a productive bench science career, Miller agreed in 1995 to head up the renal network for the newly created BJC hospital system. As it turned out, the decision was the first step on a new professional path.

Miller acquired additional management roles; in 2000, he became vice president and chief medical officer at Barnes-Jewish Hospital, where he oversees 1,500 people and a \$150 million budget. He enrolled in the EMBA program to better equip himself for the job.

Chod, an associate professor of obstetrics and gynecology, has management responsibilities as well. He is associate vice chancellor for clinical affairs at the medical school. He holds two additional positions, one as executive director for development of the Faculty Practice Plan and the other as executive director for network development of the Washington University Physicians' Network. The need for business acumen in those positions is what drew him to the EMBA program.

Chod believes that cost containment will require broader coordination across the health care landscape.

"The future of health care requires greater organization of care among physicians and other providers," he says. "Right now, if you're a patient with

multiple medical conditions, your care could be provided by a half dozen to a dozen different physicians.

"Each of those physicians has his own medical records, with redundant, and sometimes conflicting, information. So the fragmented practice of medicine today leads to mistakes and inefficiency."

Chod has found his accounting course especially useful. "Cost accounting and measuring component activities that go into a process help to determine where changes can be made to most efficiently deliver service," he says.

He also is enjoying course work in organizational behavior, as did Michalski. "Organizational behavior skills are critical," Michalski says. "Managing people is the really hard thing. Sometimes you have to make difficult decisions for the sake of the group."

"Having a broader understanding of business ... is very important in helping to shape the future of health care."

RONALD J. CHOD, MD



"No margin — no mission."

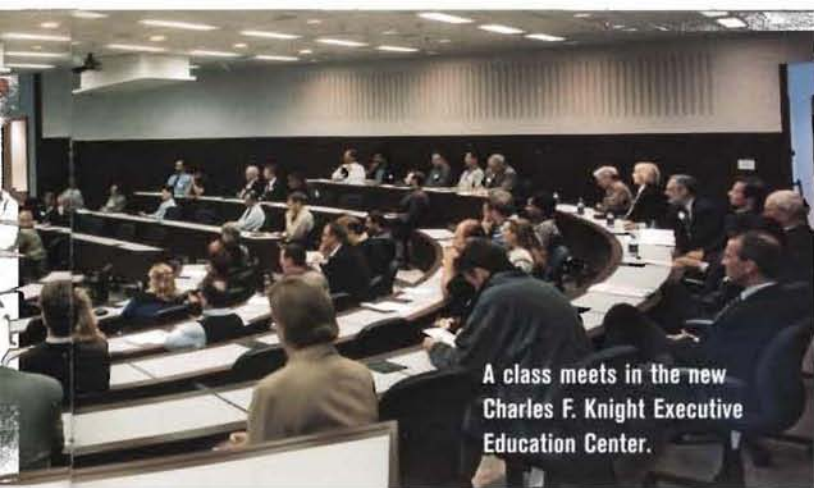
For Miller, perhaps the most important lesson at Olin has been strategic thinking, expanding perspective on problems. "You view things from a position of being opportunistically informed," he says. "You will take advantage of the opportunities, driven by information."



He cited medical records as an example. "By making a strategic decision to spend an extra \$1 million last year," he says, "we were able to dramatically decrease our billing cycle. We had to spend extra dollars in coding and chart management, but by spending those extra dollars, we were able to get our bills out the door and improve our cash flow—resulting in a multimillion-dollar benefit."

Skeptics might question the bottom-line business orientation that views people as customers rather than patients. But Michalski argues that medical care would improve if physicians were to adopt a customer-service approach. Waiting-room time would go down, doctors would be more accessible to their patients, services more evenly distributed across a region, rather than concentrated in a huge urban center.

According to Pam Wiese, assistant dean and director of executive MBA programs, the program also teaches health care professionals to spot business trends that will affect their organizations—everything from consolidation in hospital ownership, to the Internet and its creation of both highly educated and often miseducated patients, to outsourcing, to reduced levels of employer health care funding.



A class meets in the new Charles F. Knight Executive Education Center.

"If we do not break even or better, we can't fulfill our mission. We have to be responsible stewards of health care resources."

STEVEN B. MILLER, MD

The doctors rave about their academic experience at Olin. "The program is everything I hoped it would be and more," observes Chod. Says Miller: "As an academician, it has been interesting for me to learn how another school teaches. The program's use of Internet resources is very progressive, and the quality of the faculty is phenomenal."

Physicians also are enthusiastic about the program's team approach. At the outset, students enrolled in either the straight EMBA or the EMBA with a health services management concentration are grouped into teams, which remain together for the program's duration.

"I have these brilliant teammates," Miller says. In his group are executives from Anheuser-Busch, Monsanto,

Emerson and Bass Hotels. "I can learn all sorts of things about operations, service, human resources, accounting—the spectrum of business activities from people who are actually succeeding at it."

The teams also are essential to get the work done, Chod adds. "Different people on the team bring different skills, so if you have a strong finance person and a strong marketing person, you're complementing yourselves to take the work to a higher level."

Michalski agrees. "We ended up teaching ourselves a lot," he says. Michalski, unlike Miller and Chod, chose the health services management concentration rather than the straight EMBA, so his class was made up of professionals in pharmacy, hospital administration, nursing and the pharmaceutical industry, as well as physicians. "My class of maybe 30 people included professionals from all walks of health care," he says. "When we talked about things, we'd get 30 different perspectives."

Change in health care delivery is inevitable, these doctors agree. Whether physicians will play a role in shaping those changes is less assured. "The more physicians are able to understand business," Chod asserts, "the better they'll be able to interact with decision makers. So business education for key physicians should help bring health care to a new level." □

A quicker education: "Inside the Business of Medicine"

Olin presents four short, yet in-depth courses—the busy physician's business study

In this day and age," George M. Cesaretti contends, "you can't deliver good medicine without being business savvy." But Cesaretti, assistant dean and director of non-degree executive education at the Olin School of Business, also knows that not every doctor needs an MBA to deliver good care successfully.

Cesaretti and Stephen Kraft, MD, Olin's director of continuing physician business education, have developed programs for practicing physicians.

The series will help physicians confront questions such as: What does your practice look like as a business—its finance, strategy, structure, organization? What sort of contracts does it hold? How

does it negotiate those contracts? Who supplies it? How does it get paid? Who are your partners? Who are your competitors? Topics include:

- Business and Management Strategies for Medical Practice,
- Financial Management for Medical Practice,
- Quality in Health Care, and
- The Art of the Deal: Negotiation and Conflict Resolution Strategies for Physicians and Health Care Providers.

"Each course we're offering is designed to attack some major facet of the medical practice," Cesaretti says. New courses will follow as the program gathers steam.

Kraft and Cesaretti discovered that practicing physicians have non-course needs as well, so they established a Business of Health Care Journal Club, where members meet to discuss articles and research on current health-related business topics.

And the school is offering symposia on health services management issues. One in March addressed mobile commerce in health care.

"Medicine is not on another planet," observes Kraft, an Olin EMBA graduate. "While it does have unique features, it's not so unique that the laws of business don't apply. Business education can help you provide better medical care."

Genomics, medicine a

The Whitaker Foundation conference exa



Francis S. Collins, MD, PhD
Director, National Human Genome
Research Institute
National Institutes of Health



Nancy S. Wexler, PhD
Higgins Professor of
Neuropsychology,
Columbia University
President, The Hereditary
Disease Foundation



Michael Traynor, JD
President, American
Law Institute
Partner, Cooley Godward LLP



Susan M. Okin, PhD
Martha Sutton Weeks Professor
of Ethics in Society and
Professor of Political Science,
Stanford University

ADVANCES IN GENETIC SCIENCE and technology emerging from the Human Genome Project have raised profound issues—in law, ethics, medicine and policy making.

Scholars from across the nation recently gathered at Washington University in St. Louis to discuss what many consider the most important scientific undertaking of our time: the mapping and sequencing of human DNA.

The conference, “The Human Genome Project: Expanding the Conversation,” was sponsored by a generous grant from the St. Louis-based Whitaker Foundation and was presented jointly by the School of Law’s Center for Interdisciplinary Studies and the School of Medicine.

The two-day event, held January 28–29, 2002, at the Schools of Law and Medicine, was one in a series of programs being held during the 2001–2002 academic year. The entire series, “Law and the Human Genome Project: Research, Medicine and Commerce,” is intended to deepen understanding of the Human Genome Project.

e and society

BY HOLLY EDMISTON

ce examines the legal and ethical aspects of the Human Genome Project

“We are on the brink,” says Francis S. Collins, MD, PhD, “of being able to identify the susceptibility genes for almost any disease that tends to run in families.”

Collins, the director of the National Human Genome Research Institute of the National Institutes of Health, delivered the conference’s opening keynote address, “Genomics, Medicine and Society.”

Creating a genetic catalog allows researchers to study groups of individuals affected with particular diseases. But the same advances in genetics that allow scientists to conduct this type of research also pose a number of troubling questions, he says.

One of the most important is the issue of genetic discrimination, wherein people’s personal genetic information might be used to deny health insurance benefits, for example.

According to Collins, this problem could be solved now, if legislators would take action. Without such legislation, he says, individuals will be fearful of having genetic testing done.

Another key issue is how to prepare physicians to embrace the genomic revolution. Unless they work in an academic setting, many practitioners will not have firsthand experience with genomic medicine. “We must quickly educate our colleagues,” says Collins, “and inform our patients.”

Access to the new technology is another issue to consider. As advances in genetic technology are made, will they be available only to a privileged few? “It really points out the inequities in our system,” Collins says, “and we need to pay attention to them, or the benefits of this new science won’t be equally distributed.”

Another concern is the issue of intellectual property. It may be too soon to tell, says Collins, if the patents filed on thousands of genes are a good incentive to the development of products, or a deterrent that will fence in large parts of the genome, slowing the research process.

He also wonders whether the study of the genome will reduce prejudice or increase it. There is no real definition of race at the scientific level, he says, but it’s not inconceivable that someone might pull out certain bits of information and use them for dubious purposes.

Finally, society must come to a consensus about the limits of technology, says Collins, and decide whether it should be used for non-medical purposes, such as trait enhancement. He also notes that a growing anti-technology movement exists in the United States and around the world.

All of these concerns need to be considered, says Collins. Forums like the one held here in St. Louis are critical to the long-term success of the Human Genome Project and its offshoots.

Collins also makes some interesting predictions. By 2010, he asserts, an individualized form of preventive medicine based on predictive tests will be a part of mainstream health care. By 2020, it may be possible to sequence a complete human genome for \$5,000 or less—making real the vision of a genetically tailored health care plan for each person.

But Collins warns against the notion that genes are “everything.” That implication, he says, implies a degree of genetic determinism that neglects the role of the environment and undervalues the power of the human spirit. “Free will,” he asserts, “will not become obsolete.”



“If we over-value DNA,

we by necessity will undervalue the spiritual side of humanity.”

Francis S. Collins,
MD, PhD

The Honorable Continuum

BY RUTH BEBERMEYER

Highlighting the accomplishments of students, medical graduates, current and former house staff, and faculty who embody the School of Medicine's unbroken tradition of excellence.

No ordinary hero

JON JANTZ, MD '83, jokingly describes himself as a "troublemaker," but the trouble he makes resulted in his being named "Home Care Hero" by the Kansas Home Care Association and receiving the South Dakota Governor's Award for outstanding service to children (July 11, 1989 was "Dr. Jon Jantz Day" in the state).

Jantz is a pediatrician at the Newton (KS) Medical Center, clinical instructor in the Rural Health Initiative of Kansas University School of Medicine, and director of the Pediatric Research in Office Setting (PROS)

Network for Kansas.

He attended medical school on a National Health Service Corps scholarship and fulfilled his obligation to practice in an underserved area with 3 1/2 years at Pine Ridge Indian Health Service in South Dakota. Jantz describes it as "a place with lots of areas in which to make a difference." Testifying to



Jon Jantz, MD

the difference he made, the Oglala Lakota tribe gave him their highest honor, WA OHI YE WAN KA TUYA, for service to the community.

Jantz was medical consultant to National Public Radio's award-winning report, "Tragedy at Pine Ridge," and appeared on the "Nightly News" with Tom Brokaw, discussing fetal alcohol syndrome. Brokaw later made the report into a documentary.

Eventually Jantz "burned out on continuous night call and the overwhelming problems of a poverty culture" and moved to Newton. The American Academy of Pediatrics promptly put him on their Committee on Native American Health, where, for eight years, he helped educate the public, presented testimony to the Senate Committee on Indian Affairs and secured grants from the Indian Health Service.

Jantz continues his activism, working to reform the Kansas system that makes it difficult for children on

Medicaid to receive preventive care. He led a successful effort to fluoridate the Newton water supply.

He "lives a pretty ordinary life" with his wife, Sue Ann, a lawyer, and their children, Maria and David, in first and third grades. His glass-blowing hobby, however, is extraordinary. Intrigued by a demonstration he saw in eighth grade, he saved his lawnmowing money, bought a kit "before OSHA realized what they were selling to kids," and taught himself to do it in the garage. Now he does benefit shows for schools and churches and occasionally makes "something special like a wedding cake top."

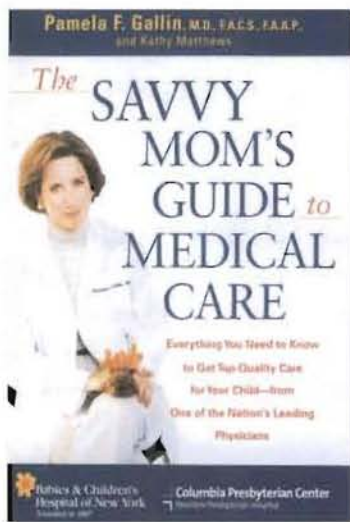
A sense of vision

PAMELA F. GALLIN, MD '78, combines motherhood and medicine with remarkable success and satisfaction. The director of pediatric ophthalmology and associate professor of both clinical ophthalmology and pediatrics at Columbia Presbyterian Medical Center in New York, Gallin is the mother of four and has always worked half-time so that she could participate in her children's activities. Nevertheless, her professional achievements do not suggest a part-time schedule.

Convinced that the world of managed care is "effectively a conspiracy against laymen trying to procure the best medical care," Gallin wanted to help mothers who lack her expertise understand how to ensure that their children get the treatment they need. She wrote (with Kathy Matthews) *The Savvy Mom's Guide to Medical Care*, a selection of both *Parenting* magazine's book club and the Book of the Month Club. Gallin has also edited a textbook, *Practical Pediatric Ophthalmology*.

She showed her ability to manage multiple responsibilities at Washington University, simultaneously earning a Bachelor of Science in computer science from Engineering and a Bachelor of Arts in biology from Arts and Sciences, with election to both Phi Beta Kappa and Tau Beta Pi.

In medical school Gallin specialized in ophthalmology because "vision is the most important sense...when people can't do other things, they can still interact using vision." Following residency at Mount Sinai Medical



Pamela F. Gallin, MD

has appeared on the "CBS Evening News," "ABC This Morning," and NBC's "Weekend Today."

Working with the United Nations International Rescue Committee, Gallin spearheaded the medical evacuation of 15 Bosnian children and several adults with eye problems to Columbia Presbyterian Hospital in 1994. She orchestrated their medical care, provided without charge, and helped the families gain political asylum.

Gallin credits her "most extraordinary husband," Leonard Yablon, chairman of Forbes Family Holdings, with fostering her success and sharing her joy in their "beautiful, healthy children." It appears likely that Laura (20) will be a banker, Abby (17) a lawyer, and Hilary (14) a doctor. Peter (10) hasn't decided.

Peace-building through medicine

WHEN JIM (C. JAMES) HOLLIMAN, MD '79, went to Scotland in 1990 to present his research paper at a meeting of the Society for Academic Emergency Medicine (SAEM) and the Emergency Medicine Research Society, he didn't suspect that it would lead to a major new dimension of his work. He learned there that emergency medicine was virtually nonexistent outside the United States, and that countries struggling to begin emergency health care systems could benefit from American expertise. Holliman was determined to help, and opportunities soon came.

Back at the Milton S. Hershey Medical Center at Penn State University (Holliman is professor of emergency medicine and surgery and associate director of the York Hospital-Hershey Emergency Medicine Residency

Center, she garnered a prestigious Heed Foundation fellowship for pediatric ophthalmology.

Now she is a Fellow of the American College of Surgeons and of the American Academy of Pediatrics. She has been an oral examiner for the American Board of Ophthalmology. In 1993, Gallin served on the White House Health Care Task Force briefing team. She

Program), he got involved in several international organizations. He served on SAEM's Subcommittee on International Consulting and chaired its International Emergency Medicine Interest Group. Invitations to assist with program and curriculum development overseas multiplied and he has helped establish programs in at least a dozen countries in the Middle East, Eastern Europe and Asia.

In 1994, Holliman founded Penn State's Center for International Emergency Medicine and its fellowship program, which he directs. It provides critical training to foreign physicians who implement training in their own countries. Recently eight faculty members from Iran University of Medical Sciences in Tehran spent six months at the Center, and Holliman made a follow-up visit to Iran in January. He recalls his surprise on his first visit when, expecting Iranians to be suspicious of an American, he found a warm welcome everywhere. He is gratified that his work is "another way to do peace-building."

Holliman has published many teaching materials, including chapters in *Field Medicine: Emergency Medicine for International Health Workers*. He has spoken at conferences in some 20 countries and chaired the program for the First Middle Eastern Conference on Emergency Medicine in Istanbul, Turkey last October.

With all this, Holliman carries a full clinical load at Hershey, is medical consultant for the National Hot Rod Association, and serves as on-site physician for the Keystone National Drag Races and Penn State's home football games.

He and his wife, Karen, an occupational therapist, have two children, Mark and Jennifer, both students at the University of Pittsburgh.

C. James Holliman, MD



A legacy of care

The Holden family establishes fund to provide medical student loans

KATHY HOLDEN, 31, SUFFERED AS A CHILD with a severe, mysterious form of epilepsy, battling frequent seizures that were difficult to control with medication. When she was 12, she became a patient of W. Edwin Dodson, MD, professor of neurology and pediatrics at the School of Medicine. Dodson had been recommended to Kathy's parents by Samuel Livingston, MD, her neurologist at Johns Hopkins University who was retiring. For the past 20 years, Kathy and her parents have been traveling from their home in Iowa to see Dodson, whom Kathy calls "Dr. D."



Ruby Holden

"We have been very fortunate to have a great doctor who not only treats the patient, but helps the family cope with the many challenges that come in caring for a daughter that lives with uncontrollable seizures," says Arlene Holden, Kathy's mother.

In 1937, Kathy's grandfather, Roland Holden, started Holden Foundation Seeds Inc., a corn research and genetics company based in Williamsburg, Iowa. Ronald Holden, Kathy's father, joined the company 30 years later after graduating from Iowa State University. Holden Foundation Seeds Inc. eventually became one of the largest, most efficient corn research operations in the world, and the Holdens sold the company to Monsanto in 1997.

In 2001, Kathy's grandmother, Ruby Holden, wife of the late Roland Holden, decided to honor her granddaughter in a special way by establishing the Kathy E. Holden Loan Fund at the School of Medicine. The fund provides interest-free loans to medical students, benefiting them and their patients for generations to come.



PORTRAITS BY MARION AND CLARY OLIVER

The Holden family: Arlene and Ronald, center; daughters Mary Ann Blythe, left, and Kathy Holden, right.

“With this gift from Kathy’s grandmother, we hope Kathy will make a difference in the lives of others,” says Arlene Holden.

William A. Peck, MD, executive vice chancellor for medical affairs and dean of the School of Medicine, says: “Kathy Holden will always be remembered by the many medical students who will benefit from the loan fund in her name. We are very grateful for the Holden family’s generosity.”

Dodson, who also is associate vice chancellor for admissions and continuing medical education, adds: “The ability to endow this type of loan addresses a critical need that our medical students have for controlling debt related to attending medical school. The Holdens have been very thoughtful and very generous in wanting to help others and to share their good fortune.”

It was in 1989 that Dodson diagnosed Kathy Holden with a newly discovered brain malformation called band

The fund provides interest-free loans to medical students, benefiting them and their patients for generations to come.

heterotopia, or double cortex. Epilepsy, dementia and developmental delays often are symptoms.

“The advent of new high-resolution brain imaging techniques allowed people to visualize the malformation in Kathy’s

brain,” Dodson says. “During the past 15 years, the condition has become widely recognized and the molecular basis of it has been unraveled. But there’s no specific treatment for double cortex.”

Kathy still suffers from other problems related to double cortex, but her epilepsy is largely controlled with medication now. She lives separately with assistance and visits her parents on weekends. Kathy has become one of the Iowa Hawkeye basketball and football teams’ biggest fans—she doesn’t miss a game.

Dodson joined the School of Medicine in 1971 and became professor of neurology and pediatrics in 1986. He was named associate dean for admissions in 1990 and associate vice chancellor for admissions and continuing medical education in 1997.

An internationally recognized expert on drug utilization in children with epilepsy, Dodson has been a member of the Board of Directors of the Child Neurology Society, the American Epilepsy Society and the Epilepsy Foundation of America. For the latter, he also served as president and chairman of the board.

Dodson is a prominent child welfare advocate in Missouri. He founded and was the first president of The St. Louis Family Support Network and served as chairman of the Children’s Trust Fund of Missouri, an organization that works for the prevention of child abuse and neglect.



W. Edwin Dodson, MD, with fourth-year medical students Margaret Rosanna Gray-Swain, left, and Elise Krejci, right. Both young women are beneficiaries of the Kathy E. Holden Loan Fund.

Lansche offers Century Club challenge



“Washington University prepared me to make a living and to do well, and I want to repay that effort. This is a very strong university and is worthy of our support.”

W. EDWARD LANSCHÉ, MD

IN HONOR OF THE 50TH REUNION of his medical school class, W. Edward Lansche, MD, will match gifts from MD, former house staff and nursing alumni Century Club donors. The match is dollar for dollar, up to \$50,000. The Century Club is the School of Medicine’s group of alumni and friends who make unrestricted annual gifts at the \$100–\$249 level.

W. Edward Lansche, AB ’48, MD ’52, is a native St. Louisan and Washington University alumnus. After earning his medical degree, Lansche completed a year of internship at Vanderbilt University in Nashville and then served two years in the Army Medical Corps.

He returned to St. Louis to specialize in orthopaedic surgery, finishing his residency at the School of Medicine in 1959. He began his private practice that same year.

Lansche retired in 1993. He and his wife, Dee Kriegshauser Lansche, BU ’50, are enjoying retirement and hope that the Lansche Century Club Challenge will encourage fellow alumni to contribute to the university.

Lansche’s match will go to the Department of Orthopaedic Surgery. Alumni may direct their gifts toward unrestricted support for the medical school or one of its departments, scholarships, the library, the Learning and Teaching Center, or a Center of Excellence. For more information on the Lansche challenge, please call Sue Ghidina at (314) 286-0012.

DASP scholars announced

Each year the Distinguished Alumni Scholarship Program (DASP) provides four-year, full-tuition scholarships to four incoming medical students. Created in 1989 by the Washington University Medical Center Alumni Association (WUMCAA), the program is the School of Medicine’s major merit scholarship funded through annual gifts. The 2001–2002 students and honorees are: (on stairs, left to right) Robert Lund, MD ’49, and David Fessler; Stuart Kornfeld, MD ’62, and Patrick Bergin; (in front, left to right) Alan Pearlman MD ’61, and Sabrina Stone; Stanley Birge MD ’63, and Karen Reisiger.



MD Update:

Reunion

May 16-18, 2002

REUNION 2002 is just around the corner, and preparations are under way for the three-day event. The scientific program will be held on Thursday, May 16, 2002, and Saturday, May 18, 2002. Thursday's presentations will be held at the Eric P. Newman Education Center on the medical school campus, and Saturday's presentations will be held at the Ritz-Carlton Hotel.

This year's presenters

Allan E. Kolker, MD '57
John McDonald, MD, PhD
Gerald Medoff, MD '62
C. Barber Mueller, MD '42
Michael R. Treister, MD '67
Robert H. Waterston, MD, PhD

The Washington University Medical Center Alumni Association met in November 2001 to select the alumni award recipients who will be recognized at the annual banquet on Saturday evening.

Awardees

Alumni Achievement

Ewald W. Busse, MD, Class of 1942
Robert D. Fry, MD, Class of 1972
Charlotte D. Jacobs, MD, Class of 1972
Clifford B. Saper, MD, Class of 1977

Alumni/Faculty

Marc R. Hammerman, MD, Class of 1972
Chromalloy Professor of
Renal Diseases in Medicine
Allan E. Kolker, MD, Class of 1957
Clinical Professor of Ophthalmology and
Visual Sciences

Distinguished Service

William S. Coxe, MD, Professor Emeritus
of Neurological Surgery
James P. Keating, MD, Former House Staff 1969
W. McKim Marriott MD, Professor of Pediatrics

With so many changes taking place around the Medical Center, the face of the campus has changed considerably. This year, tours will feature some of the latest additions as well as the familiar places, all of which are integral parts of everyday life at the School of Medicine. Alumni participants will be able to choose from the following:

Walking Tours

Bernard Becker Medical Library
McDonnell Pediatric Research Building
Alvin J. Siteman Cancer Center
General Tours of the Medical Campus

Return the registration forms and mark your calendars now for all of the festivities!

FRIENDS



AND FUN!

HOPE TO SEE YOU

REUNION 2002

Michael Lewis, MD '76, and John Milton, MD '76,
enjoying the party at Reunion 2001.

Alumni office welcomes new employee

Reuniongoers will want to introduce themselves to the newest member of Medical Alumni and Development Programs while attending this year's festivities in May. Anne Enright Shepherd recently joined the staff as director of alumni and constituent relations.

In her new role, Shepherd will organize the annual medical alumni reunion and coordinate the activities of the Washington University Medical Center Alumni Association.

"School of Medicine alumni are doing great things here in St. Louis and

across the country," says Shepherd. "I'm excited about getting to know this accomplished group and look forward to helping them stay connected with the School."

Shepherd succeeds Chad Ittner in the position. Ittner, who was with the School of Medicine for two years, is now director of development for Emory Hospitals in Atlanta.

Most recently a senior medical news writer in the School of Medicine's Office

of Medical Public Affairs, Shepherd was public relations manager at the Missouri Botanical Garden in St. Louis before joining the university.



Anne Enright Shepherd

Class Notes

40s **Ruth E. Werner, OT '49**, writes that she is still enjoying life in Tuscaloosa AL, is traveling a lot, and would like to hear from classmates.

50s **Thomas W. Williams MD '54**, was selected as Tennessee "Practitioner of the Year 2001" by the Rural Health Association of Tennessee. He recently retired from 35 years of family practice and, with his wife, Elizabeth, resides in Etowah TN.

Bettye Seitz Hudson, OT '55, who has engaged in school-based practice for the past 10 years, will retire in May 2002. She lives in Crawfordsville IN.

60s **Winston Tustison, MD '60**, is living in Tucson AZ, October through May and in Louisville CO, June through September. He has spent considerable time in the past two years fund-raising for charitable organizations, but says he plans to play more golf and tennis in Tucson and get involved in the community there.

Bruce Dunn, MD '62, who helped start a home for abandoned infants in Oradea, Romania, writes that the Romanian government's current ban on out-of-country adoptions means that there is no income from that source to cover the expenses of operating the home. He is trying to raise the \$3,000 per month necessary to care for the children until the ban is lifted and says that children are still dying in the streets there. Anyone interested in helping can contact him at bjdunn2@pacbell.net for more information. Dunn says that he would be happy to go to Romania with anyone interested in seeing the situation firsthand.

Judith Carson Vestal, OT '64, has assumed the position of occupational therapy program director at Louisiana State University Health Services Center in Shreveport.

Joshua Grossman, MD '65, writes that he recently played the title role in the Johnson City TN, community theatre production of Tom Stoppard's "The Real Inspector Hound." In addition to his academic appointments at East Tennessee State University, Grossman is a consultant for the United States Medical Licensing Examination III/ American Board of Internal Medicine review. He also lectures on medical/legal issues. He is writing a book about his student years at the School of Medicine and welcomes contacts from classmates at zjbg2@access.etsu.edu.

John R. Crouch Jr., MD '67, is co-founder and president of In His IMAGE, Inc. (International Medicine and Graduate Education) based in Tulsa OK. The organization conducts a Christian-oriented family practice residency program and trains and supports medical missionaries (14 graduates work overseas long-term in Beijing, Mongolia, Kazakstan, Russia, Egypt, Central America, South America and Africa). Crouch is also president and founder of Good Samaritan Health Services, which provides health care for underserved patients in the Tulsa area. He was named 2001 Physician of the Year by the Oklahoma Academy of Family Practice and 2001 Educator of the Year by the Christian Medical/ Dental Association.

70s **Mitchell P. Fink, MD '76**, is the founding chairman of the newly established department of critical care medicine at the University of Pittsburgh School of Medicine, the first autonomous department of its kind in the country. Fink is Watson Professor of Surgery, Anesthesiology, and Critical Care Medicine at Pitt and also an associate member of the McGowan Institute for Regenerative Medicine. He has been chief of the division of critical care medicine, earlier housed in the department of anesthesiology. The Multidisciplinary Fellowship Training

Program in Critical Care Medicine there is the largest such program in the world, and more than 500 intensivists have graduated from it. Prior to going to Pitt in 1999, Fink was Johnson and Johnson Professor of Surgery at Harvard Medical School and surgeon-in-chief at the Beth Israel Deaconess Medical Center.

Richard C. Karl, MD, HS '78, is the author of *Across the Red Line: Stories from the Surgical Life*, recently published by Temple University Press. The book deals with the tragedies and triumphs of modern medicine, and how the complexities of illness and the charge of saving lives affects physicians. Karl is Connar Professor and chairman of the department of surgery at the University of South Florida College of Medicine. He is also a frequent contributor to the *St. Petersburg Times* and a columnist for *Flying* magazine.

Mary Martin Halaney, PT '79, works part-time at Seton Northwest Sports Medicine Center in Austin TX.

80s **Susan Buerkle, OT '80**, works for HealthSouth in St. Louis as a certified hand therapist. She and her husband, Bruce, have a 12-year-old son, Greg, and an 18-year-old daughter, Lauren, who hopes to attend Washington University.

Nancy Shalowitz, HA '80, JD, was recently named the director for health law/graduate programs at DePaul College of Law in Chicago, where she has been an adjunct professor for the past five years. Shalowitz is a practicing attorney and certified mediator, focusing her practice on health care law.

Jorge A. Raichman, MD, HS '81, has obtained subspecialty certification in pain management and has also added qualifications in addiction, geriatric, and forensic psychiatry. His wife, **Deborah Raichman, MA '83**, recently showed her watercolors depicting Hebrew letters at Houston's Jewish Community Center.

Janet Dinger Lawlor, PT '85, is the busy mom of three boys, ages 11, 8 and 3. She works a mile from her home as a physical therapy supervisor at an orthopaedic sports medicine clinic in Winter Haven FL, "home of the Cleveland Indians' spring training."

David T. Harvey, MD '89, has had "two great blessings this year." He and his wife, Nina, had their first baby, Emma Elizabeth, and he was elected president of the Florida Society of Dermatology. He sends greetings and best wishes to all his 1989 classmates.

90s M. Catherine Wise, OT '90, is staff occupational therapist for Key Rehabilitation, working in a nursing home in Grinnell IA.

Joe Walters, PT '90, and his wife, Leah, have opened their second physical therapy office in Kalamazoo MI.

Beth Nunge, PT '91, is working part-time at an outpatient orthopaedic clinic, coaching basketball at the local high school in Lynchburg VA, and expecting her fourth child in July. She is married to **Mark Nunge, MD '93**.

Jack Hurov, PhD '82, PT '91, had his first book, *Hand Pearls*, published by Hanley & Belfus. Matthew Concannon, MD, is co-author. Hurov is a certified hand therapist at the Clifford V. Abbott Health and Rehabilitation Pavilion in Kansas City MO. He serves on the editorial review board of the American Society of Hand Therapists' scientific journal, *Journal of Hand Therapy*, and is a test item writer for the Hand Therapy Certification Committee.

Jon Morris, MD '92, and his wife, Suzanne, are the proud parents of Andrew Deegan Morris, born January 3, 2002. The family, which includes Suzanne's daughter, Eliza, lives in La Jolla CA. Jon is president and chief executive officer of ProSanos Corporation in San Diego, which provides products and services that integrate biological, clinical and

Join the Eliot Society today!



Between now and June 30, 2002, Larry Pakula, MD '57, and his wife, Sheila, will match gifts from new Eliot Society members. Their gift will match MD, nursing, health administration, occupational and physical therapy alumni, and former house staff \$2 for \$1 up to \$100,000.

The Eliot Society is the School of Medicine's group of alumni and friends who make unrestricted annual gifts of \$1,000 or more.

The Pakulas' match to your gift will go toward the Dr. Sidney F. and Dora K. Pakula Scholarship, in memory of Larry Pakula's parents. Sidney Pakula, MD, graduated from Washington University School of Medicine in 1929.

You may direct your gift toward unrestricted support for the medical school or one of its departments, scholarships, the library, the Learning and Teaching Center, or a Center of Excellence.

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to join than now.**

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Sheila Pakula
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(314) 286-0012 for
more information.**

genomic data for biotechnology and biopharmaceutical companies.

Victoria Akins, MD '94, is "still in Sacramento enjoying the wonderful Northern California lifestyle," and hopes classmates will visit. Akins is a pediatrician with Kaiser Permanente. Her husband, **Paul Akins, MD, HS '96**, is a neurologist in private practice. Their three children are "growing up so quickly!"

Daniel Keleti, MD, HS '95, and his wife, Ingrid Keleti, MD, are proud to announce the birth of their son, Michael Maximilian Keleti, on August 9, 2001. They live in Leawood KS, and both practice in Kansas City. Daniel was a radiation oncology resident from 1991-1995 at the same time that Ingrid was assistant professor of emergency medicine at Jewish Hospital.

Jamey Gordon, PT '97, is employed by Orthopaedics Northeast in Fort Wayne IN as director of Performance

ONE, specializing in athletic performance enhancement and biomechanical analysis.

Amy Lindgren, OT '98, married Erik Gfesser on December 3, 2000, in Wheaton IL. They live in Palatine, a suburb of Chicago, with their two cats, Axel and Amber. Gfesser is a software engineer with Electronic Data Systems in Chicago. Lindgren works at RIC (Rehab Institute of Chicago) at Alexian Brothers Medical Center in Elk Grove Village IL as a staff occupational therapist.

Jenna Hiestand, MD '99, married Eric Witham on the beach at Caye Caulker, Belize, on October 25, 2001. They live in St. Louis.

Joni M. Kamiya, OT '99, is working in the Silicon Valley area of California as an activity program coordinator at a mental health facility. She developed a neurobehavioral program at the facility to serve that special population.

00s **Nikki Blankenship, DT '00**, is living in Jackson TN, and working at the Kiwanis Center for Child Development as a school-based occupational therapist. She transferred to this position in September 2001 after working for six months at the rehab unit of the hospital in Jackson.

Avelina Espinosa, PhD '00, received the Young Investigator Award in Molecular Biology and Biochemistry at the 50th meeting of the American Society of Tropical Medicine and Hygiene held in Atlanta GA, November 11–15, 2001. She was one of 40 international young scientists who presented their research in the biology of tropical diseases at the meeting. She discussed the paper, "EhADH2, an essential enzyme for the growth and survival of the parasitic protozoan *Entamoeba histolytica*." Espinosa is a research associate at St. Jude Children's Research Hospital in Memphis TN.

Ryan Fischer, HA '00, is the corporate managed care manager for Truman Medical Centers, Inc., the primary teaching hospital for the University of Missouri at Kansas City Schools of Health Sciences. He joined Truman to take on the organization's managed care contracting and revenue recovery after completing an administrative fellowship with the United States Department of Veterans Affairs.

Heather Fogle, DT '00, writes that she has found her dream job at Cascade Children's Therapy in Seattle WA.

IN MEMORY

Golda E. Black, NU '30, died on December 20, 2001, at the age of 92. She suffered from Alzheimer's and had been confined to a nursing home in Kansas City MO, for several years. Among her survivors is a son, Paul W. Black.

Walter E. Chase, MD '32, died November 17, 2001, in Atlantic IA, at the age of 94. He practiced family medicine in Rippey IA, for 33 years. He left Rippey in 1966 to become a physician at the student health service at the University of Northern Iowa in Cedar Falls, which he directed for several years. In 1973, he retired to Sun City AZ, where he lived until 1998, when he moved to Heritage House in Atlantic. His first wife, Edna Mae Pingrey Chase, died in 1986; he married Helen Patrick in 1989 and she died in 1997. He is survived by a daughter, two sons, a stepdaughter and a stepson, six grandchildren and eight great-grandchildren.

Emmett B. Drescher, MD '36, died in Clayton MO on November 2, 2001, apparently of heart failure. He was 90. Following a surgical residency at Barnes Hospital, Drescher served as a major in the Army Air Force during World War II and was chief of surgery at Scott Air Force Base. He met his wife, Marcelyne Faugust, an Army nurse, there. After the war, Drescher had a private surgery practice in St. Louis for many years and served as a consultant for the Veterans Administration Medical Center until 1997. Known as a great outdoorsman, he often canoed on the Mississippi River and enjoyed fishing, hunting and gardening. He was also an avid supporter of cultural institutions. Survivors include two daughters, four sons, and nine grandchildren. His wife preceded him in death in 1996. Memorial contributions may be made to the Audubon Society of Missouri.

William George Reese, MD '42, died October 14, 2001, in Little Rock AR, at the age of 84. He had been professor and chairman of the department of psychiatry at the College of Medicine of the University of Arkansas for Medical Sciences from 1951-1985, retiring in 1987 as Marie Wilson Howells Professor and Chairman Emeritus. He developed the department there and when he retired had taught more than two-thirds of all the students who graduated from the medical school. Reese attended Washington University School of Medicine as a Jackson Johnson Scholar. After internship at Barnes Hospital, he served in the U.S. Medical Corps for three years in the United States, England and Germany, and then went to Johns Hopkins University Hospital where he was a Commonwealth Fellow for psychiatry. He went to the University of Arkansas in 1951. In 1987, the "Annual Reese Award" was established in his honor to recognize psychiatry residents for scholarship and research. He was given an honorary Doctor of Science degree in 1990. Reese founded the Arkansas Psychiatric Society, which gave him the Meritorious Service Award. He was a Life Fellow of the American Psychiatric Association and a Charter Fellow of the American College of Psychiatrists. Survivors include his widow, Elizabeth Bahn Reese, two sons and a daughter.

Harold E. Walters, MD '43, a retired surgeon, died November 20, 2001, of complications from Parkinson's disease. He was 82 and lived in Creve Coeur MO. During World War II he served in the Army Medical Corps in the Philippines. He then practiced in St. Louis until his retirement in 1992. For several years in the 1950s he was also an instructor at Washington University School of Medicine. Walters was a Master Mason and a member of the Scottish Rite, the

Moolah Shrine, the Royal Order of the Jesters and the York Rite bodies. He had served as chairman of the Moolah Shrine Circus, which benefits the Shriners Hospital for Children. Named 90th Potentate of Moolah Shrine Temple in 1979, he became one of the chief officers of the 11,000 Shriners in eastern Missouri. He is survived by his wife, Mary Straub Walters, two daughters, a stepson and two grandchildren.

Oscar W. A. Baltrusch, MD '45, died on September 19, 2001, in Billings MT at the age of 82. He was a general practitioner in Billings for 36 years and had started the Same Day Care Department at the Deaconess Billings Clinic there. He also served many years as the Yellowstone County health officer and had been president of the Yellowstone Valley Medical Society. During World War II he was a medical officer in the U.S. Navy. He and his wife, Dorothy Jean Porter Baltrusch, had four children, who remember going with him on "five-dollar house calls." Although he seldom took vacations, he liked fishing and hunting in the area. He also enjoyed playing the accordion and yodeling. In addition to his widow and children, he is survived by eight grandchildren.

Frank M. Townsend, MD, HS '47, died in Harwood TX, on October 31, 2001.

Phyllis Mae Wollenberg, NU '49, died in Sarasota FL, on December 30, 2001. She was 73. A native of Louisville KY, she had lived in St. Louis until 1961, when she relocated to Florida, where she worked at the Sarasota Memorial Hospital for more than 20 years. She was a Girl Scout troop leader and a member of the Audubon Society and the Nature Conservancy. Survivors include daughters Jean Schmeisser and Heidi Penhale, and a son, Kurt Wollenberg. Memorial donations are suggested to the Audubon Society or to the Hospice of Southwest Florida.

Harold G. Norman Jr., MD, HS '61, died of colon cancer in Coral Gables FL, on June 10, 2001, at the age of 63. A plastic surgeon, he was the recipient of the Florida Medical Association's highest award, the Certificate of Merit, in 1998, and the Physician's Recognition Award for Service to Citizens of Dade County in 1990. His service as a captain in the U.S. Air Force earned him the Air Force Commendation Medal for outstanding service in surgery. He had been president of the Dade County Medical Association, the Greater Miami and Florida Society of Plastic Surgeons, the Miami Medical Forum and the Florida Medical Foundation. Survivors include his wife of 43 years, Nita Todd Norman, and four children. The family suggests memorials to the American Cancer Society be designated for colorectal cancer research.

W. Douglas Davidson, HA '66, died in Austin TX, on September 24, 2001, at the age of 68. His wife, Faye, survives.

Robert A. Yanover, MD '73, died of complications from colon cancer on November 12, 2001. He was 54 and lived in Chesterfield MO. A native of Queens NY, Yanover held an undergraduate degree from the University of Rochester. Following graduation from medical school, he completed internal medicine residency in Cleveland and neurology residency at Barnes Hospital. He was on the staffs of several hospitals and had a private practice in St. Charles MO. Over the years he saw more than 43,000 patients, practicing until a month before his death. He also served as a neurology consultant at St. Joseph Health Center in St. Charles and at Barnes-Jewish St. Peters Hospital, where he was medical director of the physical medicine department. Among his survivors are his wife, Peggy Cooper Yanover, one daughter and one son, his mother and a sister. The family requests memorial contributions to the Colon Cancer Alliance Inc., 175 Ninth Avenue, New York NY 10011.

FACULTY

H. Mitchell Perry Jr., MD '46, professor emeritus of medicine, died of complications from cancer on January 19, 2002, at his home in Town and Country MO. He was 78. A specialist on hypertension and stroke, Perry continued his research at the School of Medicine after retiring as director of the hypertension division in the early 1990s. He served as a physician coordinator for the national Veterans Administration Hypertension Program and as director of the Hypertension Screening and Treatment Program for the Department of Veterans' Affairs in Washington DC, until his death. In the early 1950s, he was a member of the first American group to succeed in medically treating hypertension. More recently, he and colleagues discovered that using drugs to lower systolic blood pressure significantly reduced the risk of stroke. In collaboration with foundations such as the World Health Organization, Perry traveled the globe with his wife, Betty, to determine whether environmental factors in different cultures may influence the risk of hypertension and stroke. Perry studied at Swarthmore College and earned a medical degree from Washington University School of Medicine. He later served in the Army Medical Corps and did biochemistry research on nerve gas in the Army Chemical Corps. In addition to Betty, his wife of 56 years, Perry is survived by four children, **Horace M. "Mike" Perry, MD '75**, Clayton R. Perry, MD, Heather E. O'Keefe, PhD, and Holly E. Perry, MD; a brother, Richard L. Perry, MD, and 12 grandchildren. Memorial contributions may be sent to the School of Medicine Alumni Fund, Campus Box 8509, or to the Saint Louis Zoo; 1 Government Drive, St. Louis, MO 63110.

Seeking fixed income? Try a Washington University Gift Annuity. Here's how...

As you review your personal financial plan, you may find that a Washington University Charitable Gift Annuity can be helpful to you if you are age 60 or older. Here's one way you can receive guaranteed income for life and make an enduring gift to the University.

If you are age 72 and create a \$10,000 Gift Annuity with cash, you will receive the following benefits:

Rate of return	7.4%
Guaranteed annual income for life	\$740
Tax-free portion	\$428
Taxable portion	\$312

(The entire amount becomes taxable income after the first 14.5 years.)

Immediate federal income tax deduction **\$3,796**

(amount of charitable deduction may vary slightly)

You may also fund a gift annuity with appreciated securities.

Sample Rates of Return

Single life		Double life	
age	rate	age	rate
60	6.4%	60 & 60	6.1%
65	6.7%	65 & 65	6.3%
70	7.2%	70 & 70	6.6%
75	7.9%	75 & 75	7.0%
80	8.9%	80 & 80	7.7%
90	12.0%	85 & 85	8.7%

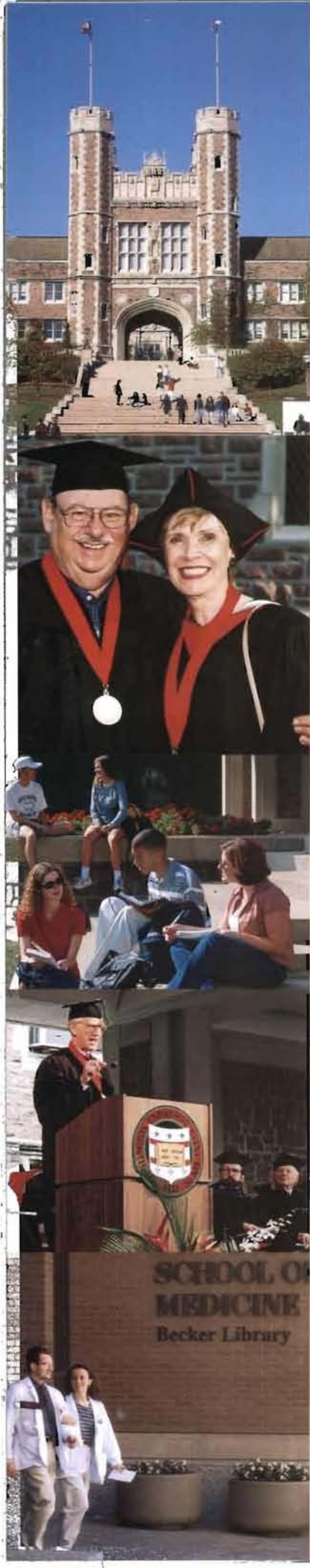
For further information or to request a personalized example, please call 1-314-935-5848 or 1-800-835-3503, complete the attached reply card, or e-mail us at plannedgiving@aismail.wustl.edu. Visit us at our Web site at <http://aisweb.wustl.edu/Alumni/PlannedG.nsf>.

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Seek advice from your tax or legal advisor when considering a Charitable Gift Annuity.

Design by Jeffrey St. Pierre '01/Create Studio at Washington University



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- Washington University is already included in my estate plans—I would like to become a Robert S. Brookings “Partner.”
- I am age 60 or over. Please send me a personalized, confidential calculation using the following birthdate(s) to illustrate the very attractive benefits that I will receive from a Washington University Charitable Gift Annuity.
- I would like a calculation based on a theoretical gift of:
 \$ _____ (minimum \$5,000)
 Cash Securities
 \$ _____
(Cost Basis) (Acquisition Date)

First Beneficiary
 Birthdate _____ Relationship _____
 Second Beneficiary
 Birthdate _____ Relationship _____

- Please send me your booklet on Charitable Gift Annuities.
- Please send me your booklet on other Life Income Plans at Washington University.
- Please send me information on making a bequest to Washington University School of Medicine.
- Please have Paul Schoon or Lynnette Sodha from the Washington University Planned Giving Office call me.
 Name _____
 Address _____
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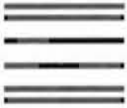
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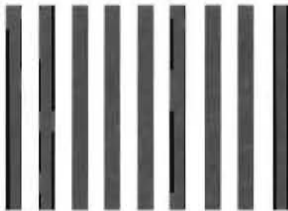
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Open for business

The 52,000-square-foot Charles F. Knight Emergency and Trauma Center, adjacent to the new southwest tower, opened its doors to the public in February. Located at 400 S. Kingshighway Blvd., the spacious facility is the final piece of the \$320 million campus integration project that began in 1996.



EMERGENCY AND TRAUMA CENTER



Healing Touch Ting Tao, a second-year student in the MD/PhD program, spends a playful moment with Wenhui "Hubert" Tang at the recent Chinese health fair sponsored by the Asian-Pacific American Student Association. The annual event and others like it provide free health screening education and referrals for families in the St. Louis area.



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