2001

Boston University School of Medicine Dean's report: Spring 2001 v. 10, no. 2

BOSTON UNIVERSITY MEDICINE

DEAN'S REPORT 2001

Boston University School of Medicine Profile

As of May 1, 2001

MD Students	629
MD/PhD	81
MD/MPH	4
BA/MD	79
MA	168
PhD	246
Residents	446
Fellows	137
Full-time Faculty	991
Part-time/Volunteer Faculty	1,365
Medical School Alumni	5,603

DEAN'S REPORT

BOSTON UNIVERSITY MEDICINE

Vol. 10 No. 2 Spring 2001

FEATURES

DEPARTMENTS

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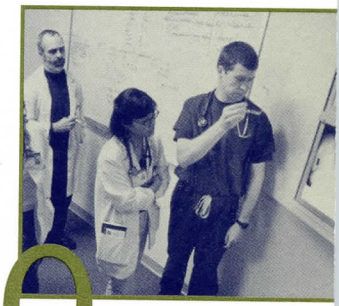

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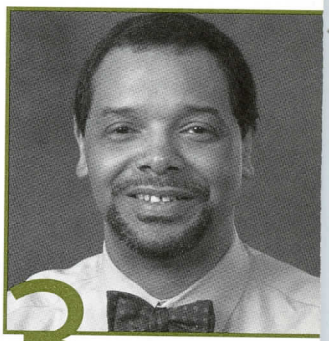

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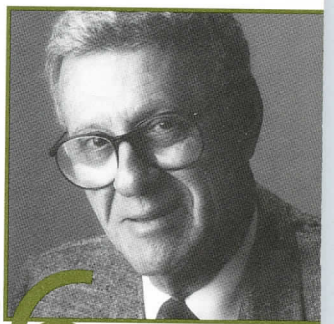

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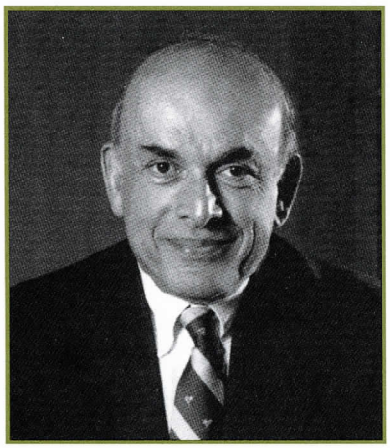
Boston University Medicine is published by Boston University Medical Center, Department of Corporate Communications, 715 Albany Street, Boston, MA 02118, on behalf of the Boston University School of Medicine.

Managing Editor: Christopher Smalley. **Publications Manager:** Stephen McGettrick. **Design:** Boston University Office of Publications Production. **Photographers:** Frank Curran, Educational Media, Ben Watkins. **Contributing Writers:** Jonathan Kranz, Peter Reich. **Cover Illustration:** Jeff Brice.

Dean's Message



At a time when reports about medical research breakthroughs and problems in health care delivery tend to dominate the news, less visible but not less significant are the changes occurring in medical education. As medical knowledge expands at an exponential rate, faculty and students employ new methods of teaching and learning and place much greater reliance on Web-based approaches to learning. Today's students use electronic media in various forms on a daily basis to review course materials on-line from home, from clinics, and at the bedside as well as in classrooms. They participate in after-class discussions with colleagues and faculty by logging on to Web sites at any hour of the day. With another click of the mouse, they open connections to medical textbooks and major clinical journals. Much of this information can be applied to management of individual patients: it is not unusual for a student working in a clinical setting to use a hand-held computer to look up such critical information as unusual drug interactions that may occur between medications prescribed for a patient. These and other types of easily accessible medical information systems expand the educational horizons of the student, while at the same time reducing medical errors and minimizing unnecessary and costly tests. As the School adapts to this new world of medical education, with new technologies and varied training sites, the 153-year tradition of focusing on patient-oriented education remains at the core of the curriculum. Our goals remain the same: to graduate new physicians with superior clinical skills and with an everlasting dedication to meeting the needs of the patients.

Also in this issue is a focus on a rapidly expanding area of research at the School, namely in the field of behavioral neurosciences. By connecting changes in brain structure and function with behavioral abnormalities, teams of investigators are gleaning fascinating new insights into autism, as well as causes and effects of substance abuse and pre- and postnatal malnutrition. Research on the fundamental causes, treatment, and prevention of Alzheimer's disease flourishes on the Medical Campus and should provide new approaches to control this devastating disease.

Research overall at the School continues to thrive. Total research awards have increased to record levels in each of the past ten years. At the School alone, independent of its clinical affiliations, sponsored research last year totaled approximately $122 million, testimony to the prodigious output of our excellent faculty. Clinical trials are expanding, and to help coordinate the hundreds of clinical research projects and develop new ones, we have recruited a new

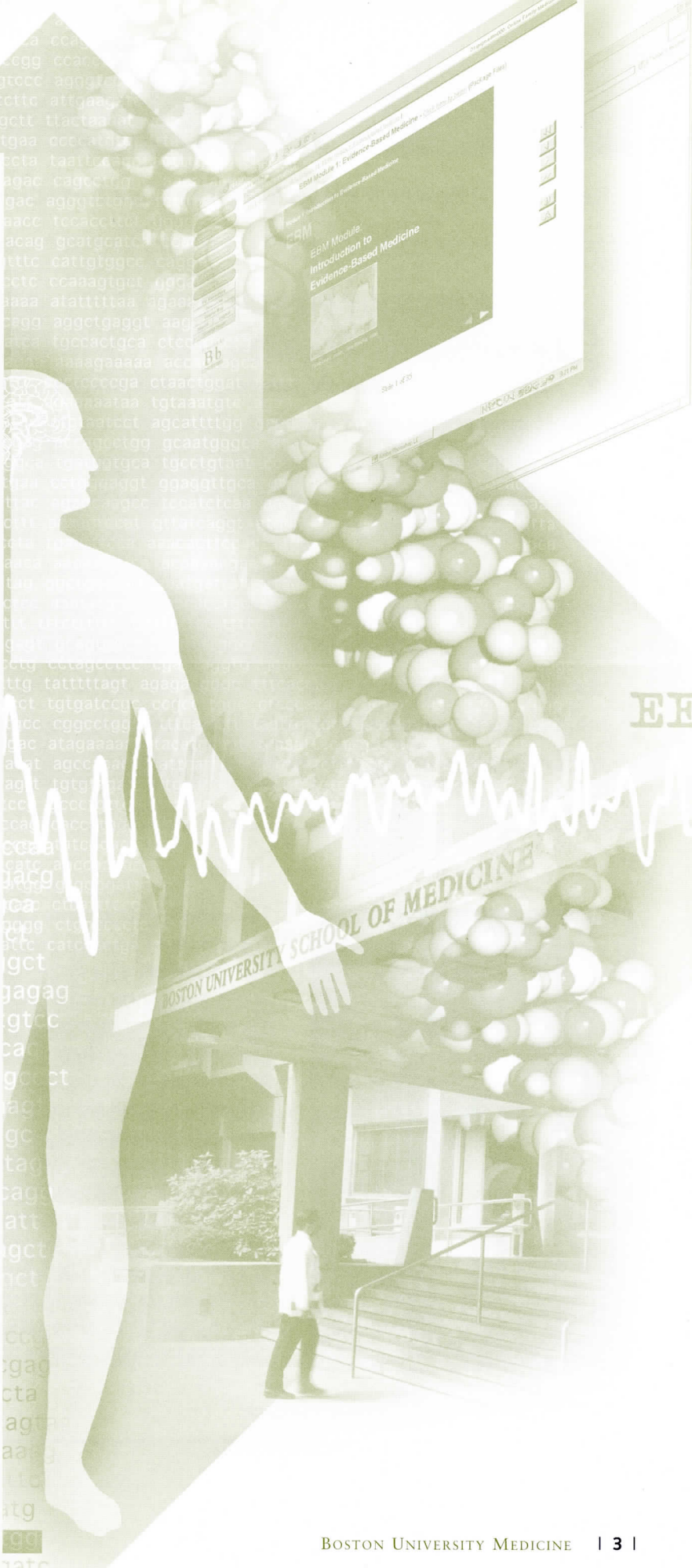
director of the Office of Clinical Research, Thomas J. Moore, MD, a highly respected clinical scientist who has had extensive experience in both academia and industry.

Finally, this issue also describes some of the recent experiences of our medical students in the research setting. In addition to developing the combined MD-PhD program in the past decade, we have recently expanded the number of research opportunities for other medical students. With the generous assistance of some alumni and friends of the School, we are now able to offer numerous summer research fellowships to interested students. The research achievements of such students, even during a brief summer period, exemplify the outstanding talents exhibited by the student body.

All in all, despite what might be considered turbulent times in medicine, the School continues to improve the quality of its educational and scientific programs to even higher levels of excellence. Building on a century and a half of extraordinary history, we're shaping a common vision of a wonderful institution with a bright future.

Aram V. Chobanian

Aram V. Chobanian, MD

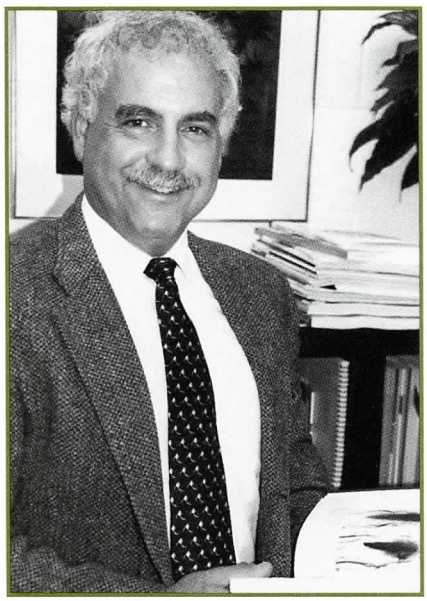


Bridging the Gap

Neurological Research Brings Insight to Clinical Practice

Perhaps few schools are as well positioned as Boston University School of Medicine (BUSM) to unite research in neurological development to clinical practice. As a premier research facility located in one of the world's greatest clusters of academic talent, BUSM sponsors many of the pioneers studying prenatal, perinatal, and postnatal development. As a partner with Boston Medical Center (BMC), an institution that serves many of the city's poorest and most vulnerable citizens, BUSM researchers and clinicians are eyewitnesses to the consequences of disrupted development—and are responsible for providing care that can ameliorate it.

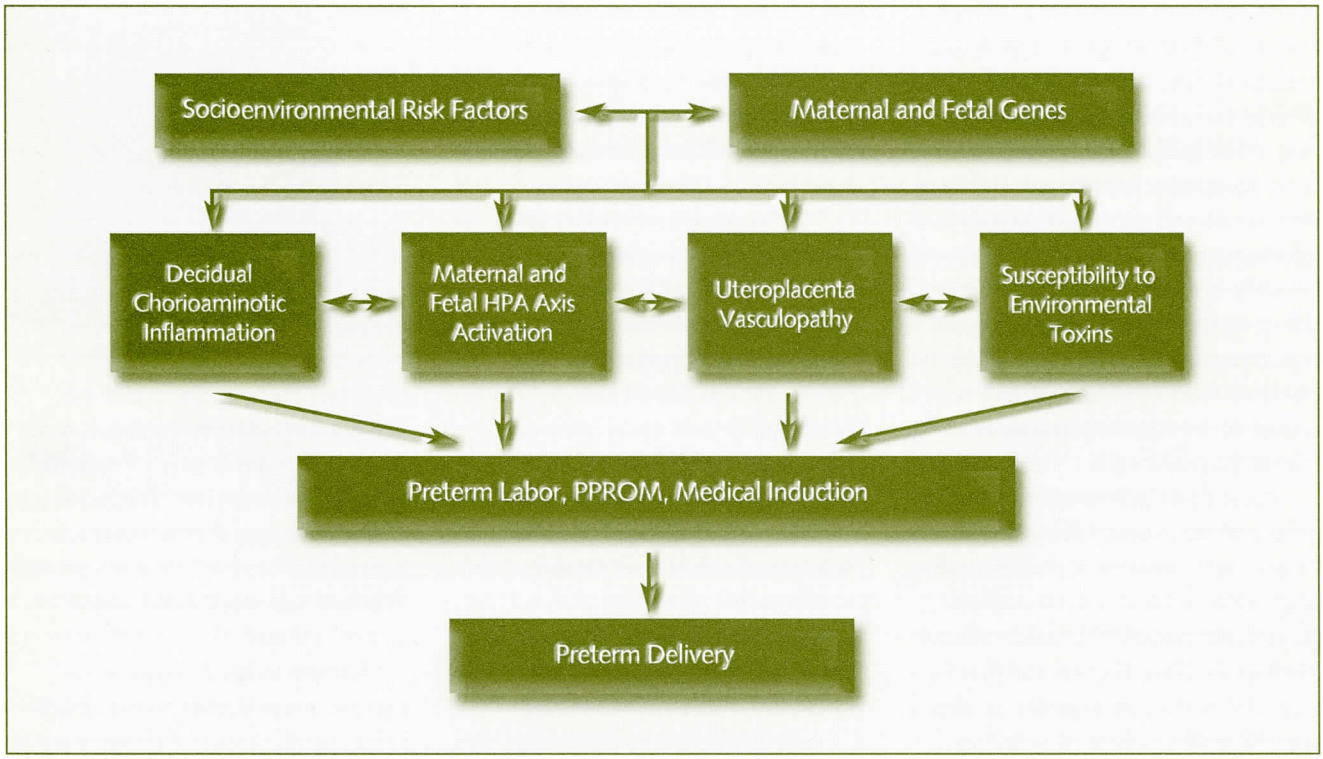
From close observation of brain morphology to multigenerational studies of large population sets, BUSM scientists are opening new insights into the relationship between neurological development and human growth, learning, and behavior.



Mark Moss, PhD

Mark Moss, PhD, chairman of the Department of Anatomy and Neurobiology, describes his department as one that has enabled BUSM "to assess the entire organism, from the molecular level to behavior." The department's access to advanced neuroimaging technologies—including structural and functional magnetic resonance imaging and magnetic resonance spectroscopy—allows researchers to assess brain integrity, metabolic function, and behavior in a living organism. The School's methods for the consistent preparation of brain tissue, Moss says, "allow us to closely examine neuropathologies and neurochemistry. Techniques such as immunocytochemical neurotransmitter receptor characterization give us insight into gene expression and neuroinflammation."

At the ultrastructural level, department researchers examine fine details, including alteration or damage to neuronal components such as neurons, glia cells, and myelin. "The advantage of our work," Moss says, "is that all variables can be related to each other in one organism. It's a framework for gaining understanding of the mechanisms of disease."



Xiaobin Wang, MD, MPH, ScD

From the Yangtze River Valley to the Charles River

Xiaobin Wang, MD, MPH, ScD, assistant professor of pediatrics, and her colleagues are engaged in a large molecular epidemiologic study of low birth weight/preterm delivery, funded in part by the March of Dimes Birth Defects Foundation. Recognizing that low birth weight/preterm delivery is the major determinant of neonatal mortality and postnatal morbidity—including cerebral palsy, mental retardation, learning disability, and vision and hearing impairment—Wang and her colleagues are pursuing what she calls "the missing pieces" of the etiology of preterm delivery and low birth weight: genetic factors and gene-environment interactions.

Wang leads a multi-disciplinary research team of pediatricians, obstetricians, epidemiologists, biostatisticians, and molecular geneticists, as well as laboratory and field staff. The study involves two populations: a low-risk Chinese population that generally receives good prenatal care; and a high-risk U.S. population, enrolled from BMC, that is a predominantly inner-city and multiracial population with rates of low birth weight and preterm delivery higher than the national average.

In addition to collecting maternal and cord blood for genetic analysis, the study team collects detailed clinical and epidemiologic information. "The goal," Wang says, "is to integrate genetic information with the clinical and socioenvironmental information we gather." She and her colleagues have made considerable progress in understanding gene-environment interactions, in which mothers with certain genotypes appear to be more susceptible to environmental insults.

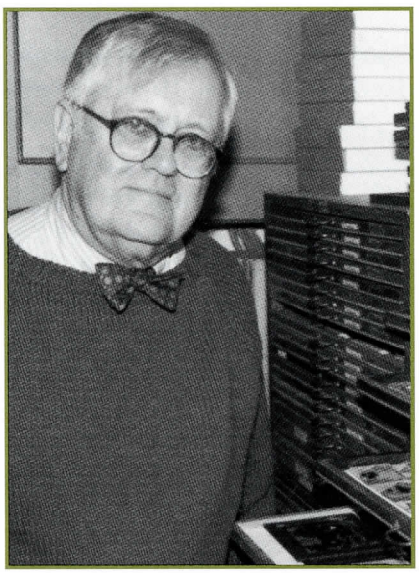
"Our study points out the complexity of the issues," Wang says. "That's why we need a multidisciplinary team to address the complex genetic, environmental, and interactive factors. This study is the first step toward putting together all the important dimensions in order to better understand the etiology and biological mechanisms of low birth weight and preterm delivery."

Examining brain structure and behavior

With his colleague, Margaret Bauman, MD, adjunct clinical associate professor of pathology and laboratory medicine, Thomas Kemper, MD, professor of pathology and anatomy and neurobiology, has been pursuing the neuroanatomy of autism. For the last fifteen years, the two have been examining healthy and autistic brains to discover if, and where, brains show evidence of neuropathological change. Working with serial sections of 35 microns each, Kemper and Bauman examined tissue from healthy and autistic brains on a comparison microscope, allowing simultaneous side-by-side observation.

"We've identified two major areas of pathological change," Kemper says. The first is in the forebrain in the limbic system, particularly in the hippocampal formation, the entorhinal cortex, and the amygdala and areas intimately connected to it. The second is in the cerebellum, where autistic brains reveal significantly fewer Purkinje cells than their healthy counterparts.

In general, Kemper observes, "the diseased tissue in the limbic system looks like an earlier stage of brain development, or perhaps a curtailment of maturation." The reduction of Purkinje cells in the cerebellum, Kemper says, "is not subtle. You can hold a section to the light and see the difference."



Thomas Kemper, MD

The discovery of lesions in the limbic system is especially exciting to researchers, because it is the area of the brain responsible for memory. "The major clinical deficits in infantile autism are in language development and social interaction, two processes that are not innate but derived from the environment, from learning," Kemper says. "Memory plays a clear role; our discovery of limbic lesions forms a nice fit between laboratory observation and behavior, between the structural and the clinical."

Kemper's discoveries suggest that the pathological process begins before birth, deflating one of the older theories of autism that attributed its cause to poor parenting. "That alone makes our work a meaningful contribution to clinical practice," says Kemper. "We've been able to lift the burden of guilt from a lot of shoulders."

Researcher Helen Tager-Flusberg, PhD, will come to BUSM in June 2001, from the Eunice Kennedy Shriver Center at the University of Massachusetts Medical School, to continue her work in chromosomal and complex genetic disorders, and, she says, "for collaborative opportunities that will stimulate new questions." Tager-Flusberg's work examines the phenotypes, at cognitive levels, of chromosomal disorders

Helen Tager-Flusberg, PhD

such as the rare Williams syndrome and Prader-Willi syndrome, and complex genetic disorders, such as autism and specific language impairment that involve the interaction of multiple, mutated genes, which may vary among individuals.

"The study of these developmental disorders can inform our basic theories of cognitive neuroscience," Tager-Flusberg says. At BUSM, she plans to extend Kemper and Bauman's work by exploring the relationship between structural abnormality and behavior. By taking in vivo functional brain images (fMRI) while the subjects are involved in cognitive tasks, Tager-Flusberg and her collaborators can measure blood flow to the areas of the brain engaged in the tasks.

"We're taking a middle path between structure and the observation of behavior," says Tager-Flusberg. "Previous fMRI studies show that the amygdala is highly activated when healthy people see facial expressions of emotion, especially fear." As documented in Kemper's research, the amygdala of the autistic brain shows abnormalities. According to Tager-Flusberg, "we want to know if the same facial expressions activate the amygdala in autistic people; we want to see if we can document a clear connection between structural abnormalities and response to stimuli."

The impact of malnutrition

Janina Galler, MD, professor of psychiatry and public health, and director of the Center for Behavioral Development and Mental Retardation, has established an international reputation for her research into both the structural and the behavioral consequences of childhood malnutrition. While her work has helped scientists gain a better understanding of malnutrition's impact on brain development, particularly in the hippocampus, Galler is particularly interested in the public health lessons that may be gleaned from her population studies.

"The bottom line," says Galler, "is that events such as the recent earthquakes in El Salvador and India leave thousands of children at risk—abandoned and malnourished. We need to actively develop interventions from a public health perspective, to identify kids at risk and to find ways to prevent the long-term effects of malnutrition."

Galler's longitudinal studies in Mexico and Barbados have formed a foundation of insight into the long-term consequences of serious childhood malnutrition. The Barbados Study, currently in its thirtieth year, has followed the progress of two groups of children: one set of approximately two hundred children who had experienced a moderate-to-serious episode of malnutrition within the first year of life; and a control group of approximately 125 healthy children. Both groups were screened to eliminate low birth weight, prenatal malnutrition, and prenatal and postnatal complications.

Galler and her colleagues found that the children with previous malnutrition scored 10–12.5 points lower on IQ tests than the controls. But perhaps the most startling observation involves the prevalence of attention deficit disorder (ADD) among the previously malnourished

Janina Galler, MD

children. While approximately 15 percent of the control group exhibited symptoms of ADD, 60 percent of the children with histories of malnutrition expressed ADD symptoms, including poor memory, short attention spans, restlessness, and a tendency to be easily distracted. Close analysis of the data revealed a strong correlation between the low IQ scores and ADD (r=0.85), suggesting the importance of early intervention.

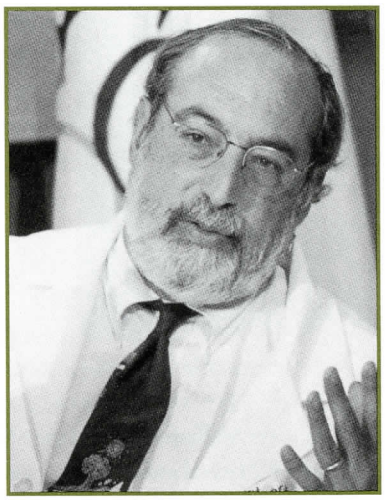
Now that study participants are in their thirties, Galler's team is able to observe the impact of malnutrition on subsequent generations. One of the latest findings is that women who experienced childhood malnutrition were more likely to suffer complications during pregnancy, including premature births and elevated blood pressure, despite appropriate prenatal care and nutrition. With continued funding, Galler hopes to sustain the Barbados Study to follow the next generation to adulthood.

Deborah Frank, MD

"Crack kids are not broken"

In the late 1980s and early 1990s, the crack cocaine epidemic swept through America's inner cities. With the genuine devastation caused by the drug came what Deborah Frank, MD, associate professor of pediatrics, calls "a huge infrastructure of terror and media hype. The stigma attached to cocaine was used to justify outrageous public policies, including the arrest and imprisonment of pregnant women."

At BMC, where 18 percent of the children who were delivered in the late 1980s were subject to prenatal cocaine exposure, the issue has not been one of abstract media alarm but of immediate clinical interest. Working with Barry Zuckerman, MD, chairman, Department of Pediatrics, Frank—who had been studying prenatal marijuana exposure—focused on crack cocaine in a study measuring the impact of cocaine on birth weight. In 1989 Frank and Zuckerman reported their findings: Prenatal cocaine

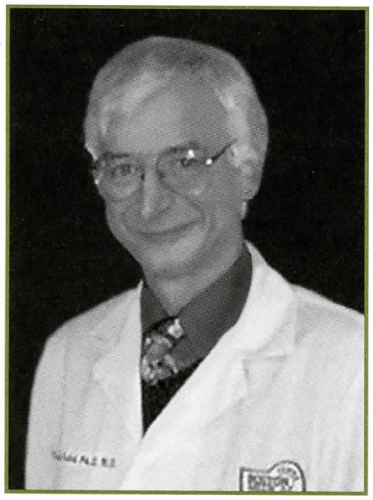


Barry Zuckerman, MD

exposure had an effect on birth weight that was equivalent to smoking half of a pack of cigarettes a day.

Concerned about the media hype in the early 1990s, Frank successfully applied for a federal grant that would allow her to follow two cohorts of approximately one hundred children each, one group exposed to prenatal cocaine and the other not. Fortunately, recent work by Mark Mirochnick, MD, associate professor of pediatrics, and Michael F. Holick, MD, PhD, director of the General Clinical Research Center, demonstrated a way to quantify metabolized cocaine in a newborn's meconium, the accumulated waste from the last two trimesters in utero. The new technique allowed Frank and her colleagues to distinguish various levels of cocaine exposure.

Among neonates, Frank found increased incidence of subependymal



Michael F. Holick, MD, PhD

germinal matrix hemorrhage on the cranial ultrasounds of exposed newborns. At three weeks, heavily exposed infants appeared more excitable, and demonstrated less modulated changes from sleep to waking or crying states.

In general, however, the findings contradicted media paranoia. "The media described these children as 'doomed,' a lost generation, or as children unable to love," says Frank. But her studies found that by age four, prenatal cocaine exposure had no impact on verbal intelligence scores. To date, no study that has tracked children up to age six has found a significant correlation between prenatal cocaine exposure and intellectual development.

If anything, the consequences of cocaine exposure may in part reflect those of prenatal malnutrition. Both Galler and Frank hypothesize that the connection could be related to diverted resources (pregnant women purchasing cocaine instead of food), suppressed maternal appetite, and/or cocaine's impact on placental vessels, resulting in decreased nutrient transfer.

"Crack kids are not broken," Frank says. In fact, her research suggests that environment plays a much larger role in these children's lives than prenatal cocaine exposure does. "At Boston Medical Center," says Frank, "we have learned to treat the child, not the exposure. Deprivation and violence affect all kids badly. What these kids really need, and what we need for better public health, are policies for intervention and prevention that are in the best interests of parents and children."

Future efforts

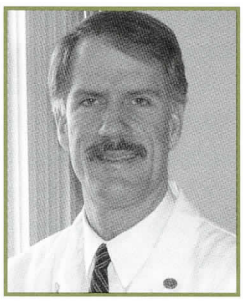
Whether the specific study topics are birth weight, brain structure, or the consequences of malnutrition, BUSM research is developed with an eye toward clinical relevance and applicability. "All of our work," Moss says, "has driven clinical and therapeutic interventions." As work progresses on the connections between prenatal, perinatal, and postnatal development, and their impact on learning and behavior, BUSM researchers and physicians expect to uncover new opportunities for intervention and to establish guidelines for improved public health policy.

The New World of Medical Education

The medical curriculum continues to evolve. Now, more than ever, students are gaining extensive and excellent training through clerkships at community health centers, rotations to rural settings, inpatient training at affiliated hospitals, and the introduction of electronic curricula. Students at Boston University School of Medicine (BUSM) are the beneficiaries of such innovations, learning superior clinical skills, professionalism, and an appreciation of the practice of patient-oriented medicine in diverse communities.

Continuity in the Community

Exposure to ambulatory care in the community begins during the first year of medical school, and in a variety of ways. Some students are assigned to a neighborhood health center for both longitudinal courses, namely Integrated Problems and Introduction to Clinical Medicine. They will continue at these sites into the second year, and in the third year can return for the third-year clinical clerkship in family medicine, as well as the ambulatory component of the clerkships in pediatrics and medicine.



Dan Rust, '02

While such longitudinal experiences allow students to observe patients over time, they also gain experience in a variety of practice settings. "It is really nice to have familiar faces at the clinic," says Dan Rust, '02, who spent much of his first and second years at Dorchester House Multi-service Center, one of the Boston HealthNet Community Health Centers. "You get to know the people, and they get to know you. With Vietnamese, Hispanic, African-American, Irish, and Cape Verdean patients, it is a good opportunity to learn more about the community." (see sidebar)

Other students are assigned to family medicine practitioners for an extended family medicine preceptorship, in which the students spend fourteen afternoon sessions with the preceptors. Initially, they shadow the physician, then make the transition to interviewing patients. At the same time, students are taking notes on certain issues such as domestic violence, geriatric care, and family history, topics that are analyzed later in formal group discussions. Returning to nursery and office sessions in the second year, the students focus on the medical history and physical examination of patients.

Dan Rust, '02

Uphams Corner Health Center

Accompanying his wife, Kathryn Caldera, a cultural anthropologist, to Cape Verde in 1997, Rust learned the language and the culture. Knowing that there is a large Cape Verdean community in Dorchester, he asked to be assigned to Dorchester House Multi-service Center for Introduction to Clinical Medicine years I and II, and arranged his own volunteer program in his third year.

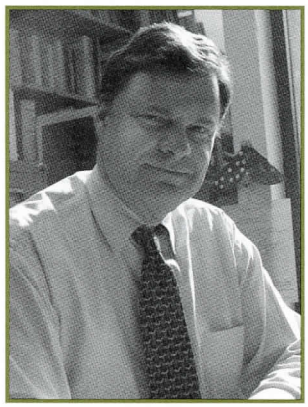
"When third year came up," Rust says, "I learned that community service is part of the outpatient block in medicine. I then made a few calls, and my preceptor at Uphams Corner Health Center introduced me to Adelina Alves, a Cape Verdean–American community advocate and social worker. I decided to volunteer with her department, to find housing and jobs for Cape Verdeans. With my knowledge of the Cape Verdean language, I could help people make and get to appointments, advocate for them, and provide translation. It was eye-opening for me to go to housing offices and welfare offices, stand in line, and experience firsthand the challenges many patients face. I was struck by the social workers' commitment to solving their clients' problems. In the course of my rotation, I heard many physicians remark that the success of their treatment plans depends largely on the efforts of community advocates and social workers."

Rust graduated from Harvard University in 1988 with a degree in anthropology and worked as a laborer and for the U.S. Geological Survey before deciding to apply to medical school.

Medical Education at a Rural Maine Outpost

One of the newest additions to the clinical curriculum is a rotation in rural Maine. Developed in cooperation with the Maine Ambulatory Care Coalition (MACC), which sponsors medical education at twenty-five community health centers in the state, this network serves approximately 70,000 Maine residents, mostly in medically underserved areas. The placement program, funded by the National Health Service Corps, is called SEARCH: Student/Resident Experiences and Rotations in Community Health. In Maine, SEARCH provides truly rural primary care training, and places several BUSM students each year.

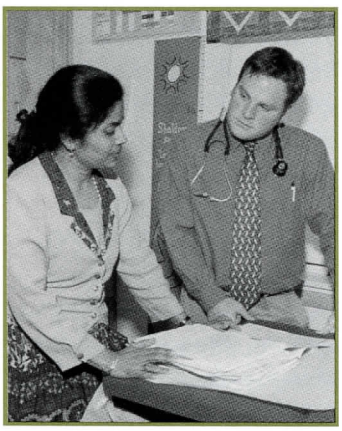
"These experiences test our students in the extreme because the rural health centers are thirty to fifty miles from the nearest hospital," says Peter Shaw, PhD, associate director of the Office of Medical Education. "They'll see gunshot wounds; logging, hunting, and snowmobile accidents; and a lot of alcoholism. Often they'll be in charge of, and responsible for, a broader range of medical problems than in the city. In the rural area, you have to deal with the situation yourself."



Peter Shaw, PhD

Aram Demirjian, '02

Guilford Medical Associates, Guilford, Maine



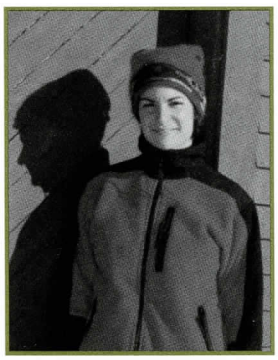
Usha Reddy, MD, and Aram Demirjian, '02

"I have been shadowing Dr. Usha Reddy at Guilford Medical Associates," says Demirjian. "She has a large patient population and does a lot of OB/GYN. There's a fairly sizeable elderly population with diabetes, hypertension, COPD [chronic obstructive pulmonary disease], and coronary artery disease. I am also doing full physicals on a number of people in their thirties and forties who have no major problems. In winter, we see a lot of walk-ins for upper respiratory infections, coughs, and asthma exacerbation. Slots are usually double- and triple-booked by afternoon."

Because many residents have either inadequate health insurance or none at all, Demirjian needs to discover the patient's needs and then find out what type of coverage he or she has. Frequently, he will then go back and work something out with the patient. "Once, the pharmacist told me he could provide crutches and a splint for a patient, but not ace bandages. We all try to work hard to make sure we're not depriving someone of the care they ought to receive," Demirjian says.

The differences in health care in rural Maine as compared with major medical centers are numerous, but none were as surprising to Demirjian as was the practice of a surgeon making a home visit. "One patient is a woman who is hemiplegic as a result of a stroke, and it wasn't clear if she had an aneurysm or a hernia, so the surgeon stopped by so the ambulance wouldn't have to bring her to the hospital," he says.

Demirjian earned a bachelor's degree from Bucknell University in 1996 and a master's degree in medical sciences from Boston University in 1997.



Laura Galaburda, '02

Laura Galaburda, '02

Bingham Area Health Center
Bingham, Maine

Galaburda was assigned to a small clinic in Bingham, Maine, where the MACC provided housing in a hunting lodge a few miles from the clinic. "There are a lot of moose here," says Galaburda. "They like the salt on the roads, so there's a scenic drive to work. With all the snow, it is a bit like *Northern Exposure*.

"Most of the employment is logging or the industry it provides, and we see a lot of chronic pain from injuries acquired in the woods. The men who drive the logging trucks come in with chronic joint pain in their hips, knees, and ankles. Most of the older generations and many of the young kids smoke cigarettes and have done so for years, so COPD is prevalent," she says. "Even in this small town, there is a pulmonologist not too far away because the demand is so high. When I did my inpatient rotation at the Boston VA, I saw people with COPD, but the difference was they had quit smoking; here, people with recurrent bronchitis, pneumonia, and constant coughing are not willing to quit."

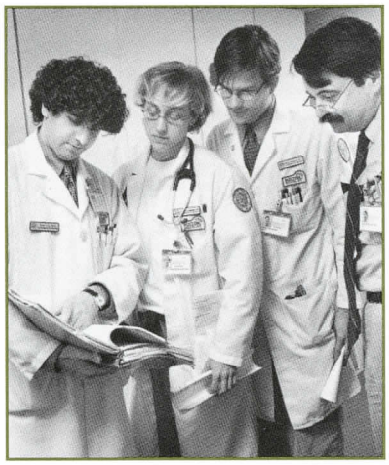
Throughout her clerkship, Galaburda has also been able to learn a great deal about the families who live in the area, often caring for parents, children, and the childrens' children, all in the same week. "Many members of the same family are patients at the health center," she says. "They come in and talk about one another with us as the health care providers, mostly just as friendly conversation, sometimes to thank one of us for our help with his or her grandparent or child. You learn confidentiality means something different than it does in a large health center, where anonymity is often more the rule."

Galaburda graduated from Harvard University, where she was a John Harvard Scholar, in 1998.

Efficiency in the Hospital

An innovative concept called the Firm provides continuity of care and a more cohesive setting for clinical clerkships

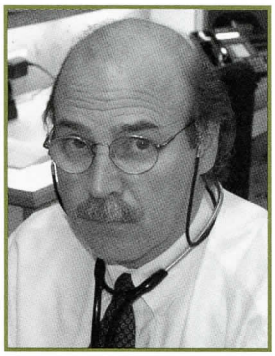
The evolution of health care has forced clerkships to face several challenges, including increased patient turnover, decreased length of stay, and fewer opportunities for house staff and students to see the natural history and progression of an illness. To answer that challenge, Boston University Medical Center (BUMC) has turned to a concept known as "the Firm."



Firm students at Boston University Medical Center

A notion first started nearly twenty-five years ago, the Firm helps academic health centers link ambulatory and inpatient care. Each Firm, of which there are six at BUMC, comprises a group of primary care physicians. The inpatient attending physician for the Firm is derived from that group, and all patients of physicians in that group are admitted to the Firm. A specific hospital social worker and discharge planner are also assigned to the Firm. The continuity of care and quality of communication that accompanies patients as they enter and leave the hospital are better, more complete, and more efficient.

The Department of Medicine adopted the Firm system in 1998 to further improve the manner of care for patients as well as the educational experience for students and residents. The monthly attending physician for each team on the Firm is both the attending of record and the teaching attending. This facilitates communication between the attending of record and various consultants,



Eric Hardt, MD

as well as strengthens the link between patient care and teaching. Referring and admitting physicians, who hand off their primary responsibilities to the inpatient attending, have more time for office management and continue to maintain key social and doctor-patient relationship activities without the burden of multiple hospital visits during this era of increased time pressure. Residents and students are not assigned to a specific Firm but rather rotate from Firm to Firm, a practice that offers diverse and complementary experiences.

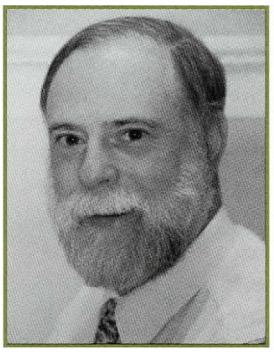
"The Firm not only provides more expertise for taking care of certain types of patients," says Eric Hardt, MD, chief of Firm C, the Geriatric Service at Boston Medical Center (BMC); "it also improves the information flow through the linked chain of care sites and brings continuity to the medical curriculum." Firm C handles approximately 85 percent of the geriatric patients who are treated at BMC.

"In the third year, undergraduate medical curriculum focuses on acute inpatient care and, generally, care of the geriatric patient," says Hardt. "Students learn that when people leave the hospital, they are not cured but have been transferred to settings fourth-year students visit. When students return in the fourth year for the required course in geriatrics, they see the hospital patient now recovering in a nursing home or at home. The students learn how to use community resources to solve common problems of discharged patients, and how to deal with the physical environment and compliance with medication." The home visitation portion of this course will be familiar to alumni as the twenty-first-century version of the Home Medical Service, now in its 126th year.

Roger Williams Medical Center

Students obtain superior clinical education at the School's newest major affiliate

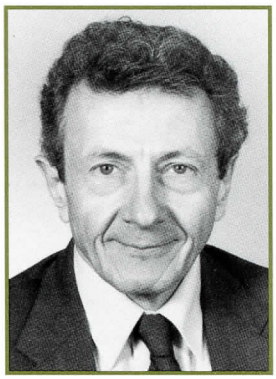
Rogers Williams Medical Center (RWMC) is 128 years old and has a long tradition of academic teaching. The 30-acre campus in the Mount Pleasant section of Providence, R.I., includes a 220-bed medical and surgical hospital with 6,700 admissions annually; research laboratories; a therapeutic radiation facility; and practice offices. The hospital offers a continuum of care: it possesses the only hospital-owned nursing home in the state, with 200 beds; a 175-bed assisted living complex; and a vigorous home care program that receives 100,000 visits annually. In addition, RWMC provides two- and three-bedroom apartments for BUSM students engaged in clinical rotations.



Michael B. Macko, MD

Medicine: "For the inpatient portion, students are assigned to teams headed by a resident and an intern. They get to see a smaller hospital and participate actively in the care of patients. We have a Blood and Marrow Transplant Unit, multiple fellowships, and a large medical faculty. For the outpatient portion, students participate in the Internal Medicine Practice and rotate through the VA Outpatient Clinic, a hospice, and subspecialty outpatient clinics. They see a wide variety of outpatient cases, closer to what the average physician does on a day-to-day basis in the real world."

—Michael B. Macko, MD, clinical associate professor of medicine, Roger Williams Medical Center



Harold J. Wanebo, MD

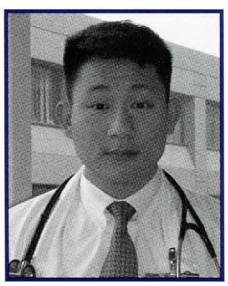
Surgery: "We are trying to maximize the experience on clinical services. In surgery, clerks spend time on the Oncology Service and in a general surgery practice, as well. They spend time in the offices and interact with patients before and after surgery. They see the real-life perspective of a busy practice, including seeing how decisions are made prior to treatment and then seeing the patient in follow-up. They also see a variety of cases on a daily basis and interact with the anesthesia service and learn how to place endotrachial tubes. Students make rounds with the fellow and the resident; they get their own patient and they present the patient when making rounds. We have a weekly journal club that focuses on oncology. Articles are selected for the training of fellows, but students prepare a critique to present. They learn how to be critical readers of current literature."

—Harold J. Wanebo, MD, professor of surgery, Roger Williams Medical Center

John Su, '02

A Schweitzer Fellow and combined MD-MPH candidate, John Su completed both Medicine and Surgery at RWMC

During his first year at BUSM, Su became involved with the Hepatitis B Initiative (HBI) *(www.hepbinitiative.org)*, which was started by medical and public health students from all the Boston-area schools to spread awareness about hepatitis B and the availability of the vaccine.



John Su, '02

HBI now performs outreach in Chinatown and Dorchester, makes presentations to schools and summer programs, and offers free screenings and vaccinations at two clinics in Chinatown. In recognition and support of his community work, Su was named a 1999–2000 Schweitzer Fellow.

Su's work with HBI, as a Schweitzer Fellow and as HBI's executive director during his second year, brought him into the sphere of influence of the Boston University School of Public Health, and he was accepted as a dual degree student in the Department of Social and Behavioral Sciences.

"At Roger Williams, at least in terms of primary care, I definitely have been able to apply some of the epidemiology from my SPH classes in evidence-based medicine in the outpatient environment. Working with Dr. Macko [the clerkship director at RWMC] at the VA site, I encounter alcoholism, depression, and other chronic diseases. With many public health challenges in the VA population in Providence, the social and behavioral emphasis of my MPH is to figure out how to change people's habits, such as helping them quit smoking and drinking, assisting them with a successful diet, or encouraging them to receive the needed vaccinations."

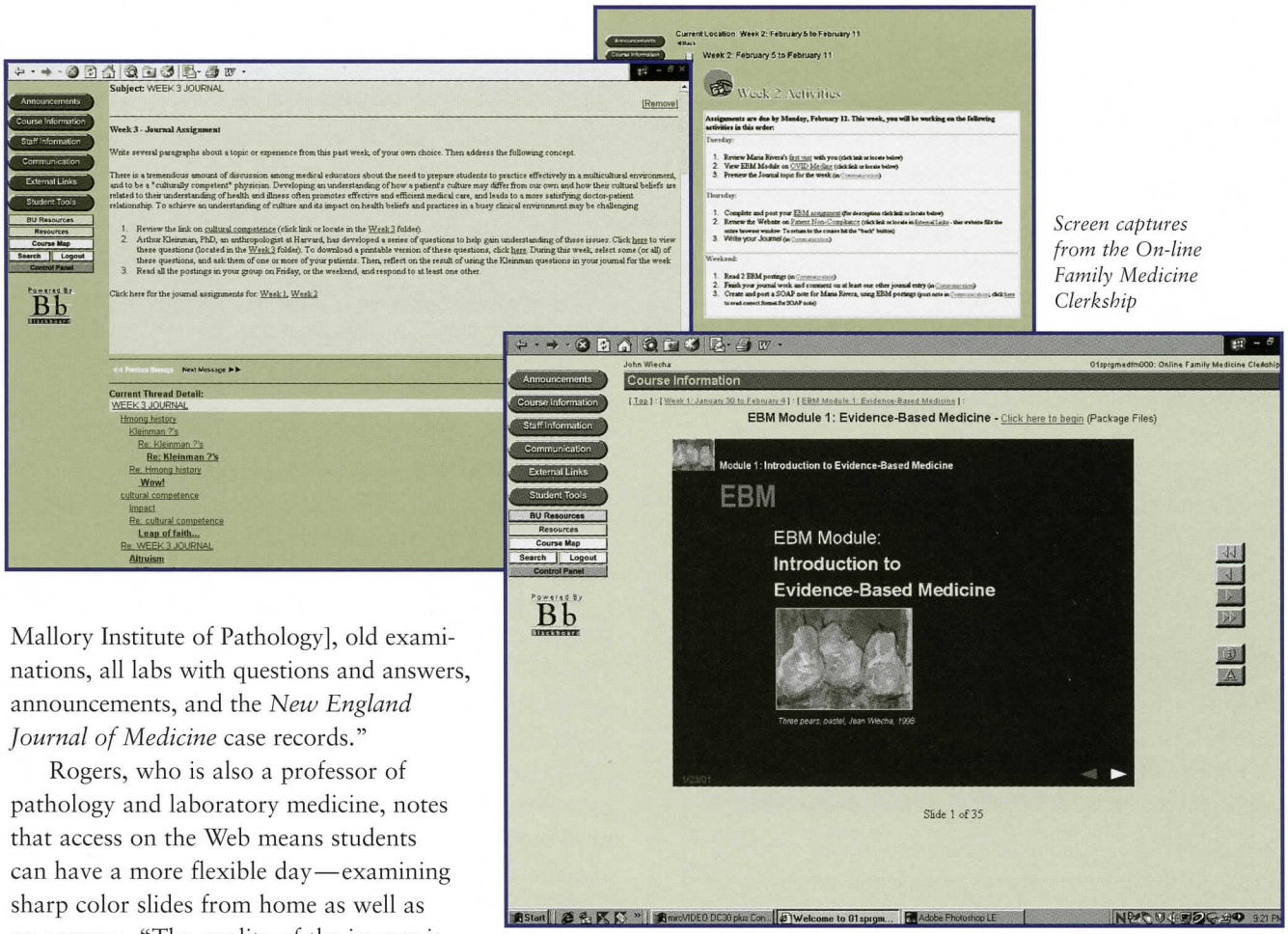
Su graduated from the University of California, Berkeley, in 1996 and worked in the health care consulting business before entering medical school.

Courses on the Web

A steady introduction of new technologies proceeds in Anatomy and Neurobiology, Pathology and Family Medicine

Many faculty have employed electronic media to complement basic science courses for several years; however, in the past year BUSM has increased its use of technology for educational purposes. For example, Deborah Vaughan, PhD, associate professor of anatomy and neurobiology, recently launched her electronic images for the histology course; and last fall, the entire pathology course appeared on the Web. Now the School is taking the merger of technology and education to the next level.

"We decided to put all teaching materials on the Internet for students," says Adrianne Rogers, MD, director of the Office of Medical Education. "This includes the entire syllabus, all the lecture slides [in PowerPoint format], digital images [drawing on the collection at the

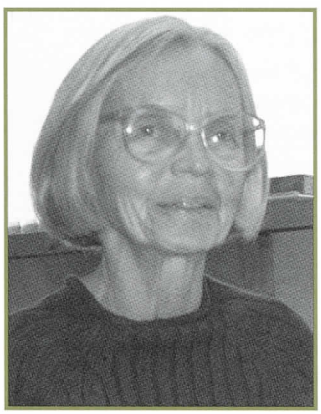


Screen captures from the On-line Family Medicine Clerkship

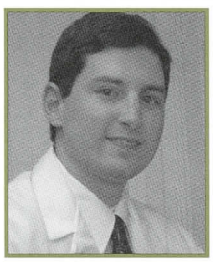
Mallory Institute of Pathology], old examinations, all labs with questions and answers, announcements, and the *New England Journal of Medicine* case records."

Rogers, who is also a professor of pathology and laboratory medicine, notes that access on the Web means students can have a more flexible day—examining sharp color slides from home as well as on campus. "The quality of the images is remarkable, when compared to a projected slide or a textbook," she says.

Much of the value lies in the ready accessibility and high quality of the images held by the Mallory Institute of Pathology. Michael O'Brien, MD, a professor of pathology who produced the on-line pathology course, says, "Before, the images would flash on a screen during a lecture, but the student couldn't refer back to them. Furthermore, in the exam, at least 10 percent of the questions are based on the images. To help students prepare for exams, we took large numbers of images of much better quality than slides or textbooks, and put them in pathology review sessions on CourseInfo. In the past, they would have had to hope for access to the limited number of projectors and carousels in the library to review Kodachromes of lesser quality."



Adrianne Rogers, MD



John Campbell, '03

"Overall the pathology Web site was a success," says John Campbell, '03. "The biggest reason that it was successful was that every lecture was in PowerPoint, which meant that everything that was given in class was on the Internet for reference day or night. For people like me, who like to study at home, it is extremely convenient to be able to just hop on-line to check on something I had written during lecture; for others, it is very helpful to be able to print out a lecturer's slides before class and then add things in the margins during the lecture."

Vivian Hayashi, '03

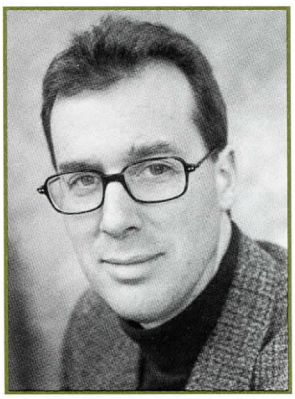
"The pathology Web site was indispensable," says Vivian Hayashi, '03. "The Web site is surely changing the way we study. My use started with Dr. Vaughan's histology Web site. I wouldn't have done as well in the course without it. I know that medicine has been studied for hundreds of years without computers, and it's possible to learn and do well without them, but the Web makes it easier and less stressful when it comes to the actual course and studying for exams."

The Office of Medical Education is evaluating the CourseInfo pathology course carefully; O'Brien notes that students have indicated that they like the course and find it useful.

Web-based Learning in Family Medicine

From remote clinical teaching sites and from home, the Internet connects medical students to full-text medical literature and asynchronous, on-line discussions with peers and mentors about real and simulated patients

Because family medicine is community based, students in the clerkship have virtually no hospital time; they are at clinics and doctor's offices throughout New England. As a result, they enjoy fewer opportunities for collaborative learning. In traditional hospital-based rotations, students round in groups and often debrief in teams, but in the new ambulatory settings, students work alone or in smaller teams at off-campus clinics. The Department of Family Medicine has addressed this dilemma with an experiment in distance learning.



John Wiecha, MD, MPH

Under the guidance of John Wiecha, MD, MPH, assistant professor of family medicine, part of the clinical clerkship curriculum is offered on the Internet. "Much of medical electronic education is self-directed learning where you log in and complete a module on-line," says Wiecha, an assistant professor of family medicine. "But that doesn't allow for the interactions associated with peer learning. We tried to set up a program to enhance communication between people with opportunities for reflection and personal growth—where students could learn from each other, and where there was more communication with faculty."

According to Wiecha, the course offers three major areas. "First, we present a case, using either video or text. Each week, as the case evolves based on new information, students participate in asynchronous discussion—in other words, not in real time—following discussion threads posed and moderated on-line. The goal is to develop competence in managing the disease process.

"Secondly, to build skills in the practice of evidence-based medicine, we—along with the Alumni Medical Library—developed a series of modules on information retrieval. Finally, students maintain a reflective journal based on a weekly theme. The idea is to promote core physician values and humanism by asking students to reflect each week on the case and on readings, and to write journal entries on topics such as idealism or empathy."

About one-half of the third-year class participates in this Web-based instruction program as they rotate through the Family Medicine clerkship. "I have a computer at home, and it is a nice way to end the day," says Dan Rust '02, who adds that the library research component has helped him improve search strategies. "It provides good practice in formulating research questions from our site."

The program, which was developed using CourseInfo software, is funded by the Robert Wood Johnson Foundation (RWJ) and has also won support through a Public Health Service Primary Care Training Grant. It is undergoing rigorous evaluation to assess its value in the education process. RWJ also recently awarded a Generalist Physician Faculty Scholarship to Wiecha.

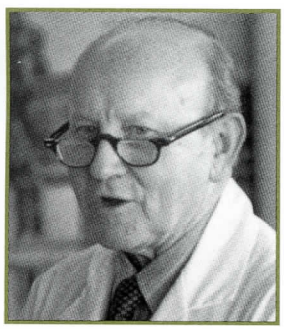
Developing a Cadre of Clinical Investigators

Providing research experiences to BUSM students early in their academic careers

Suzanne C. Sarfaty, MD

Recent gifts from alumni and friends to underwrite summer research experiences for medical students expand the students' view of the world of medicine. Last year, 15 students took advantage of the new program, and this year a more highly developed program has funds to compensate as many as 30 students for eight to ten weeks of summer research. "This really allows medical students to understand how basic research functions and how it affects the practice of medicine," says Suzanne C. Sarfaty, MD '88, assistant dean for Student Affairs, who runs the summer research program. "Whether they are running tissue cultures or collecting population data, doing research intensifies their curiosity and magnifies the importance of basic science in the preclinical years." Sarfaty is also a clinician at the East Boston Neighborhood Health Center.

Early to recognize the benefits of exposure to research at the initial stages of medical training, Peter Mozden, MD, professor emeritus of surgery, began generating funding for summer research in 1964. "The goal was to develop a cadre of clinical investigators," says Mozden. "Once students enter residency and are involved in clinical practice of medicine, it is hard to draw their attention away from clinical problems. This early exposure to scientific problems provides an opportunity to learn, in a disciplined way, how to handle and understand data that comes their way—critical questioning."

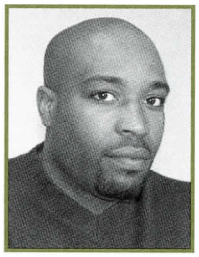


Peter Mozden, MD

As part of a grant funded by the National Cancer Institute, Mozden sponsored numerous students in cancer research rotations; more recently, his generous gift continues to underwrite more summer research experiences for BUSM students. Last year, a gift from Jerome Serchuck, chairman, BUSM's Board of Visitors, made it possible to support thirty students in summer research. Additional support has been provided by Peter Pochi, MD '55, professor emeritus of dermatology and past president of the Alumni Association.

For Marquis Jessie, '03, the summer research opportunity provided important links between the patient's presenting symptoms and what happens in the body: "It helped me connect clinical symptoms with the mechanism at the cellular and molecular level," he says.

Jessie, who graduated from Brown University in 1997, learned about the summer research program from Sarfaty. "I worked in the lab of Michael Watkins, PhD, associate professor of surgery and of pathology and laboratory medicine at BUSM, and chief of surgery at the Boston VA Medical Center. His lab studies endothelial and smooth-muscle cells and their pathologic role in the vascular conditions that lead to vein graft failure," he says. "This was my first experience in a biomedical lab, and I learned a lot about experiment protocol, abstract preparation, and various mechanisms of vascular disease, in addition to the basic lab techniques such as PCR and tissue culture.



Marquis Jessie, '03

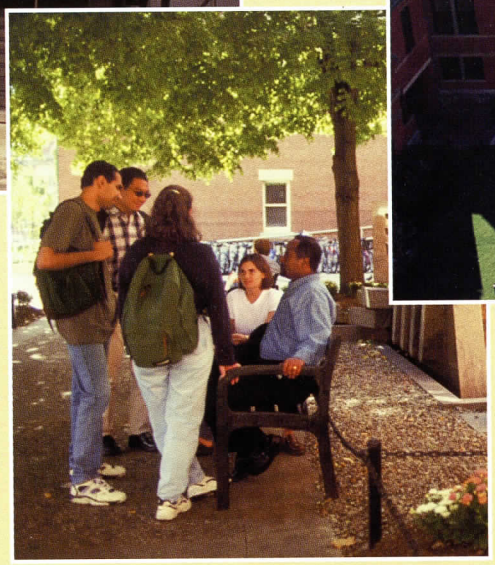
"It really opened my eyes to the rapidly changing world of medicine and the important role that biomedical research can play." Jessie continues, "by understanding the exact mechanisms that occur in conditions such as intimal hyperplasia on the molecular and cellular level, we can develop ways to avoid subsequent morbidity and mortality due to these processes."

Research in the Department of Emergency Medicine allowed Mary Harris, '03, to see emergency medicine through the eyes of investigators. The research portion placed her on a team assessing the value of the Brief Negotiated Interview as part of Project ASSERT, and she learned a great deal about survey research methods. The experience working in the Emergency Department also allowed for patient contact, changing the way she approached second year. "Now I know why I care," she says. "You've seen people, and you know you can help some of them—it reinforced the reasons I came to medical school."

Harris was a history and chemistry major at Wellesley College, and graduated in 1999.

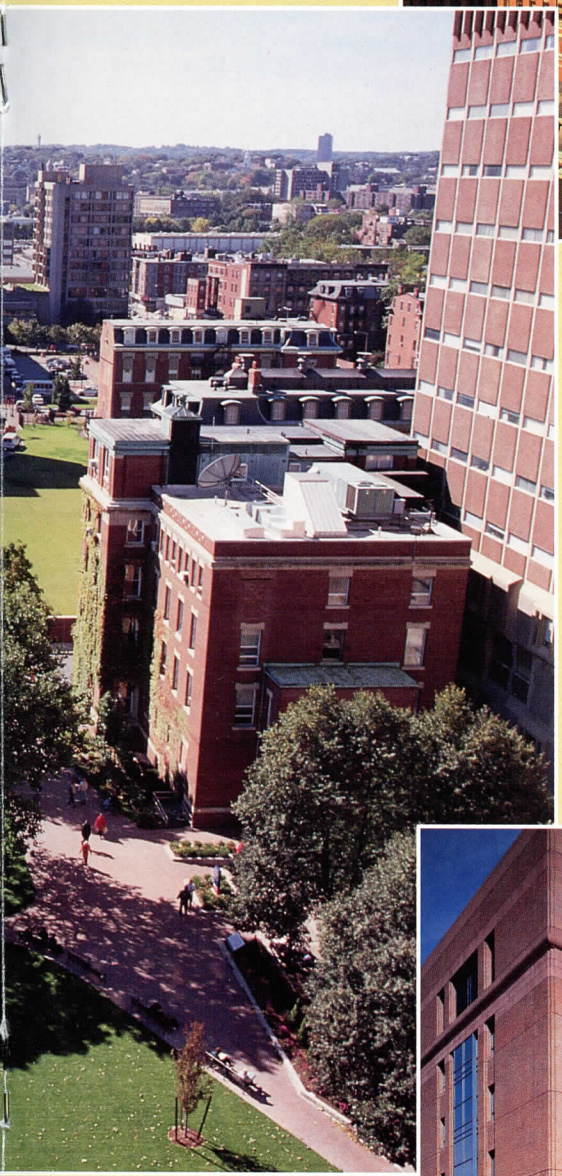
BUSM Campus Pictorial

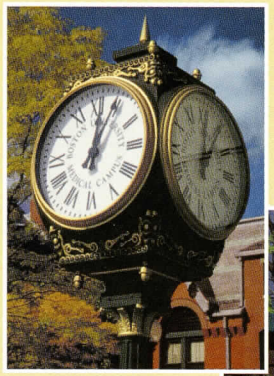
The medical campus as viewed from East Newton Street

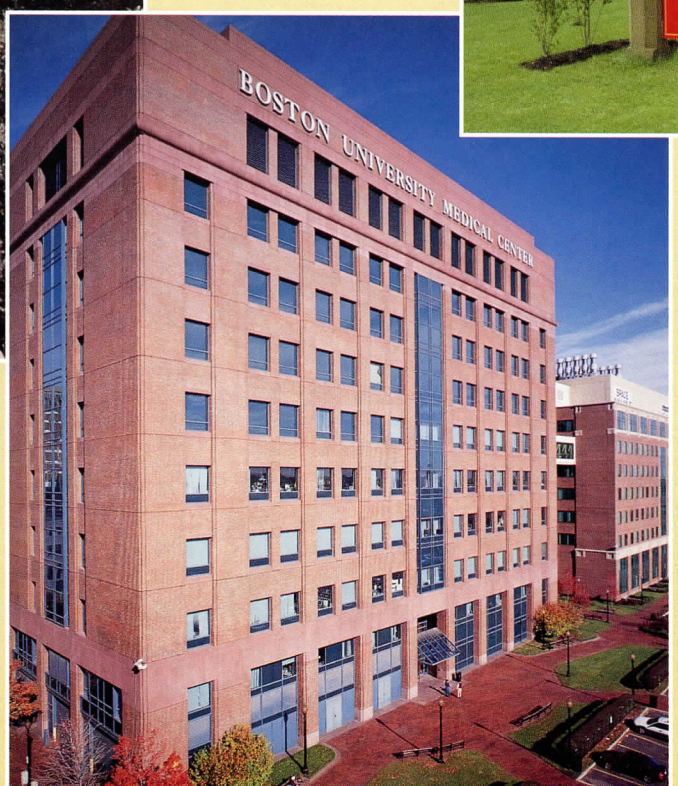


Medical students relax before exams

The Instructional Building and related research buildings



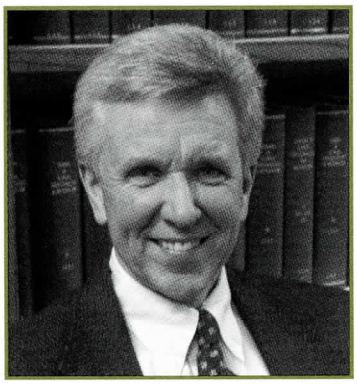




The BioSquare complex

Thomas J. Moore, MD

Thomas J. Moore, MD, an authority on nutritional aspects of hypertension, began work early in January as director of the Office of Clinical Research (OCR) and assistant provost for Clinical Research. Moore brings wide experience from the private sector, having been executive medical director for Merck and Company.



Moore is taking over the director's position from Deborah Cotton, MD, who recently became chief of medicine at the Boston VA Medical Center (see sidebar). "In her two years as director, Dr. Cotton did a terrific job promoting research activities in the merged hospitals and assuring that we were complying with the regulations that govern clinical research," Moore says. "With that groundwork laid, we can now look outward and be sure that the companies and agencies that sponsor clinical research know about our researchers and what our medical center has to offer."

Moore adds that he wants to foster collaborative clinical research efforts involving teams of investigators from the schools of medicine, public health, and dentistry. He also plans to include the neighborhood health centers in more research studies. "There are many wonderful clinical researchers on the medical campus," Moore says. "The next logical step is more collaboration, bringing a mix of different skills and viewpoints together to answer a research question. I want the OCR to catalyze that kind of collaboration."

The DASH Diet

Simon and Schuster will publish Moore's book, DASH Diet, in the fall of 2001.

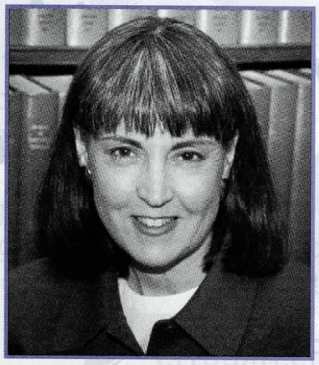
Moore was chairman of the steering committee for the DASH trial, a multicenter, NIH-sponsored study that showed that a diet rich in fruits, vegetables, and low-fat dairy foods can substantially lower blood pressure. The DASH diet has now been included in hypertension guidelines in the United States and Great Britain, and by the World Health Organization. A follow-up study, published in the *New England Journal of Medicine* in January 2001, showed that a reduced-salt version of the DASH diet is even more effective. Moore plans to continue studies in this area at BUSM.

"We have clear proof in two large clinical trials that the DASH diet can lower blood pressure. Now we need to figure out how to get people to try the DASH diet," Moore says. "I want to include the food companies who make healthy food products in the health care process. In my view, doctors should identify the patients, and then the food companies, with their sophisticated marketing ability, can deliver reminders, recipes, discount coupons, and newsletters directly to those patients who will benefit the most. I plan to design a trial to test whether this approach will help patients change their eating habits."

Cotton Assumes Leadership Role at VA Boston Healthcare

Deborah Cotton, MD, MPH, professor of medicine and public health, who has served as the first director of the Office of Clinical Research since 1998, became chief of the Medical Service, VA Boston Healthcare System (VABHS), on April 1, 2001. She succeeded Joseph Vita, MD, who is returning to the Boston University Medical Campus to pursue his extensive research studies on vascular function. Cotton, a clinical epidemiologist and infectious diseases physician, is best known for her work in AIDS research.

"I am delighted to accept this leadership position at a critical juncture in the history of the VA health services in Boston. I look forward to working with a superb group of dedicated physicians to provide optimal care to our area veterans and to continue to train talented young physicians," says Cotton.



The VABHS was formed in 2000 from the merger of the VA hospitals in Boston, West Roxbury, and Brockton, Massachusetts. All inpatient medical services are now located at the West Roxbury campus. Ambulatory care services are located chiefly at the Brockton and Boston campuses. The VABHS serves as a major teaching site for both Boston University School of Medicine and the Harvard Medical School. Faculty from both medical schools staff VABHS, and medical house officers from Boston Medical Center, Brigham and Women's Hospital, and Beth Israel Deaconess Medical Center rotate through its medical service.

Moore earned his MD degree from the University of Cincinnati College of Medicine in 1971 and, after an internship at the Dartmouth Affiliated Hospitals, returned to the University of Cincinnati to complete a residency in medicine. He then joined the Peter Bent Brigham Hospital and Harvard Medical School as a research fellow, where he rose to the rank of physician and associate professor of medicine before leaving in 1995 to join Merck and Co. As the primary medical and scientific liaison officer for Merck in the Northeast, Moore identified investigators for Merck research programs, served as clinical expert in disease management collaborations, and provided a clinical viewpoint and advice to Merck's sales and marketing teams.

As an academician, Moore won a Clinical Investigator Award from the National Institutes of Health (NIH) and an Established Investigator Award from the American Heart Association. In addition, he has served as project leader of a Specialized Center of Research grant in hypertension at Brigham and Women's Hospital, a program project grant on aging, and studies of nutritional approaches to prevent hypertension.

Martin H. Steinberg, MD

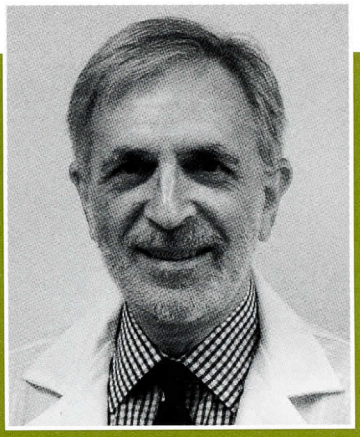
One of the nation's leading authorities on blood disorders, Martin H. Steinberg, MD, has joined Boston University School of Medicine as a professor of medicine and of pediatrics and Boston Medical Center as director of the National Institutes of Health Comprehensive Sickle Cell Center. Steinberg will help to build and improve the clinical activities for patients with sickle-cell disease, which affects about one in three hundred African Americans, and is frequently associated with premature mortality.

Steinberg's extensive experience in clinical investigation will complement the existing infrastructure of research and patient care to improve clinical services with a sickle-cell day hospital and a small treatment facility at the Boston University Medical Campus.

Before returning to Boston last fall, Steinberg had established his reputation as an authority on blood disorders and the treatment of sickle-cell disease while at the University of Mississippi Medical School, Jackson, where he was assistant dean for Coordination of Research and a professor of medicine. He was also associate chief of staff for Research and Development at the VA Medical Center in Jackson.

A member of numerous professional groups, including the American Society for Clinical Investigation and the Association of American Physicians, Steinberg was awarded a Founder's Medal by the Southern Society for Clinical Investigation in 2000. He sits on several national peer review panels and editorial boards, and is primary author of *Disorders of Hemoglobin,* published early in 2001 by Cambridge University Press.

Steinberg graduated from Tufts University School of Medicine in 1962. After an internship at Bellevue Hospital in New York, he served for three years with the U.S. Air Force before returning to Boston for a residency in medicine and a fellowship in hematology at New England Medical Center. He joined the University of Mississippi School of Medicine in 1970.



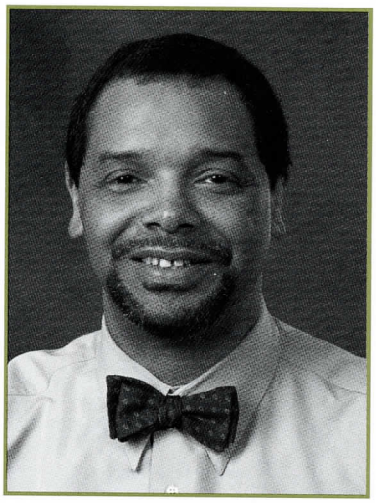
Sharing New Knowledge with Less Developed Nations

"A better and longer life for patients with sickle-cell disease in developed countries has resulted from basic and clinical investigation. Yet the chief burden of this disease lies in Africa, where even minimal standards of care are often lacking. In parts of Africa, up to a third of the people carry a gene for hemoglobin S. About 120,000 babies with sickle-cell disease are born yearly (as compared with 1,000 in the United States), but less than 2 percent survive to the age of five. High-technology treatment will benefit the fortunate few, but to have an important effect, any treatment must be translated into a form that can be applied in the less developed and poorer countries of the world."

"Drug Therapy: Management of Sickle Cell Disease"
Martin H. Steinberg
The New England Journal of Medicine
Apr 1, 1999; 340 (13): 1021–30

Gregory A. Antoine, MD, FACS

Gregory A. Antoine, MD, FACS, will join the faculty at Boston University School of Medicine in June as associate professor of surgery and of otolaryngology, and chief of the Plastic Surgery Department in the Division of Surgery at Boston Medical Center. Antoine will bring expertise in cranio-maxillofacial surgery and lower extremity reconstruction, as well as substantial experience in breast reconstruction. Until recently he was affiliated with the Department of Otolaryngology at the Metro Health Campus of Case Western Reserve University, where he served as chief of the Division of Trauma and Head and Neck Surgery.



Antoine's appointment signals a renewal for plastic surgery at the School and Boston Medical Center, which had thrived under the guidance of Gaspar W. Anastasi, MD, who died in April 1999. Anastasi had joined the faculty in 1968.

"I am excited and privileged to come to a school with a heritage established by Dr. Anastasi," says Antoine. "I look forward to establishing and building a vibrant, productive plastic surgical service offering a variety of services and at the same time challenging the conventional wisdom about where to get state-of-the-art care in Boston."

Antoine earned his MD degree from the State University of New York at Buffalo School of Medicine in 1976 and completed residencies in surgery in Buffalo before moving on to the Walter Reed Army Medical Center for training in otolaryngology–head and neck surgery. He completed his plastic and reconstructive surgery training at the Georgetown University School of Medicine. Antoine took time off from his medical training to complete the U.S. Army's military training programs, including the Armed Forces Combat Casualty Care Course, the Air Assault School with the 101st Airborne Division, and Airborne Paratrooper Jump Training. He put his medical training to practice treating GIs in the Ranger Battalion who were attacked during the Somalia incursion.

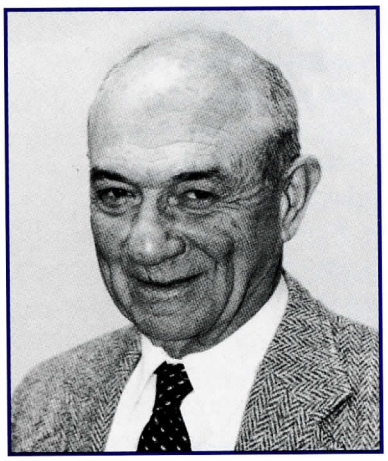
Antoine's fellowships have included a Hand and Microsurgical Fellowship at the Minnesota Microsurgical Institute, a Cranio-maxillofacial Surgery Fellowship at Eastern Virginia Graduate School of Medicine, and the Weatherhead Professional Fellowship at the Weatherhead School of Management, Case Western Reserve University. He is certified by both the American Board of Plastic Surgery and the American Board of Otolaryngology.

Throughout his career, Antoine has participated in a number of medical humanitarian programs including work with Kenyatta National Hospital in Nairobi, Kenya, and reconstructive surgery teams in the Dominican Republic, El Salvador, and Honduras.

Professorship Celebrates Four Decades of Vascular Expertise

Jay and Louise Coffman Professorship in Vascular Medicine Established

Friends and colleagues of Jay Coffman, MD, gathered in the Hiebert Lounge on April 20 to celebrate the establishment of the Jay and Louise Coffman Professorship in Vascular Medicine and to salute his work as a physician-scientist. Coffman is known by his peers as the quintessential physician: a clinical specialist in peripheral vascular disease, he has led a distinguished career as a clinical investigator and an outstanding educator. He was named a Distinguished Alumnus of the School of Medicine in 1994.

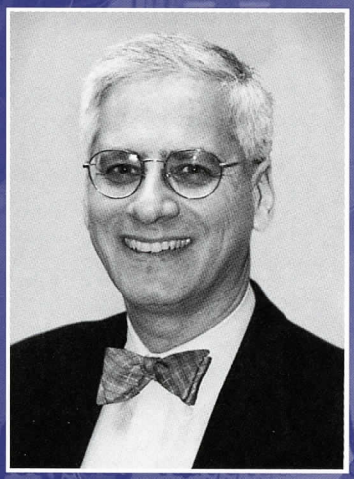


Coffman first set foot on the Boston University School of Medicine (BUSM) campus as a first-year student in the fall of 1950, having just graduated from Harvard College. He graduated from BUSM in 1954 and completed his internship and residencies in medicine at Massachusetts Memorial Hospitals, the predecessor of Boston City Hospital, now Boston Medical Center (BMC). After two years of cardiovascular research at Walter Reed Army Institutes of Research, Coffman returned to BUSM as an instructor in medicine in 1960, when the department was led by Robert W. Wilkins, MD.

Coffman has served Boston Medical Center for nearly fifty years as a member of its house staff, chief medical resident, head of the Section of Vascular Medicine, and associate chief of the Department of Medicine. A member of the Society for Clinical Investigation, his research in vascular disease is renowned nationally and internationally, and his laboratory was funded continuously by the National Institutes of Health for more than thirty years.

Coffman's early research established the principle of blood flow debt repayment following acute reduction of cardiac flow to leg muscles. His studies of vasospastic cold fingers (Raynaud's disease) in patients with scleroderma demonstrated the benefit of treatment with reserpine.

He is a recognized expert in patient-oriented research into the effects of drugs on vascular disease. He served the academic community as chairman of the Executive Committee of the Council on Circulation of the American Heart Association, was founder and president of the Society of Vascular Medicine, and continues to consult on the diagnosis and treatment of peripheral vascular disease.



Cohen Named to Coffman Professorship

Richard A. Cohen, MD, professor of medicine, physiology, and pharmacology and experimental therapeutics, and head of the Vascular Biology Unit of the Department of Medicine, has been named as the first recipient of the Jay and Louise Coffman Professorship.

Cohen is also a former clinician scientist and established investigator of the American Heart Association, past president of the American Federation for Clinical Research, and a current member of the board of trustees of the American Federation for Clinical Research Foundation. He has served as a member of the Experimental Cardiovascular Sciences review panel of the National Institutes of Health. He is known for his research on the role of the endothelium in vascular function, and the influence upon its function of disease, most notably diabetes. Recently, Cohen's laboratory has investigated the regulation of calcium levels and ion channels in vascular smooth muscle by the vasodilator known as nitric oxide, and the interference in the normal actions of nitric oxide in diseased blood vessels by oxygen-derived free radicals.

Cohen graduated from Johns Hopkins University Medical School in 1976 and came to BUSM and the Boston Medical Center (then University Hospital) program for internship and residency. He worked with Coffman as a vascular fellow in 1978 and rose quickly through the academic ranks.

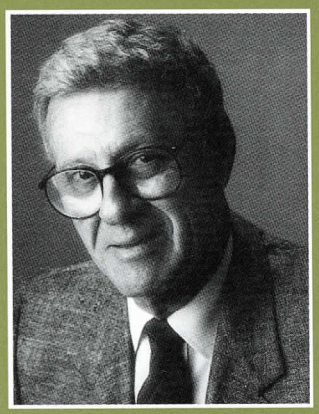
Board of Visitors

Member Profiles

The Boston University School of Medicine Board of Visitors actively supports the work, mission, and research of the School. The following individuals are some of the more recent additions to the Board of Visitors.

Jerome Serchuck, JD

Jerome Serchuck, JD, newly appointed chairman of the Boston University School of Medicine Board of Visitors and a member since 1988, has helped direct the board's energies, allowing it to become more proactive by focusing on the needs of the School and its students.



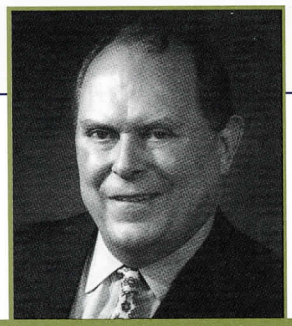
"Involvement of good people with diverse backgrounds, desire to work, and proven abilities in their chosen fields will produce a dynamic board that will make meaningful contributions to the School," says Serchuck.

A private investor with interests in venture capital, real estate, and biotechnology, Serchuck was a principal of Endo Laboratories, Inc., an ethical pharmaceutical manufacturer now an integral part of DuPont Pharmaceuticals, Inc. He is a trustee of the Washington Institute for Near East Policy and an associate trustee of North Shore University Hospital of Manhasset, N.Y.

Serchuck's daughter, Leslie, BUSM Class of 1990, is a medical officer at the Pediatrics/Adolescent and Maternal AIDS Branch, National Institute of Child Health and Human Development, in Bethesda, Md.

Serchuck and his wife, Joan, generously funded the establishment of the Office of Medical Education at BUSM. In addition, they support the Student Summer Scholarship Program.

Educated at New York University and New York Law School, Serchuck is a member of the New York bar.



James M. Howell, PhD

James Howell, PhD, joined the Boston University School of Medicine Board of Visitors in 1994. He served as chairman of the board from June 1994 through May 2000.

Howell is president of The Howell Group, a Boston-based consulting firm with expertise in the areas of economic forecasting and analysis, economic development planning, and policy development. The firm's clients are located throughout the United States and Europe and include financial institutions, universities, and corporations, as well as governmental units and commissions, including the European Community and the OECD. Previously Howell served as chief economist of the Bank of Boston.

Currently a Trustee and member of the Executive Committee of Boston University and a member of the Board of Trustees of New England Colleges' Fund, he has been a member of numerous boards and commissions, as well as the author of extensive publications and professional papers. Howell also served as the host of the weekly television program *Business World with Jim Howell* on WABU-TV 68 in Boston.

Howell received his undergraduate degree from Texas A&M University and a doctoral degree in economics from Tulane University. In 1982 he was awarded an Honorary Doctorate of Humane Letters by Rivier College.

Esther A. H. Hopkins, PhD, JD

Esther Hopkins, PhD, JD, has been a member of the Board of Visitors since 1998. A Trustee of Boston University, the Northeastern Section of the American Chemical Society, and the First Parish Church in Framingham, Mass., Hopkins is also a selectman in Framingham.

Her membership in professional organizations includes the Boston Bar Association, Collegium of Distinguished Alumni of the College of Arts and Sciences, Alpha Kappa Alpha, and the NAACP (life member). She was previously affiliated with the Office of the General Counsel, Department of Environmental Protection of the Commonwealth of Massachusetts.

Hopkins has received many honors and awards, including induction as a member of Scarlet Key, Beta Kappa Chi, Sigma Pi Sigma, Phi Beta Kappa, and Sigma Xi. She is also the recipient of the Boston University 1995 Alumni Award for Distinguished Service to Alma Mater.

Hopkins received her undergraduate degree from Boston University College of Arts and Sciences; an MS from Howard University; an MS and PhD in biophysical chemistry from Yale University; and a JD from Suffolk University.

Noubar B. Afeyan, PhD

Noubar Afeyan, PhD, who became a member of the School's Board of Visitors in 1998, is the founder, president, and chief executive officer of NewcoGen Group, a new ventures firm he founded in 1999. NewcoGen Group comprises NewcoGen, a venture creation firm focusing on information technology and the life science fields, as well as Applied Genomics Technology Capital Fund LP, a new venture capital fund for the genomics industry. Afeyan is also a special partner at OneLiberty Ventures in Cambridge, Mass., and a senior lecturer at the Massachusetts Institute of Technology Sloan School of Management.

Until August 1999, he was senior vice president and chief business officer of Applera Corporation (formerly Perkin Elmer Corporation). While at Applera, Afeyan initiated and oversaw the creation of Celera Genomics, a tracking stock group of Applera Corporation focused on generating and providing genomic information to the pharmaceutical and biomedical research industries. Celera Genomics grew from $.5 billion valuation to more than $4.5 billion in just six months after it was brought to market in 1999.

Afeyan was the founder, chairman, and chief executive officer of PerSeptive Biosystems, a leader in the bioinstrumentation field. He oversaw PerSeptive's growth from $1 million in revenues in 1991 to $100 million in revenues in 1997. PerSeptive merged with PE Corporation in 1998 in a deal valued at $360 million.

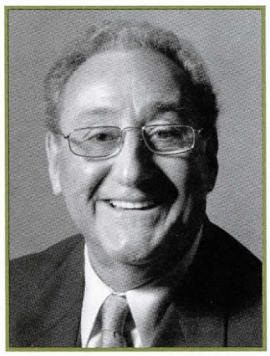
During 1996 and 1997, Afeyan also served as chairman of the board of ChemGenics Pharmaceuticals, a privately held genomic and drug discovery company that was a spin-off from PerSeptive Biosystems. ChemGenics was acquired by Millennium Pharmaceuticals in 1997 in a deal valued at $100 million.

In addition to ChemGenics, PerSeptive, and Celera Genomics, other successful high-tech start-up companies that Afeyan is affiliated with as a founding investor/advisor or cofounder include LifetecNet, Antigenics, Color Kinetics, and Exact Sciences. He serves as a member of the board of directors for Antigenics, Color Kinetics, and Exact Sciences.

Afeyan earned his undergraduate degree in chemical engineering from McGill University in Montreal and subsequently moved to the United States to attend the Massachusetts Institute of Technology, where he earned a PhD in biochemical engineering.

Elliot H. Cole, JD

Elliot Cole, JD, who joined the Board of Visitors in 1999, is a partner in the law firm of Patton Boggs, L.L.P., in Washington, D.C., a firm of 400 attorneys with offices located nationwide.

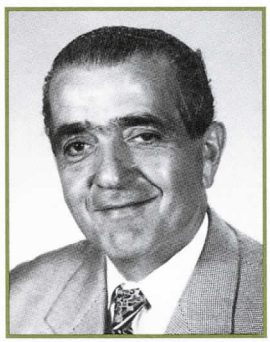


Cole has served as a Trustee of Boston University and as a member of the Board of Visitors of Boston University School of Law. He is a principal of Venture Partners International, Inc., New York City; director, FileTek Corporation, Rockville, Md.; director, Exocell, Inc., Philadelphia; director, Technology Center, Inc., Vienna, Va.; director, e-LYNXX Corporation, Chambersburg, Penn.; member, Advisory Board of the Washington Political Action Committee; member, District of Columbia Bar Association; member, Woodmont Country Club, Rockville, Md.; and member, Metropolitan Club, New York City.

Cole received his undergraduate degree from Boston University College of Communication and his law degree from Boston University School of Law.

Sarkis J. Kechejian, MD '63

Sarkis Kechejian, MD, joined the Board of Visitors in 1998. He is president and chief executive officer of a series of medical clinics he established in the Dallas–Fort Worth, Texas, area; and president of The Kechejian Foundation.



From 1975 to 1988, Kechejian was in private practice in Dallas, specializing in invasive cardiology. Previously he served as director of the Cardiac Catheterization Laboratory, Methodist Hospital, Dallas, and assistant clinical professor at Southwestern Medical School, Dallas.

Kechejian is a member of the American Medical Association, the Dallas County Medical Society, and the Texas Medical Association. He is board certified by the American Board of Internal Medicine, and the American Board of Cardiovascular Diseases. In 1974 he was elected a Fellow of the American College of Cardiology.

In 2000 Kechejian generously established the Kechejian Scholarship Fund at Boston University School of Medicine.

He received his undergraduate degree from New York University, his medical degree from Boston University School of Medicine, and his cardiology training at New York University Medical Center.

N. Stephen Ober, MD '86

N. Stephen Ober, MD, joined the Board of Visitors in 2000. Ober is president of Beyond Genomics, Inc., a biotechnology start-up company focusing on the emerging field of systems biology.

Prior to joining Beyond Genomics, he was founder, president, and chief executive officer of Synergy, the claims data management and analytic division of QUINTERNET Informatics. By 1998, three years after its founding, Synergy had developed the largest health care claims database of its kind in the United States, with more than one billion health transactions on-line. Synergy's main focus today centers on developing and commercializing a series of revolutionary Web-based health information products for all segments of the health care industry.

Ober has authored several papers on pharmacoeconomics and the use of transaction data in measuring health care outcomes. He is a lecturer at Boston University Schools of Medicine and Management.

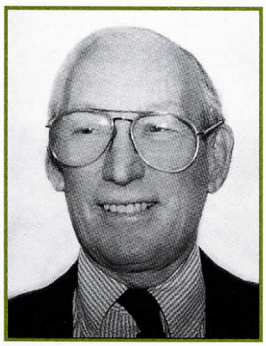
Ober received his undergraduate degree in biology from Boston University and his medical degree from Boston University School of Medicine.

He performed his clinical training in general and orthopedic surgery at the University of California, San Diego. He graduated with an MBA from Harvard Business School in 1991.

John M. Stewart, MBA

John Stewart, MBA, is a director of McKinsey and Company, Inc., a management consulting firm located in New York City. He joined the School's Board of Visitors in 1998. Stewart has been associated with McKinsey and Company since 1961, and his professional expertise includes the areas of international competition, research and development, and factory operations in the pharmaceutical, electronics, aerospace, telecommunications, and auto industries. He has worked with companies in the United States, Canada, England, France, and Germany.

Stewart is a trustee of the Hospital for Joint Diseases, in New York; the Mt. Sinai–New York University Medical Center; and the Woods Hole Oceanographic Institution in Woods Hole, Mass.



His affiliations have included membership on the Defense Science Board (Department of Defense), the National Council on Economic Education, and the Economic Policy Council of the United Nations Association of the United States.

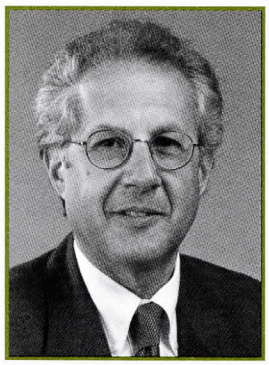
In 1997 Stewart became a patient in the Amyloid Treatment and Research Program at Boston University Medical Center, and has continued his association with the medical center since then.

Stewart is a graduate of Yale University and Harvard Business School.

Alfred I. Tauber, MD

Alfred Tauber, MD, professor of medicine, professor of philosophy, and director of the Center for Philosophy and History of Science at Boston University, joined the Board of Visitors in 2000.

Tauber has been a member of the Boston University faculty since 1982, when he became chief of the Hematology and Oncology Service at Boston City Hospital. Until 1995 he actively directed a research laboratory focused on the biochemistry of the acute inflammatory response, with studies ranging from free radical chemistry to cytoskeletal dynamics.



In 1993 Tauber accepted a formal appointment in the Department of Philosophy at the College of Arts and Sciences, where he received tenure in 1998. Although he now teaches and writes primarily on the philosophy of science, Tauber continues to practice medicine at the Boston Medical Center in the Hematology-Oncology Section. In 1997 he became a founding member of the biotechnology company NanoFrames, a venture that designs and modifies viral proteins for biomedical and industrial applications.

Aside from his research publications in immunology, Tauber has published extensively on nineteenth- and twentieth-century biomedicine, contemporary science studies, and ethics. Ongoing projects include further studies in medical ethics and American Transcendentalism.

After receiving his bachelor's and medical degrees from Tufts University, Tauber completed his clinical and research training at the University of Washington, New England Medical Center, and Peter Bent Brigham Hospital.

Richard L. Taylor, MBA, JD

Richard Taylor, MBA, JD, who recently joined the Board of Visitors, is chairman of Taylor Smith Properties, Inc., a real estate development firm that focuses on both housing and retail/commercial projects in urban markets.

Taylor joined former Massachusetts Governor William Weld's cabinet as his first secretary of transportation. During Taylor's two-year tenure, he was active in executing an aggressive road and bridge repair program. He is especially proud of expanding the commuter rail from Worcester to Boston and overseeing construction of the Ted Williams Tunnel and the Dudley Station bus terminal.

Following his service in the Weld cabinet, Taylor joined Blue Cross and Blue Shield, first as division vice president for the central and western region, and later as division vice president for national accounts. He managed key accounts and oversaw the consultant/RFP department, achieving significant sales and customer services results in both of these capacities.

Always active in civic and cultural activities in the Boston community, Taylor is a director of The Partnership. Previously he served as a Trustee of Boston University; deputy chairman of the Federal Reserve Bank of Boston; president of the Boston Ballet; vice chairman of the Urban League; and president of the Minority Developers Association.

Taylor received an MBA degree from Harvard Business School and a JD degree from Harvard Law School. He attended the University of Oxford as a Rhodes Scholar and earned a bachelor's degree in journalism from Boston University.

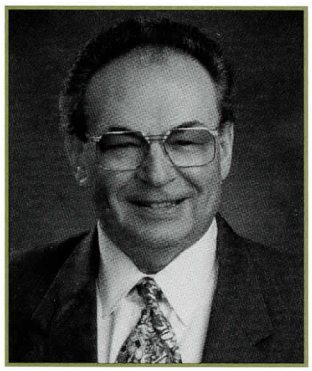
Lawrence A. Yannuzzi, MD '64

Lawrence Yannuzzi, MD, who recently became a member of the Board of Visitors, is a professor of clinical ophthalmology at Columbia University Medical School and vice chairman, Department of Ophthalmology, and surgical director of the Manhattan Eye, Ear, and Throat Hospital. He is founder of the Macula Foundation, Inc., which has distributed several million dollars to eye research across the country.

A world-renowned retinal specialist whose particular field of interest is macular degeneration and unusual chorioretinal diseases, Yannuzzi was an early pioneer in the interpretation of flourescein angiography and a more recent innovator in indocyanine green choroidal angiography. He was the first to use oral steroids in the treatment of cystoid macular edema and developed an eye drop to treat this condition.

Yannuzzi has published more than 200 scientific articles and has edited several textbooks. In addition, he has received many awards, including the 1999 Award of Merit in Retina Research, the 1998 J. Donald M. Gass Medal presented for outstanding contributions in the study of macular diseases, the 1989 Boston University School of Medicine Distinguished Alumnus Award, the Paul Henkind Memorial Lectureship Award, the Nara Japan Award, and the British Ophthalmological Society Perceival Award. In June 2001 Yannuzzi will receive an honorary medical degree from the University of Ancona in Italy.

Yannuzzi completed his undergraduate degree at Harvard College and his medical degree at Boston University School of Medicine.



I. Howard Fine, '66

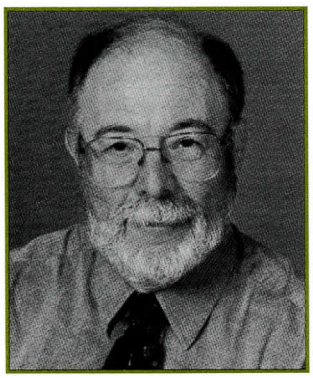
Clinical Associate Professor of Ophthalmology
Oregon Health Sciences University
Cofounder of the Oregon Eye Surgery Center

One of the world's preeminent cataract surgeons, Fine is recognized for his major contributions to modern cataract surgery, including the total redesign of cataract extraction methodology. His many innovations to instrument designs have transformed surgical concepts into clinical reality, thus advancing the whole field. His techniques, procedures, and instruments have been adopted as the standard worldwide.

Fine's distinguished clinical career has been recognized both nationally and internationally. He has received many awards, including the prestigious Innovator's Award, given annually by the American Society of Cataract and Refractive Surgery. In 1999 he was named one of the twenty-five most influential ophthalmologists of the twentieth century by a vote of ophthalmologists worldwide, as polled by the American Society of Cataract and Refractive Surgery.

A Fellow of the American Academy of Ophthalmology, Fine has held local, state, and national leadership positions, including serving as vice president and president of the Oregon Academy of Ophthalmology, on the board of directors of the American College of Eye Surgeons, and on the board of directors of the American Board of Eye Surgery. He is currently president-elect of the American Society of Cataract and Refractive Surgery.

Dr. Fine has been a visiting professor at medical schools internationally. His research has been published extensively, and he has served on the editorial boards of *Ocular Surgery News, Ophthalmology World News, Ophthalmology Times,* and *Operative Techniques in Cataract and Refractive Surgery.*



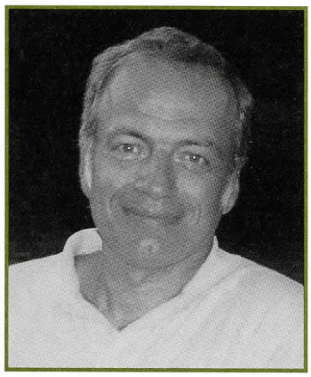
Ronald L. Katz, '56

Professor of Anesthesiology, University of Southern California
Professor Emeritus of Anesthesiology, University of California, Los Angeles

Katz is an internationally recognized expert in the areas of pain management and critical care. His outstanding career includes a Guggenheim Fellowship at the Royal Postgraduate Medical School of the University of London and an appointment as professor of anesthesiology at Columbia University College of Physicians and Surgeons. In 1973 he was serving as professor and chairman of the Department of Anesthesiology at the University of California, Los Angeles (UCLA), where he was also chief of staff of the UCLA Medical Center. In 1995 Katz became professor and chairman of anesthesiology at the University of Southern California (USC). In 1998 he was honored for his work by the UCLA School of Medicine with the establishment of the Ronald L. Katz, MD, Endowed Chair in Anesthesiology.

Katz is a founding member of the International Association for the Study of Pain, the Society for Education in Anesthesia, and the Association of Anesthesia Program Directors. He is a Fellow of the American College of Anesthesiology and of the Royal Society of Medicine (London). Katz is a member of numerous professional organizations, including the International Anesthesia Research Society; the Kennedy Institute of Ethics; the American Society of Law, Medicine, and Ethics; and the American Society of Critical Care Anesthesiologists. He has held leadership positions, including chairman of the Scientific Advisory Board of the Institute of Critical Care Medicine.

Katz has produced more than a dozen teaching films, published more than 200 articles and book chapters, and given more than 190 lectures worldwide. He is a member of the editorial board of numerous professional journals, including *Anesthesiology Review* and *Modern Trends in Anesthesia;* has served as editor-in-chief of *Advances in Anesthesiology* and *Anesthesiology Handbook;* and is cur-rently editor-in-chief of *Seminars in Anesthesia, Perioperative Medicine and Pain.*



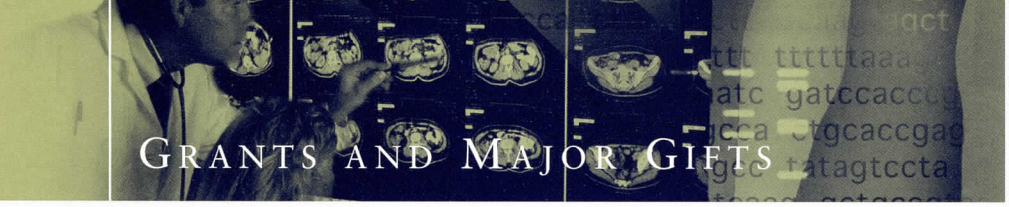
Michael Salcman, '69

Former Professor and Head of Neurosurgery, University of Maryland School of Medicine, and former Chief of Neurosurgery, Sinai Hospital, Baltimore

Renowned for his pioneering research on the effects of microwave-induced hyperthermia on the brain and brain tumors, Salcman's contributions to neurosurgery have been recognized throughout the world. His focus on innovative and creative modes of management of intrinsic neoplasm of the central nervous system has placed him in the forefront of research efforts in this area. He founded the Neuro-oncology Service and served as professor and head of the Division of Neurological Surgery at the University of Maryland School of Medicine. He has also served as the chief of the Division of Neurosurgery at Sinai Hospital in Baltimore and clinical professor of neurological surgery at George Washington University School of Medicine. Salcman's research has focused on intracranial diseases and included early work on image-guided stereotactic techniques, microwave hyperthermia and chemotherapy and interstitial radiation for brain tumors, and the role of repeat surgeries utilizing the operating microscope and lasers. His early work was the subject of a Pulitzer Prize–winning book, *Not Quite a Miracle.*

He is the author of more than 190 scientific papers and has edited six textbooks. A member of numerous professional organizations, he is a Fellow of the American College of Surgeons and has served as president of the Congress of Neurological Surgeons, the largest professional association of neurosurgeons in the world. From 1991 to 1996, he served on the Decade of the Brain Scientific Advisory Council of the American Association of Neurological Surgeons. From 1991 to 1997, he served on the Washington Committee for Neurosurgery of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons.

Salcman has held positions on the editorial boards of major neurosurgical journals, including serving as associate editor and chairman of the editorial board of *Neurosurgery.*



Grants and Major Gifts

NIH Awards Grant for Alzheimer's Research

Recently, the National Institutes of Health (NIH) awarded Boston University School of Medicine (BUSM) and three other medical centers in the United States $25 million for the Alzheimer's Disease Anti-inflammatory Prevention Trial (ADAPT). The study will test the use of anti-inflammatory medication for the prevention of Alzheimer's disease. Johns Hopkins University, Sun Health Research Institute, and the University of Rochester are also included in this study.

Researchers believe that inflammatory processes in the brain may play a role in the development of Alzheimer's disease. The ADAPT study tests naproxen and celecoxib, two drugs used to treat arthritis, for their ability to prevent Alzheimer's disease.

"Retrospective studies of anti-inflammatory medications for the treatment of arthritis and other illnesses indicated a reduced occurrence of Alzheimer's disease among the participants taking these medications. The ADAPT study will help us discover if anti-inflammatory medications can prevent or delay the onset of Alzheimer's disease," says Robert C. Green, MD, MPH, Boston site director of the ADAPT study, and clinical director of Boston University's NIH-funded Alzheimer's Disease Center.

GCRC Receives NIH Renewal Grant

The General Clinical Research Center (GCRC) at BUSM received a five-year renewal grant from the National Institutes of Health, allowing the center to continue providing research resources to basic and clinical scientists throughout Boston University Medical Center.

The grant provides more than $10 million to the GCRC, which offers a clinical research environment to investigators and to those conducting innovative clinical research studies prior to requests for private or government funding. BUSM Dean Aram V. Chobanian serves as the principal investigator, and the program director is Michael Holick, MD, professor of medicine, dermatology, and physiology. The GCRC is available for projects funded by the government and by pharmaceutical and biotechnology companies.

Department of Urology Awarded NIH Grant

Abdulmaged M. Traish, PhD, MBA, professor of biochemistry and urology and the director of Research in the Department of Urology, was awarded a four-year, $1 million grant from the National Institutes of Health (NIH) to investigate Female Sexual Arousal Dysfunction. This research is funded for the first time by the NIH and considered a breakthrough in recognizing female sexual arousal dysfunction as a scientific medical field.

NIAAA Awards Samet $3.7 Million Grant

Jeffrey Samet, MD, associate professor of medicine and public health, recently received several grants totaling more than $4 million. Samet received a five-year, $3.7 million grant from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to test whether alcohol consumption and the hepatitis C virus, together or separately, are associated with more aggressive HIV-related disease progression. The results of this study are expected to provide crucial information needed for the

development and prioritization of interventions for co-infected persons with addictions.

The NIAAA has also provided Samet with an additional grant to be used to better understand the relationships among alcohol use, HIV infection, and HIV risk behaviors in Russia. The long-term goal is to determine appropriate prevention interventions to reduce the transmission of HIV in Russia.

Aid for Cancer Research Awards Grant to BUSM

A generous donation from the local nonprofit organization Aid for Cancer Research will help BUSM in its battle against colon and rectal cancer.

Peter Thomas, PhD, director of the Laboratory of Surgical Biology and professor of surgery, pathology, and laboratory medicine, received the grant, which will be used to purchase a Bio Rad Gel Documentation System. The machine is the newest imaging system used in colon and rectal cancer detection.

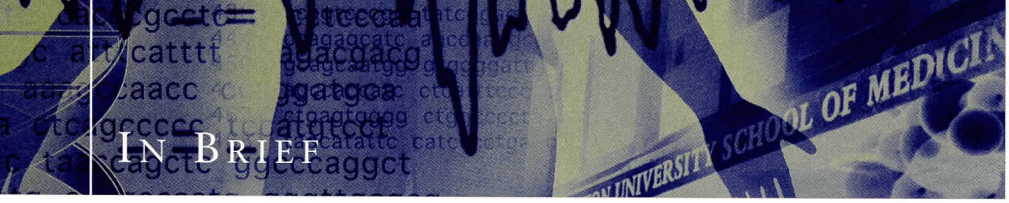
The new Bio Rad Gel Documentation System photographs tissue extracts and preserves the images on computer disks, eliminating the need to repeat film exposures or to rerun experiments.

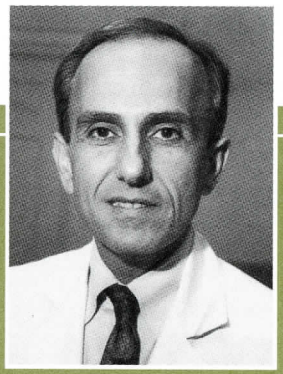
Chester S. Keefer, MD, Society

Chester S. Keefer, MD, was a visionary who had the foresight and determination to lay the foundation for Boston University Medical Center. To honor his memory, Boston University School of Medicine established the Chester S. Keefer, MD, Society, which recognizes the commitment, generosity, and support of individuals whose own visions have provided major assistance. Persons whose total contributions to BUSM have reached $50,000 or more are invited to become members in the society. The society inducted ten new members in the spring of 2001, bringing the number of members to 135.

2001 Keefer Society Members

Elsa Chaffee-Boden, MD '41
John F. Cogan, Jr.
Andrew B. Crummy, MD '55
Barry M. Manuel, MD '58
Steven Abbott Miller, MD '70, and
Jacqueline H. Miller, PhD
Peter J. Mozden, MD '53
Miss Alice Ohanasian
Bertha Offenbach-Fineberg, MD '36
Mr. and Mrs. Wilson Nolen
Gordon and Ruth Snider





Menzoian Recognized for Medical Humanism

James Menzoian, MD, professor of surgery, was recently honored as one of forty-seven physicians nationwide selected by medical students for the 2000 Association of American Medical Colleges (AAMC) Humanism in Medicine Award.

Honorees are nominated by the AAMC Organization of Student Representatives based on five defining characteristics of humanism in medical education: positive mentoring skills, compassion and sensitivity, collaboration, community service activity, and observance of professional ethics. The AAMC Humanism in Medicine Award is also sponsored by Pfizer Medical Humanities Initiative. It annually honors medical school faculty physicians exhibiting the finest qualities of a healer and teacher.

George Askew, MD, FAAP, assistant professor of pediatrics, has been selected as one of eleven recipients of the inaugural Advocacy Fellowship for Physicians Soros Open Society Institute, Medicine as a Profession. Askew will serve his fellowship, as the first Closter Policy Scholar, at ZERO to THREE: National Center for Infants, Toddlers, and Families, in Washington, D.C.

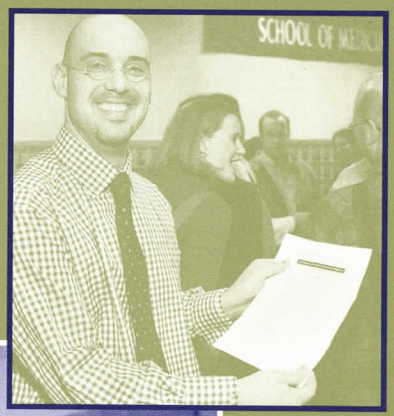
Haralambos P. Gavras, MD, professor of medicine, received the Novartis Award for Hypertension Research from the Council for High Blood Pressure Research. The award recognizes his groundbreaking work to introduce the use of Angiotensin II antagonists and angiotensin converting enzyme inhibitors in the treatment of hypertension and heart failure.

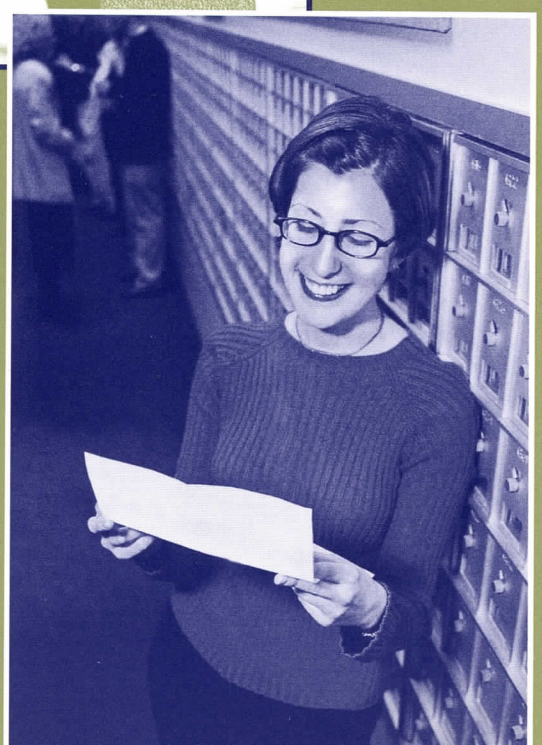
Kenneth Grundfast, MD, chairman of the Department of Otolaryngology, was awarded the prestigious Sylvan E. Stool Award from the Society for Ear, Nose, and Throat Advances. In receiving the award, he was honored for outstanding lifetime contributions and service in the field of ear, nose, and throat advances in children.

Terence Keane, PhD, vice chairman of research, Department of Psychiatry, received the Distinguished Service Award in 2000—Psychologists in Public Service—for his impact in transforming how psychology is practiced, especially in the area of trauma. Many of the techniques he developed for treating trauma are now standard practice.

George O'Connor, MD, associate professor of medicine, was honored as a 2000 Local Hero of the American Lung Association of Greater Norfolk County for his commitment to preventing lung disease and promoting lung health. O'Connor currently serves as principal investigator for the Feasibility of Retinoid Treatment for Emphysema Study.

Thomas Ryan, MD, professor of medicine and chief of the Section of Cardiology emeritus, was elected to mastership status within the American College of Physicians—Society of Internal Medicine for his outstanding contributions to the field of medicine.





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