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BUSM Dean's Report

2002

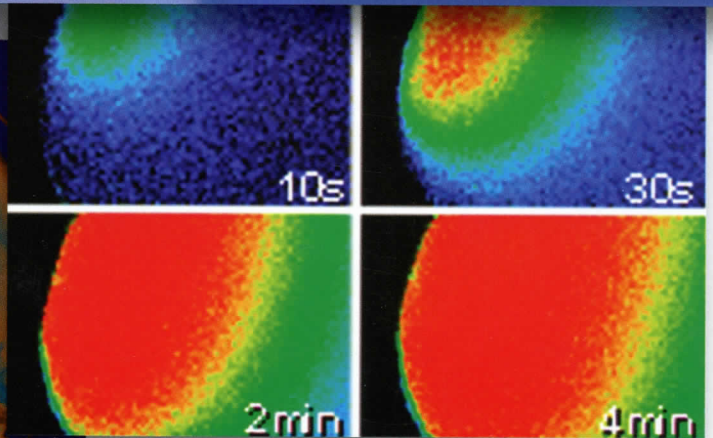
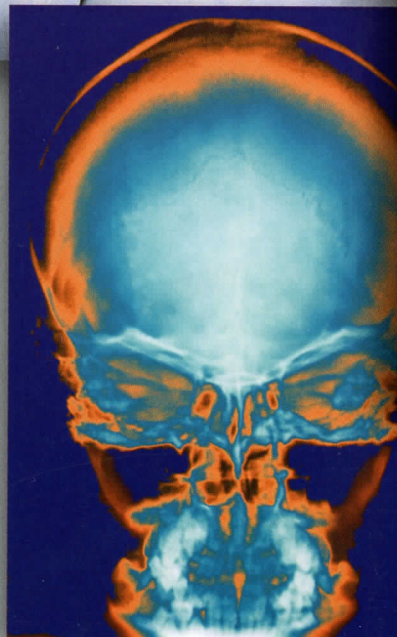
Boston University School of Medicine Dean's report: 2002

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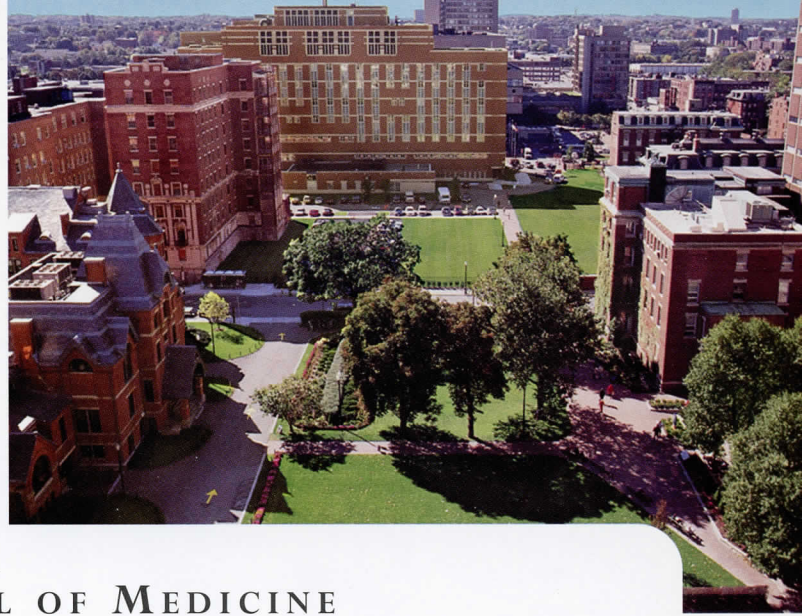
Boston University

BOSTON UNIVERSITY SCHOOL OF MEDICINE

A DECADE OF CHANGE
AND PROGRESS



Dean's Report 2002



BOSTON UNIVERSITY SCHOOL OF MEDICINE

A Decade of Change and Progress

A MESSAGE FROM THE DEAN

Remarkable changes have occurred in medicine within the past decade. Impressive advances in biomedical research include characterization of much of the human genome. Medical knowledge has grown exponentially. Fundamental shifts have occurred in the delivery of health care, altering the vital role of the physician. Some changes seriously affect academic medical centers and threaten the core of the academic mission, while new financial constraints and uncertainties impose additional difficult decisions. Boston University School of Medicine adapted and anticipated major changes in order to deal with these new challenges.

Rapid advances in biomedical research required reassessment of the School's research programs despite their previous success. Research growth was beginning to slow; laboratory facilities called for modernization and expansion; and core support services needed upgrading. Most essential for the future success of the research enterprise was the recruitment of new faculty leaders and young scientists with new ideas and new expertise.

The rapidly expanding base of medical knowledge and the changes in health care delivery also necessitated a re-examination of the School's educational programs, including the undergraduate medical curriculum, clinical training sites,

and the structure of departments. In addition, opportunities were arising for new degree and nondegree educational programs to meet the developing educational needs of physicians, scientists, and other health professionals.

The survival of our major hospital affiliates, Boston City Hospital and Boston University Medical Center Hospital, was threatened at the beginning of the decade by serious financial pressures imposed by radical changes in the health care delivery system and the emergence of managed care. Unification of the clinical and educational programs on the Medical Campus became an important priority, and we began to consider a merger of the two hospitals.

In addition, we needed to intensify fund-raising efforts in order to diminish dependence on tuition income, provide funds for new academic programs, augment scholarships, and increase the number of endowed professorships.

This report summarizes how the School dealt with these challenges and how the Medical Campus has been transformed into a dynamic academic medical center well-positioned to meet the new demands and opportunities that lie ahead.

Aram V. Chobanian



Research Growth

Having crossed the threshold of a new millennium into a new era of biomedical sciences, a period of discovery and excitement has begun in the scientific village at Boston University Medical Center.

To promote research excellence, the Boston University School of Medicine recruited faculty, enhanced existing research programs, established new ones, and built modern research facilities to support them. Since 1991, total research space has more than doubled. Approximately 437,000 square feet of new research space has been created and 122,000 square feet of space has been fully renovated. The BioSquare development project will help meet future research needs of the Medical Campus and provide research space for biotechnology and pharmaceutical corporate tenants.

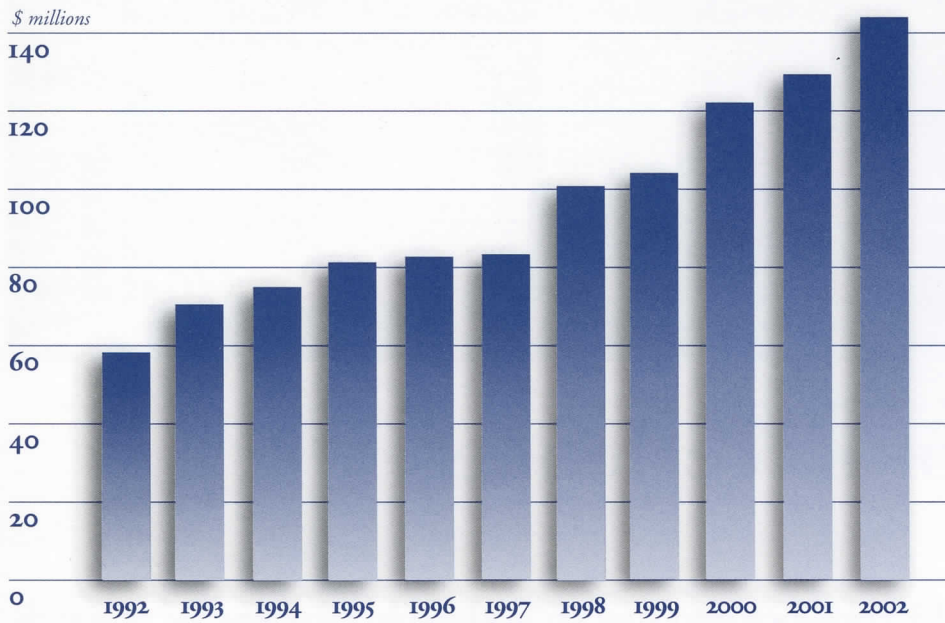
These initiatives have facilitated the expansion of research on a broad front involving both basic and clinical investigations. New centers of excellence have been created,

and major new programs in translational research have been developed to facilitate the rapid transfer of laboratory discoveries to clinical applications at the bedside.

Approximately half of the more than nine hundred active contracts and grants for research and training focus on clinical research. The resulting overall growth shows a two-and-one-half-fold increase in total research funding in the past decade (Figure 1).

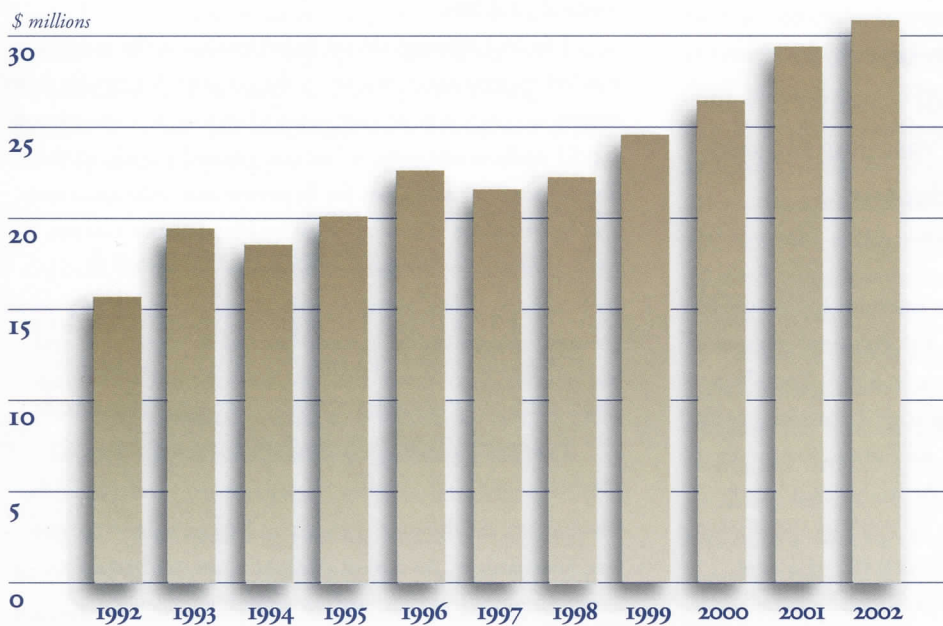
This growth recently placed the School in the top twenty U.S. medical schools in total federal funding for research, according to data compiled by the Association of American Medical Colleges, a substantial improvement from its position a decade ago.

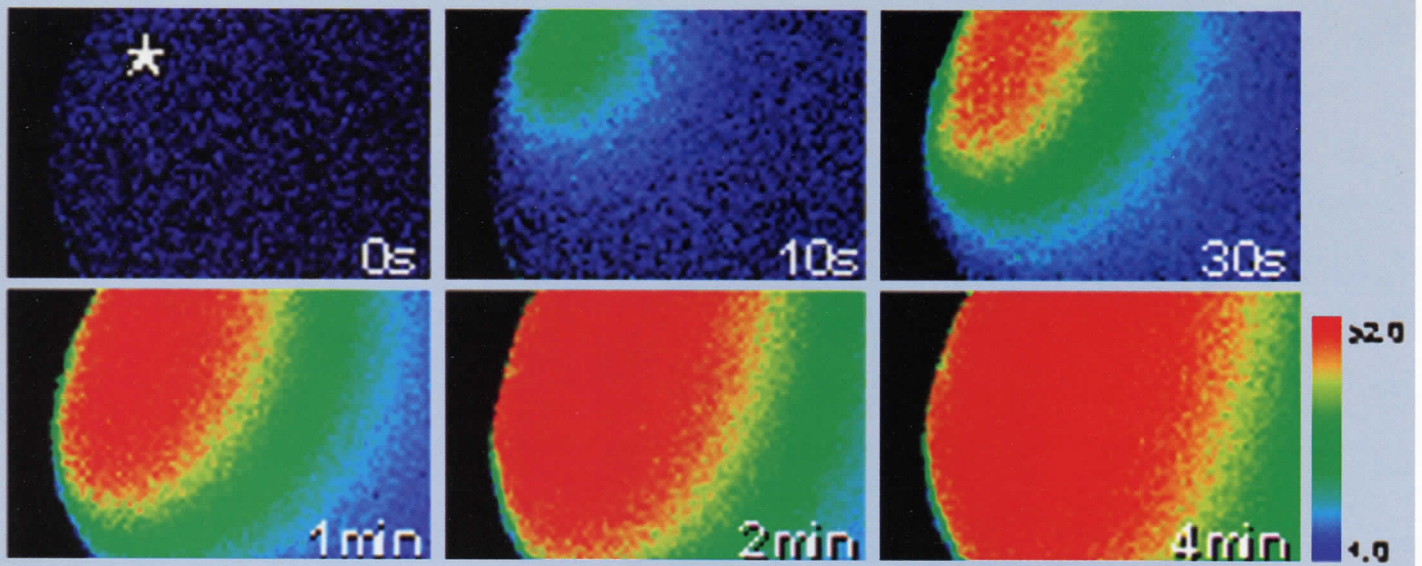
FIGURE 1: SPONSORED RESEARCH FUNDING



Indirect cost recovery has nearly doubled in this period and will exceed \$31 million this year (Figure 2). It is expected that the accelerated growth in research support will continue in the next several years.

FIGURE 2: INDIRECT COST RECOVERY





Centers of Excellence

Numerous Centers of Excellence and superb leadership in scientific research are making a reality of the School's vision of becoming a model twenty-first-century medical center and leader in the study of urban diseases.

WHITAKER CARDIOVASCULAR INSTITUTE

Basic and clinical research have prospered in the areas of coronary heart disease, hypertension, vascular biology, and atherosclerosis.

The Whitaker Cardiovascular Institute is directed by Joseph Loscalzo, MD, PhD, who was recruited as chief of cardiology and head of the Institute in 1994. Loscalzo's own research had already provided important insights into the role of nitric oxide deficiency and homocysteine in the development of vascular diseases. At BUSM, he led the effort that resulted in the funding in 1995 by the National Heart, Lung, and Blood Institute (NHLBI) of a new Specialized Center of Research (SCOR) on Ischemic

Heart Disease in Blacks, which, like many other research programs on campus, addresses an important urban medical problem.

The SCOR program on hypertension is the longest-funded hypertension SCOR in the country. Currently in its twenty-seventh year of continuous funding at levels exceeding \$1 million annually, it has contributed greatly to the development of therapies for hypertension, atherosclerosis, and heart failure. Directed now by Haralambos Gavras, MD, professor of medicine, the center continues BUSM's half-century of leadership in hypertension, which at present focuses research on the genetic basis of hypertension and the interaction of genes and environment in the development of hypertension and its clinical complications.

Chief of Cardiology Wilson Colucci, MD (BUSM '75), was recruited in 1995. Internationally recognized for his research on the pathogenesis and treatment of congestive heart failure, he has established a new and rapidly expanding program on cardiomyopathies.

LEFT: Calcium wave in a frog egg upon injection of calcium influx factor derived from human platelets. Diffusion of the factor through the egg stimulates influx of calcium detected by a fluorescent dye. The site of injection is shown by the asterisk in the first panel. These studies are part of a research program in the Vascular Biology Unit investigating mechanisms by which nitric oxide, a platelet inhibitor and vasodilator, regulates cell function. From Trepakova ES, Csutora P, Hunton DL, Marchase RB, Cohen RA, and Bolotina VB. *J. Biol. Chem.* 275: 26158–26163, 2000. Reprinted by permission of the American Society for Biochemistry and Molecular Biology.



WHITAKER CARDIOVASCULAR INSTITUTE: (front, l-r), Victoria Herrera, MD; Jane Leopold, MD; Joseph Loscalzo, MD, PhD; and Jane Freedman, MD; (back, l-r), Ravin Davidoff, MD; Wilson Colucci, MD; Alice Jacobs, MD; and Richard Shemin, MD

Another new program was made possible in 2001 by the addition of Kenneth Walsh, PhD, professor of medicine. Dr. Walsh, a leading authority on the basic aspects of gene therapy, heads a Program Project supported by a multimillion-dollar grant from the National Institutes of Health (NIH).

Clinical investigations in cardiovascular diseases also have grown in the past decade. Led by Thomas Ryan, MD, former chief of cardiology; Richard Shemin, MD, chairman of the Department of Cardiothoracic Surgery; and Alice Jacobs, MD, professor of medicine and director of the Cardiac Catheterization Laboratory, our scientists have directed a number of clinical trials on coronary bypass surgery, thrombolytic therapy, and angioplasty. Dr. Jacobs, an expert on heart disease in women, is working with colleagues to develop more accurate diagnostic tools for women at risk for cardiovascular problems.

FRAMINGHAM HEART STUDY

The Framingham Heart Study (FHS) has entered a new phase emphasizing the study of genetic determinants of cardiovascular and other chronic diseases.

Since its inception in 1948, the study has been led by BUSM faculty, including Drs. Roy Dawber, William Kannel, William Castelli, and currently Daniel Levy.

BUSM was recently awarded a seven-year contract that will provide approximately \$42 million to continue the follow-up study led by Philip Wolf, MD, professor of neurology, of the original cohort of 5,209 participants and their 5,124 children, and to begin assessment of approximately 3,500 grandchildren of the original group. Knowledge obtained from the FHS on the risk factors for heart diseases and stroke has played an important role in the decline of cardiovascular diseases in the United States over the past three decades. In addition, Boston University researchers, utilizing FHS data, have made major contributions to the understanding of other diseases such as dementia, osteoarthritis, and osteoporosis, and of visual and hearing loss. Extension of the FHS to the third generation of individuals provides a unique opportunity to elucidate family patterns of cardiovascular diseases and particularly the genetic factors involved in such diseases as hypertension, hypercholesterolemia, obesity, diabetes, and asthma. After fifty-four years of existence, the FHS continues to hold great promise for major medical discoveries.

Much of what is currently known about risk factors for stroke, such as hypertension, hypercholesterolemia, and smoking, has been identified by Dr. Philip Wolf and his colleagues, including Carlos Kase, MD, and Viken Babikian, MD, both professors of neurology. They also are leaders in advancing new forms of therapy to prevent the complications and recurrence of stroke.



CANCER RESEARCH: (l-r), Maureen Kavanah, MD; Stuart Calderwood, PhD; Marianne Prout, MD, MPH; and Jianlin Gong, PhD. Inset: Peter Quesenberry, MD; and Gerald Elfenbein, MD, Roger Williams Medical Center



CANCER RESEARCH CENTER

Basic science research in oncology expanded substantially in the past decade with the addition of distinguished new faculty.

In 1991, Douglas Faller, MD, PhD, was recruited as director of the Cancer Research Center. Research programs have grown rapidly, particularly in the past two years, with the addition of several senior faculty members. Gerald Elfenbein, MD, professor of medicine and a leader in bone marrow transplantation, was recruited to the School's Roger Williams Medical Center affiliate in Providence, RI, to develop a bone marrow transplantation program. Peter Quesenberry, MD, professor of medicine and a leading authority on stem cell research, also recently joined the Roger Williams Medical Center, where he has established the only stem cell research and clinical program in Rhode Island. In addition, Stuart Calderwood, PhD, professor of medicine and a leader in studies of radiation injury, and Jianlin Gong, PhD, associate professor of medicine and an expert in the development of new vaccines to treat cancers, have just moved to BUSM from the Dana Farber Cancer Center in Boston, bringing with them well-funded research programs of their own.

These distinguished new faculty members joined an existing group of accomplished cancer researchers, including Maureen Kavanah, MD, associate professor of surgery, and Marianne Prout, MD, MPH, associate professor of public health, medicine, and surgery, who for many years have been involved in clinical trials on breast cancer and its prevention. Dr. Kavanah has been national chairman of the National Breast Cancer Prevention Trial.

BUSM recently received a Cancer Research Center planning grant from the National Cancer Institute (NCI) that should facilitate further expansion of cancer research programs and place BUSM in a competitive position for future designation by NCI as a National Comprehensive Cancer Center.

PULMONARY CENTER

As one of the preeminent research centers on pulmonary diseases in the world, the Pulmonary Center has experienced outstanding research growth in the past decade.

Directed by Jerome Brody, MD, professor of medicine, the Pulmonary Center now includes 36 faculty members, 11 of whom are full professors. The recruitment in



Jerome Brody, MD, and David Center, MD, sketch the role of inflammation in bronchial asthma.

1991 of Mary Williams, PhD, professor of medicine, played an important role in the growth of a major research program on the genetic control of lung development. An NIH-funded Program Project led by Drs. Williams and Brody supports this work.

The program in pulmonary immunology, infection, and inflammation, led by David Center, MD, Gordon and Ruth Snider Professor of Medicine, is funded by several NIH grants including one that led to the designation of BUSM as a National Asthma and Immunology Center in 1996. The asthma study group, which includes Professors Matthew Fenton, PhD, and William Cruickshank, PhD, examines the genetic mechanisms involved in asthma. Professor Hardy Kornfeld, MD, leads efforts that are providing important new data on immune mechanisms involved in protection against tuberculosis. In addition, Drs. Center, Kornfeld, Cruickshank, and associates have discovered a cytokine, Interleukin-16, and have characterized its structure and function, uncovering potential new approaches to the treatment of asthma and HIV infections.

The NIH-designated Specialized Center on Pulmonary Fibrotic Disease, led by Ronald Goldstein, MD, professor of medicine, has contributed greatly to understanding the causes and treatment of emphysema. These investigations are complemented by epidemiologic studies on possible causes of chronic obstructive pulmonary diseases and by an ongoing clinical trial on the use of retinoids in the treatment of emphysema. Other programs in the Pulmonary

Center that have grown considerably include studies on pulmonary hypertension and the cardiovascular effects of sleep-disordered breathing.

ARTHRITIS CENTER

As a major research Center of Excellence for more than a quarter of a century, the Arthritis Center has experienced research growth on a broad front in the past decade.

In 1994 Joseph Korn, MD, was recruited as director to succeed the Arthritis Center's founder, Alan S. Cohen, MD, bringing with him important work on the basic mechanisms of inflammation and repair, particularly as related to autoimmune and fibrotic diseases such as scleroderma. Dr. Korn's research has made the Medical Campus a major site for studies on the pathogenesis and treatment of scleroderma, a typically fatal disease.

The NIH-funded Multipurpose Arthritis and Musculoskeletal Research and Treatment Center, led by David Felson, MD, professor of medicine and public health, has expanded to include epidemiological studies involving the Framingham Heart Study population and a community-based group in Beijing, China. The research has increased



ARTHRITIS CENTER: (l-r), Robert Simms, MD; Joseph Korn, MD; Martha Skinner, MD; and David Felson, MD

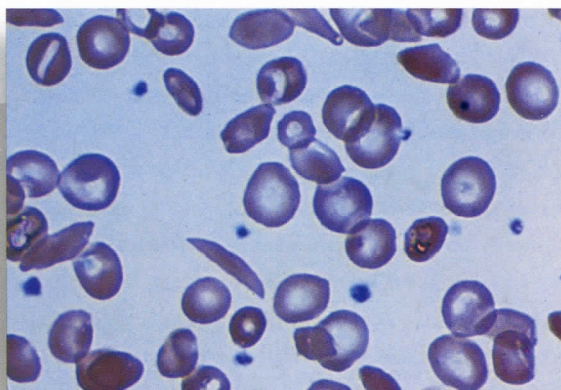
greatly the understanding of risk factors and treatment of osteoarthritis, osteoporosis, and hip fracture. Dr. Felson and associates such as Robert Simms, MD, professor of medicine, and Timothy McAlindon, MD, associate professor of medicine, are also studying nontraditional nutritional therapies such as ingestion of products obtained from cartilage for the treatment of arthritis.

BUSM is internationally known for investigations into another uncommon and once-fatal disease, amyloidosis.

Studies led by Dr. Cohen characterizing the nature of the amyloid fibril, causes of its deposition in tissues, and the genetic basis of certain forms of amyloidosis prepared for recent breakthroughs in treatment, pioneered by a group led by Martha Skinner, MD, director of the Amyloid Research and Treatment Program and professor of medicine. In new therapies, use of chemotherapeutic agents to kill off amyloid-producing plasma cells followed by administration of human stem cells has led to remarkable remissions in many patients with primary amyloidosis. Furthermore, work has shown that liver transplantation can induce remission of the disease in hereditary amyloidosis, which is characterized by abnormal production of amyloid protein by the liver. A cure of amyloidosis appears to have been obtained in some patients—a remarkable feat, considering that survival from amyloidosis had never before been achieved.

COMPREHENSIVE SICKLE CELL CENTER

This NIH-funded center was established three decades ago by alumnus Louis Sullivan, MD (BUSM '58), who later became President of Morehouse School of Medicine in Atlanta and Secretary of Health and Human Services (1989–93). Martin Steinberg, MD, a leading researcher in the field recruited in 1999 to lead the center, has established programs on the genetics and treatment of sickle cell disease. His studies are complemented by the work of Susan Perrine, MD, associate professor of medicine and pediatrics, who, with Douglas Faller, MD, PhD, demonstrated in Phase 1 and Phase 2 clinical trials that administration of butyrate to patients with sickle cell disease reduces the number of sickle cell crises by activating a fetal hemoglobin gene normally dormant after birth. They also have observed that butyrate benefits patients with beta-thalassemia, a genetic disease characterized by severe anemia.



CENTER OF EXCELLENCE IN WOMEN'S HEALTH

BUSM was funded in 1997 by the Department of Health and Human Services to become a national Center of Excellence in Women's Health.

Directed by Karen Freund, MD, MPH, associate professor of medicine, the center coordinates and enhances women's health services and research at BUSM, BMC, Boston Veterans Affairs Medical Center, and Boston HealthNet. The center complements another initiative, the Program on Research in Women's Health, led by Gail Sonenshein, PhD, professor of biochemistry, that has been particularly successful in advancing research on breast cancer. Dr. Sonenshein and her colleagues demonstrated that the nuclear factor NF kappa-B promotes cell survival and



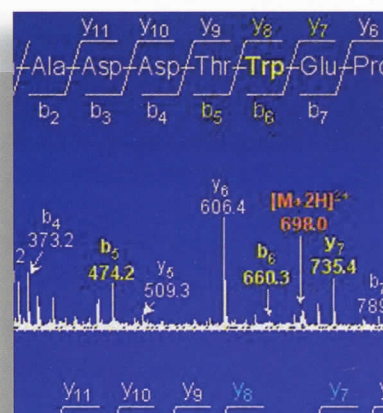
WOMEN'S HEALTH: (l-r), Sharon Levine, MD; Barbara "Bobbi" Philipp, MD; Karen Freund, MD, MPH; Caroline Apovian, MD; Gail Sonenshein, PhD; and Valena Soto-Wright, MD

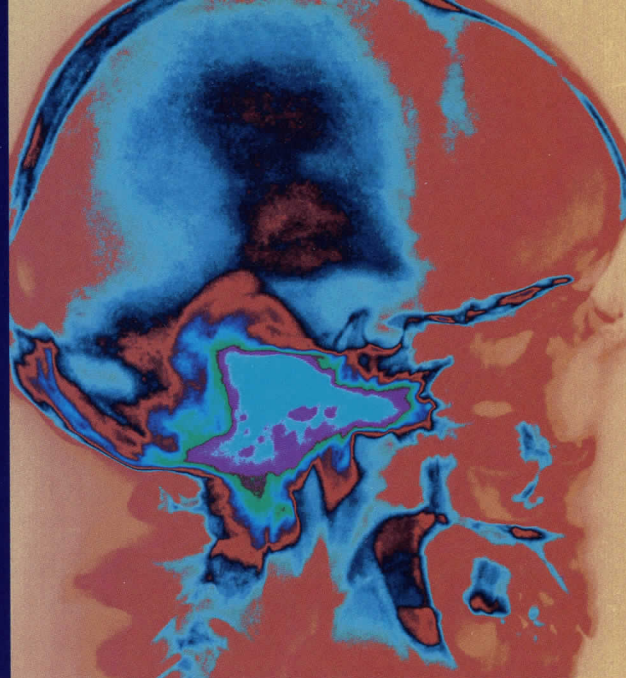
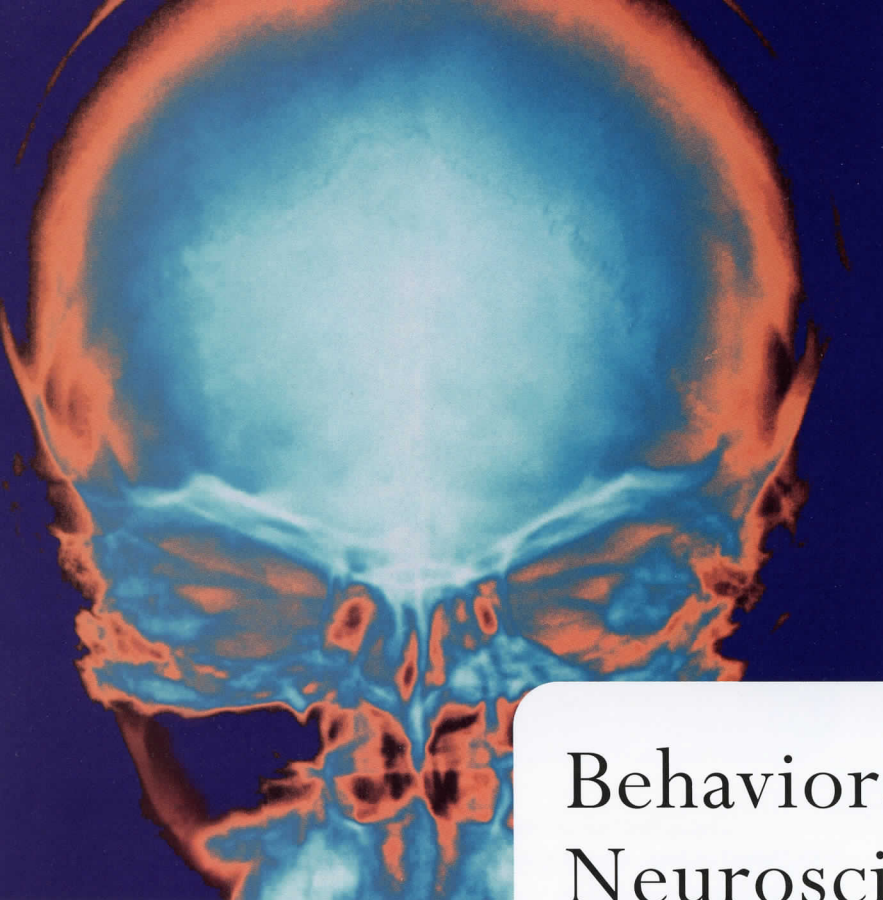
is expressed in high amounts in breast cancer cells. They recently won a multimillion-dollar Program Project Grant from the National Cancer Institute and have obtained substantial funding from the United States Army. Faculty members associated with the center have led important new initiatives and programs: Caroline Apovian, MD, associate professor of medicine, in human nutrition; Barbara "Bobbi" Philipp, MD, assistant professor of pediatrics, in promoting breastfeeding; and Sharon Levine, MD, associate professor of medicine, in geriatrics.

NATIONAL MASS SPECTROMETRY CENTER

The establishment of the National Mass Spectrometry Center at BUSM was made possible by the recruitment in 1994 of Catherine Costello, PhD, from the Massachusetts Institute of Technology, where she was associate director of its center.

The NIH approved transfer of the center to BUSM in 1997 and awarded a multi-million-dollar grant to fund its activities. The center provides expertise to BUSM and other researchers throughout the United States for the chemical characterization of complex molecules such as carbohydrates, proteins, glycoproteins, and glycolipids. Techniques currently being developed are also becoming very important for research in genomics and proteomics.





Behavioral Neuroscience Programs

In the past decade research at BUSM on the development, function, and genetics of the human brain has led to major breakthroughs in the understanding and treatment of a variety of serious health problems, including Alzheimer's disease, autism, substance abuse, Parkinson's disease, and other memory and stress disorders.

ALZHEIMER'S DISEASE CENTER

Focusing on research, education, and clinical care, BUSM has emerged as a major center for the study of Alzheimer's disease over the past decade.

Funded initially in 1996 and again in 2001 by NIH, the Alzheimer's Disease Center is led by Neil Kowall, MD, professor of neurology and also director of the Geriatric Research, Education, and Clinical Center at the Edith Nourse Rogers Memorial Veterans Hospital in Bedford, MA, who was recruited to BUSM in 1995. His research on the

molecular neuropathology of the human brain is complemented by studies on the genetics of Alzheimer's disease led by Lindsay Farrer, PhD, professor of medicine and neurology; biochemical studies on the degradation of brain amyloid by Carmela Abraham, PhD, professor of biochemistry; and biochemical studies on apolipoprotein E by Vassilis Zannis, PhD, professor of medicine and of biochemistry. Dr. Farrer's group recently demonstrated the importance of the apolipoprotein E4 genotype and of gender and race in the development of Alzheimer's disease. In addition, Robert Green, MD, who joined the BUSM faculty in 1999 as associate professor of neurology, is involved in a number of NIH-funded clinical trials dealing with the prevention of Alzheimer's disease in high-risk

individuals, including one that studies the influence of non-steroidal anti-inflammatory drugs. In addition, Dr. Wolf and associates, using data from the Framingham Heart Study, have reported very recently that an elevated blood level of homocysteine, known to increase the risk of heart attacks and strokes, is also associated with a doubling of the risk for Alzheimer's disease. The past decade has thus seen the emergence of BUSM as a major center for the study of Alzheimer's disease, one of the most devastating illnesses in the elderly population.



ALZHEIMER'S RESEARCH: (l-r), Neil Kowall, MD; Lindsay Farrer, PhD; Vassilis Zannis, PhD; Robert Green, MD; and Carmela Abraham, PhD

NEUROSCIENCE PROGRAMS ON AGING, AUTISM, MALNUTRITION, AND SUBSTANCE ABUSE

Integrating changes in brain structure and function with behavioral abnormalities provides new insights into a broad range of problems associated with aging, autism, malnutrition, and substance abuse.



BEHAVIORAL NEUROSCIENCES: (l-r), Deborah Frank, MD; Mark Moss, PhD; Helen Tager-Flusberg, PhD; Janina Galler, MD; Richard Myers, PhD; and Douglas Rosene, PhD

Mark Moss, PhD, chairman of the Department of Anatomy and Neurobiology, and his colleague Douglas Rosene, PhD, associate professor of anatomy and neurobiology, lead major programs on the effects of hypertension and aging on anatomical, functional, and behavioral changes in monkeys.

Research in autism has been greatly enhanced by the recent recruitment of Professor Helen Tager-Flusberg, PhD, a world authority and principal investigator of a multimillion-dollar NIH Program Project Grant, in which she is examining the effects of chromosomal disorders in autism and other complex genetic diseases associated with specific language impairments. Using functional magnetic resonance imaging (fMRI) techniques, her group is measuring the effects of various cognitive tasks on blood flow in different regions of the brain. She also collaborates with Thomas Kemper, MD, professor of pathology and laboratory medicine and of anatomy and neurobiology, and Margaret Bauman, MD, adjunct clinical professor of pathology and laboratory medicine, who have demonstrated the presence of anatomic abnormalities in areas of the forebrain and cerebellum of autistic subjects. This work has indicated that the earliest changes associated with autism probably begin before birth, thus negating the theory that autism is due to poor parenting.

In work on another Program Project Grant, Janina Galler, MD, professor of psychiatry and public health, has demonstrated that fetal malnutrition in rats impairs normal brain development and causes behavioral changes later in life. These basic investigations have been complemented by longitudinal studies of children from Barbados and Mexico who have been exposed to moderate or severe malnutrition in the first year of life. Dr. Galler's recent findings have revealed that malnourished children score



RESEARCH ON SUBSTANCE ABUSE: (l-r), Conan Kornetsky, PhD; Domenic Ciraulo, MD; Richard Saitz, MD, MPH; Jeffrey Samet, MD, MPH; and Brian Yamamoto, PhD

significantly lower on IQ tests and are four times as likely to develop Attention Deficit Disorder as are controls. In addition, studies by Deborah Frank, MD, professor of pediatrics, and Barry Zuckerman, MD, chairman of the Department of Pediatrics, have demonstrated that prenatal cocaine exposure is associated with low birth weight, although verbal intelligence scores are not affected during childhood.

Several research programs at BUSM deal with substance abuse. For example, Conan Kornetsky, PhD, professor of psychiatry and pharmacology, has demonstrated that chemically dissimilar substances such as cocaine, heroin, alcohol, and nicotine share activities in the brain that subserve their rewarding and addictive actions. Brian Yamamoto, PhD, professor of pharmacology, who joined our faculty this year, leads a large research program on the neurotoxicity of amphetamine and other addicting drugs.

Domenic Ciraulo, MD, recruited in 1996 as chairman of the Division of Psychiatry, directs a center, funded by the National Institute on Drug Abuse (NIDA), that examines the predisposing factors for substance abuse. The studies employ fMRI to identify specific sites in the brain that are affected by addicting drugs and by newly developed medications for treating substance abusers. In addition, innovative educational programs on substance abuse led by Jeffrey Samet, MD, MPH, and funded by grants from the National Institute of Alcoholism and Alcohol Abuse and NIDA, train medical students, residents, and practicing physicians on how to identify and manage substance abusers. These various programs on addictive disorders are particularly important for the

Medical Center, since they address serious debilitating problems in the urban population that it serves.

The Aphasia Center, based at the Boston Veterans Administration Health Care System (Boston VA), was established in 1965 under the direction of the late Harold Goodglass, PhD, professor of neurology, and has continued to receive NIH funding to the present. The center is a world leader in the study and treatment of aphasias and memory disorders. The Aphasia Center has trained a talented cadre of scientists and clinicians, and under the current leadership of Martin Albert, MD, PhD, professor of neurology, continues to examine the neurochemistry of language disorders, perception, and cognitive capacities.

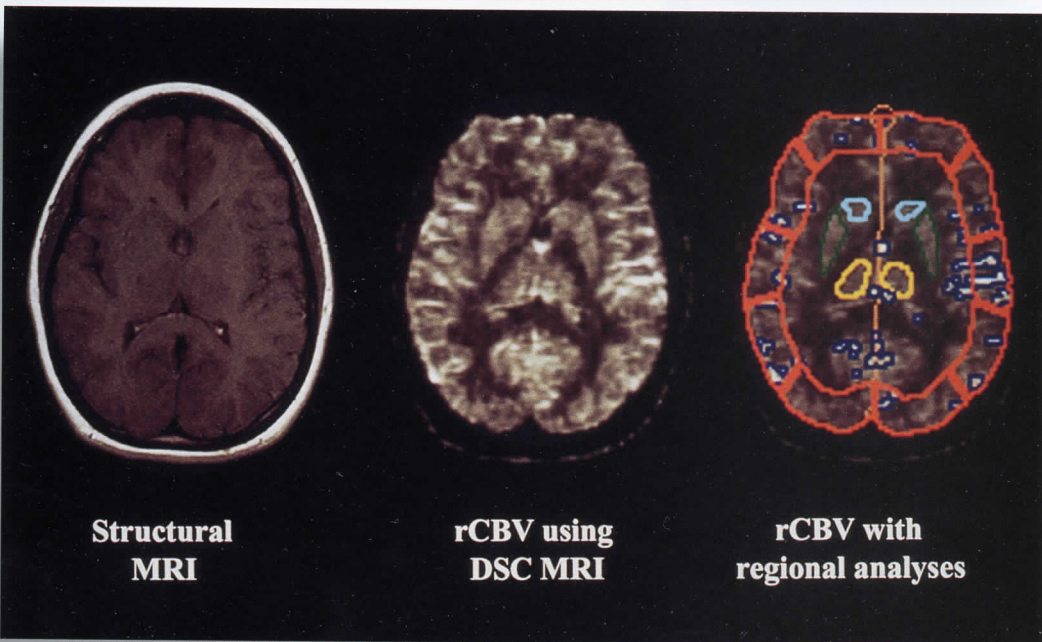
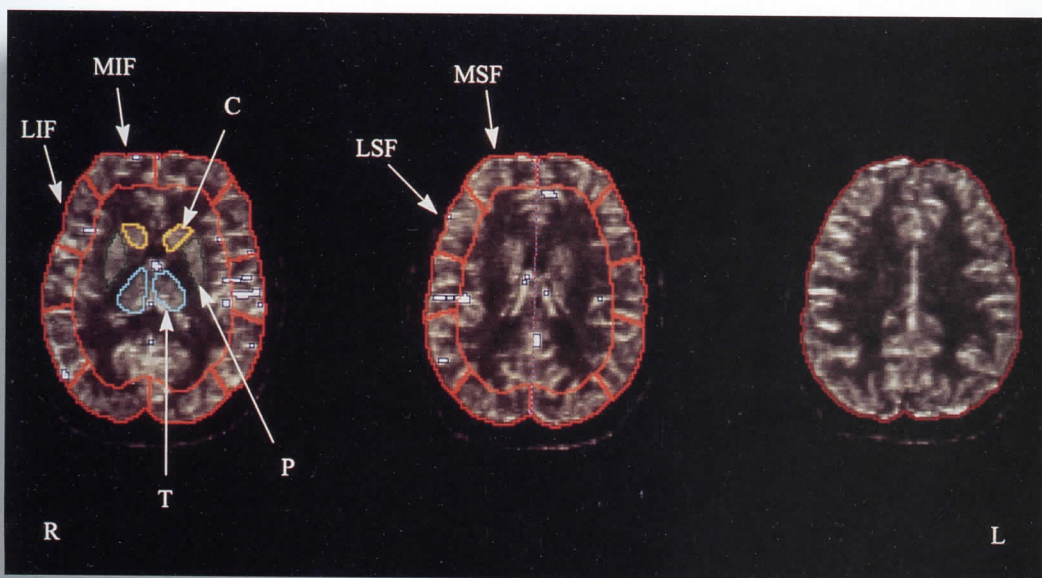
Another major center based at the Boston VA is the Center for Post-Traumatic Stress Disorders (PTSD), led by Terence Keane, PhD, vice chairman for research in psychiatry, who joined the BUSM faculty in 1999. Dr. Keane and associates have pioneered the development of methods to assess and diagnose PTSD and characterize the psychological, behavioral, and physiological consequences of exposure to traumatic events. They also work on the Medical Campus to develop treatment for PTSD in such groups as refugees tortured in their countries of origin, children and families traumatized by war, and patients with HIV infections.

Research on Parkinson's disease and other movement disorders was strengthened by the recruitment of J. Stephen Fink, MD, PhD, as chairman of the Department of Neurology. Dr. Fink, who had been an associate professor of neurology at Harvard Medical School and director of neurology programs at Genzyme Corporation, studies the genetic basis and treatment of movement abnormalities. His group complements existing genetic expertise at the School in the group led by Richard Myers, PhD, professor of neurology. Dr. Myers's group has recently identified several gene loci that show strong associations with the presence of Parkinson's disease, indicating an important genetic contribution to its etiology.



POST-TRAUMATIC STRESS DISORDERS: (l-r), Terence Keane, PhD, with associates: Brett Litz, PhD, associate professor of psychiatry; Lynda King, PhD, research professor of psychiatry; and Daniel King, PhD, research professor of psychiatry

(Below) **WATCHING THE BRAIN WORK:** Researchers in the Division of Psychiatry are using the latest brain neuroimaging techniques to study changes in the activity of specific brain regions as people recall traumatic memories or take mood-enhancing drugs.





Health Services Research

In the past decade BUSM has undertaken several large research programs that deal with health care delivery, health economics, health policy, and drug epidemiology.

A leader in health services research was the late Mark Moskowitz, MD, former chief of the Section of General Internal Medicine, who with such colleagues as Robert

Friedman, MD, professor of medicine, and Daniel Berlowitz, MD, MPH, associate professor of medicine, made fundamental observations on access to and quality of health care and outcomes of treatment. Mark Prashker, MD, MPH, associate professor and chairman of the Health Services Department at the School of Public Health, and his associates have developed large research programs at both the Medical Campus and the Bedford VA Medical Center, where he heads the VA Center for Health Quality Outcomes Economic Research.

The Slone Epidemiology Center has become the most successful drug epidemiology research group in the United States. Currently directed by Allen Mitchell, MD, and associate directors Lynn Rosenberg, PhD, and David Kaufman, ScD, the Slone Center has made several important observations such as the demonstration of the beneficial effects of folic acid use in preventing spina bifida, the value of anti-inflammatory drugs in reducing the risk of colon cancer, and the medical risks of oral contraceptive drugs. They also have established a national database for identifying previously unsuspected associations between medications or environmental agents and the development of birth defects.



SLONE EPIDEMIOLOGY CENTER: (L-r), Allen Mitchell, MD, Director, with David Kaufman, ScD, and Lynn Rosenberg, PhD



BioSquare

In 1991, Boston University School of Medicine and Boston University Medical Center Hospital embarked on a joint project to develop approximately sixteen acres of land immediately across from the Medical Campus.

The joint development project, named BioSquare, was planned not only to meet the future research needs of the Medical Campus for many decades to come but also to become a major scientific village, providing space and core services to corporate tenants involved in pharmaceutical and biotechnology research.

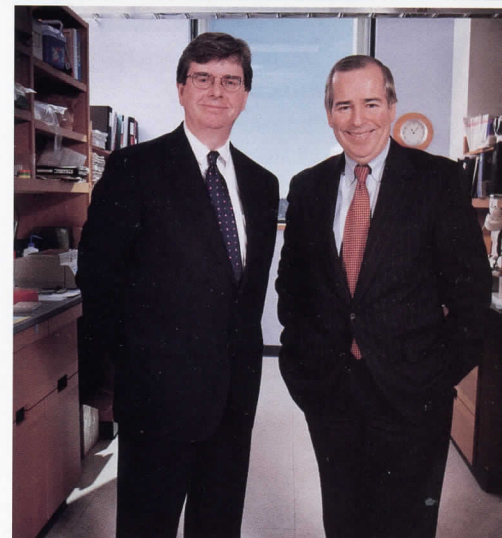
The dream of BioSquare has become a reality. The first building on site, the 201,000-square-foot Center for Advanced Biomedical Research (CABR), which opened in 1993, supports researchers at BUSM and the Boston University Goldman School of Dental Medicine. In 2000, a second research facility, the 197,000-square-foot Evans Biomedical Research Center (EBRC), opened for researchers in the Division of Medicine and corporate tenants. An Innovation Center recently opened in the EBRC to house five start-up companies.

BioSquare tenants have access to a wide range of sophisticated laboratory facilities and core services such as a cardiovascular imaging suite, structural biology core, X-ray

crystallography facility, NMR spectroscopy core, cryoelectron microscope facility, mass spectrometry center, confocal microscopy core, and transgenic animal facility. A 1,000-space parking garage was also opened at BioSquare in 2000.

Planned for the near future are two more research buildings, a hotel and conference center, and a second garage. The overall project, once completed, will include approximately 2.5 million square feet of research and office space. Richard Towle, Senior Vice President of Boston University, has played a major role in moving the BioSquare project forward.

BioSquare supports important growth by University researchers. It also offers tremendous opportunities for companies that become part of this exciting academic environment. The partnerships being developed between the Medical Center and the research firms should benefit all participants and lead to important advances in biomedical research.

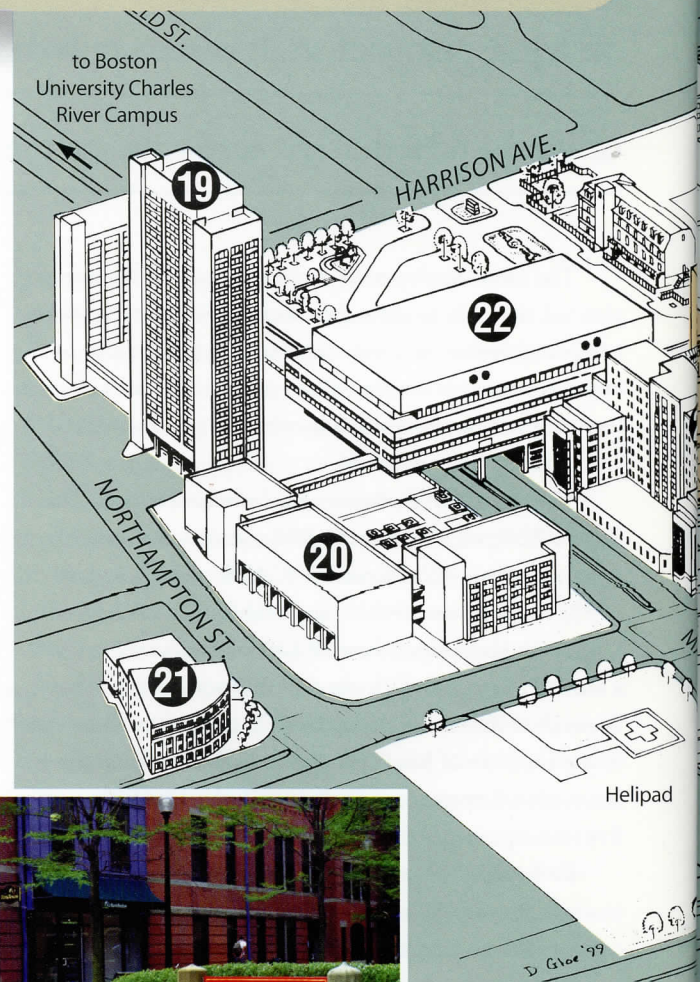


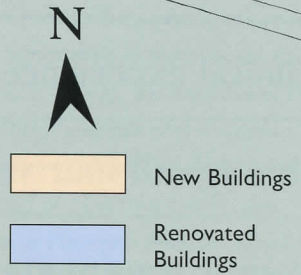
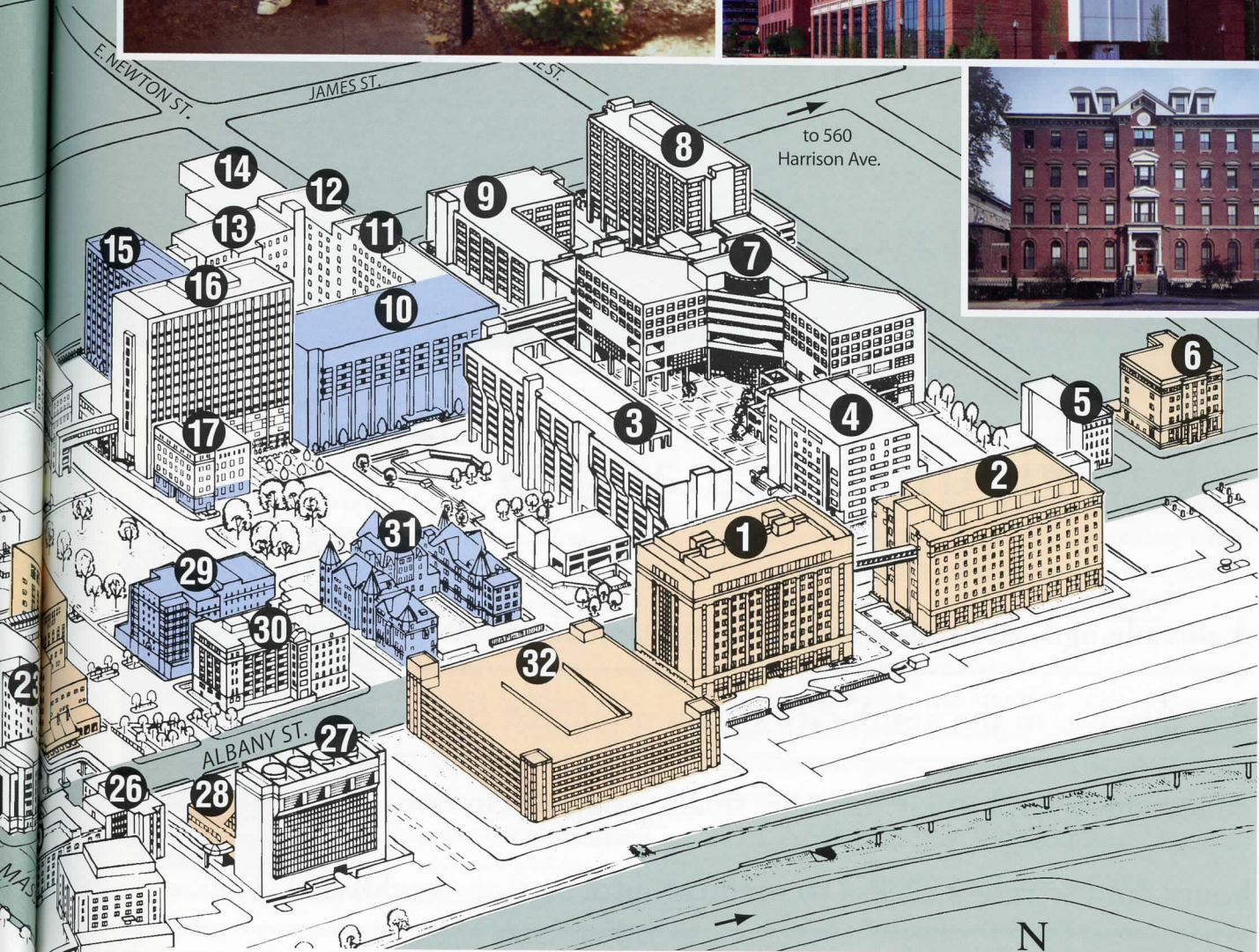
BIO SQUARE LEADERSHIP: *Richard Towle, (right), senior vice president, and Michael Donovan, (left), associate vice president for Administrative Services, BUMC*

Campus Growth

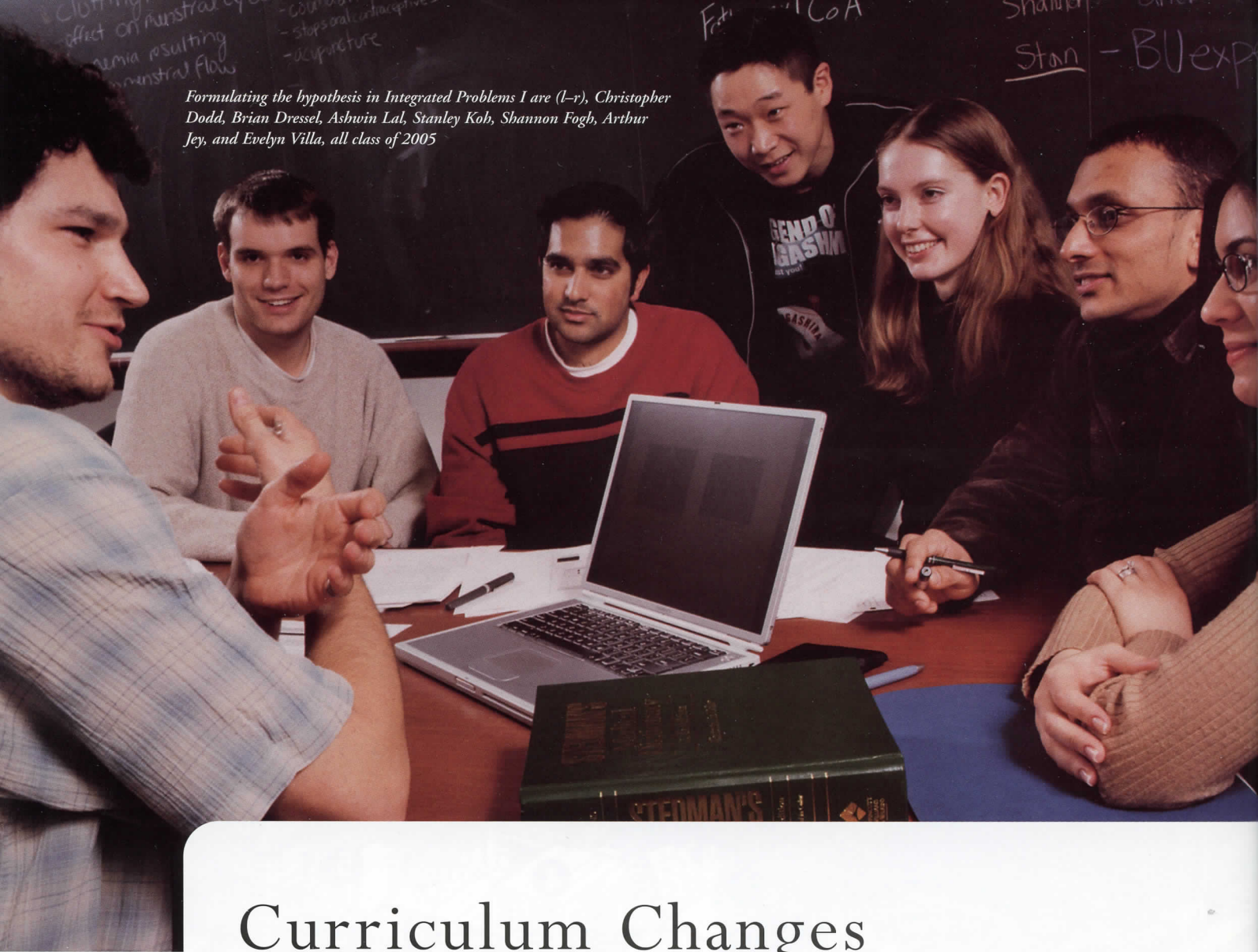
The expansion of research on the Boston University Medical Campus has required the development of new research buildings and the renovation of outmoded laboratories. Since 1991, total research space has more than doubled. Approximately 437,000 square feet of new research space has been created and 122,000 square feet of space has been fully renovated.

- | | |
|---|---|
| 1. Center for Advanced Biomedical Research | 16. BUSM Instructional Building L |
| 2. Evans Biomedical Research Center | 17. BUSM Building A |
| 3. Solomon Carter Fuller Mental Health Center | 18. Silvio O. Conte Medical Research Building |
| 4. Henry M. Goldman School of Dental Medicine | 19. South Block |
| 5. Naval Blood Research Center | 20. South Block Parking Garage |
| 6. BU Biomedical Research Laboratory | 21. BUSM Research Building |
| 7. BMC East Newton Pavilion | 22. BMC Ambulatory Care Center |
| 8. Doctors Office Building | 23. Dowling Building |
| 9. Preston Family Building | 24. BMC Harrison Pavilion |
| 10. Evans Building | 25. Mallory Institute of Pathology |
| 11. Old Evans Building | 26. Maxwell Finland Laboratory |
| 12. Collamore Building | 27. Power Plant |
| 13. Robinson Building | 28. State Medical Examiner's Facility |
| 14. Harrison Court | 29. Surgical Building |
| 15. Houseman Research Center including McNary Learning Center | 30. Maternity Building |
| | 31. Talbot Building |
| | 32. Parking Garage |





Formulating the hypothesis in Integrated Problems I are (l-r), Christopher Dodd, Brian Dressel, Ashwin Lal, Stanley Koh, Shannon Fogh, Arthur Jay, and Evelyn Villa, all class of 2005



Curriculum Changes

A decade ago, the rapidly expanding base of medical knowledge and the upheaval in the health care system prompted changes in medical education. Today's students enjoy small-group discussions, fewer lecture hours, and wireless access to medical information worldwide. The clinical experience begins in the first week of medical school and continues through all four years, providing optimal conditions for learning how to deliver continuing care.



MD-PHD STUDENTS: (seated, l-r): Michael Liang, Rebecca Saff, Laura Nguenya, and Morris Tansky; (standing, l-r): Grace Monis, Michael Mansour, Ausaf Bari, and James Chen

Perhaps the most pervasive and influential change in medical education has been the least visible: steady and deliberate introduction of appropriate new teaching technologies in several courses, including Anatomy and Neurobiology, Pathology, and Family Medicine. Histology slides and the entire Pathology Course for second-year students have become available electronically on the Internet. The Department of Family Medicine now connects medical students from remote clinical teaching sites with campus peers and mentors in online discussions about real and simulated patients. Rapid and continuing innovation in technology for information retrieval permits students to access most textbooks and more than 1,200 medical journals in full-text form from computers anywhere.

THE EARLY MEDICAL SCHOOL SELECTION PROGRAM

BUSM's innovative Early Medical School Selection Program (EMSSP) to recruit underrepresented minorities to medical school has broadened its scope from the five original colleges and universities to twelve colleges and universities, including historically black colleges and universities and primarily Hispanic institutions. Students apply as college sophomores; with provisional acceptance to medical school, they spend two summers and their entire senior year at Boston University completing undergraduate requirements and taking basic science courses that give double credit toward both bachelor's and medical degrees. They enter medical school having completed certain basic science courses, which gives them more free time to study or do research. The curriculum places accepted students on a fast track with a cadre of students in the other Boston University pre-medical pathways: the Modular Medical Integrated Curriculum (MMEDIC), its related program in the College of Engineering (ENGMEDIC), and the Seven-Year Program.

Led by Associate Dean of Students and Minority Affairs Kenneth Edelin, MD, the EMSSP has already produced thirty-eight BUSM alumni and currently has enrolled twenty-six students at the School of Medicine and twenty-two additional students in the undergraduate portion of the program. Because of its success, the program has been expanded and has become the major pathway for recruitment of underrepresented minorities to BUSM.

EMSSP: (l-r), Kenneth Edelin, MD, with Khadijah Adejumo, Amber Edwards, and Robert Rusher, all class of 2004



INAUGURAL EVENT:

President Jon Westling gives his inaugural address in 1996.



New Leaders at the Helm

The most important administrative change at Boston University during the decade was the selection in 1996 of Jon Westling as University President.

In addition, former President John Silber was appointed as Chancellor.

President Westling had served previously at the University in various roles, including provost, executive vice president, and acting president. He appointed Dennis Berkey, PhD, Dean of the College of Arts and Sciences, to also serve as University Provost and Dr. Chobanian as Medical Campus Provost, to be responsible for the overall academic activities on the Medical Campus as well as those he oversees as Dean of Boston University School of Medicine.

ADDITIONAL ADMINISTRATIVE APPOINTMENTS

Several appointments were subsequently made in the Medical Campus Provost's Office. Norman Levinsky, MD, became associate provost after an outstanding twenty-five-year tenure as chairman of the Division of Medicine. Marcelle Willock, MD, MBA, was appointed assistant provost for community affairs and outreach following retirement as chairman of the Department of Anesthesiology. BUSM is proud that Dr. Willock has been appointed Dean of the Charles R. Drew School of Medicine in Los Angeles and will assume this position in May 2002. In

recent years, Deborah Cotton, MD, was recruited to become assistant provost and director of the Office of Clinical Research, later to be succeeded by Thomas Moore, MD. Mark Klempner, MD, an international authority on infectious diseases and principal investigator on a large grant on Lyme disease, was recruited to become Wesselhoeft Professor of Medicine and assistant provost for research.

Major appointments were also made in deans' offices. John Chessare, MD, MPH, a professor of pediatrics, became the chief medical officer at Boston Medical Center and associate dean for BUSM Clinical Affairs. Phyllis Carr, MD, an expert on women's health, was appointed associate dean for student affairs in 2001. Also, Robert Witzburg, MD '77, has been selected as the new dean of admissions to replace John O'Connor, MD, who will retire in June 2002.

In addition, Robert Meenan, MD, MPH, MBA, former director of the Arthritis Center, was appointed chairman of the Department of Socio-Medical Sciences at BUSM in 1992, and Dean of the School of Public Health in 1996.

NEW LEADERSHIP



PROVOSTS AND DEANS: (l-r), John Chessare, MD, MPH; Phyllis Carr, MD; Thomas Moore, MD; Mark Klempner, MD; Norman Levinsky, MD; and Marcelle Willock, MD, MBA



BASIC SCIENCE CHAIRMEN: (l-r), Donald Small, MD; Michael Christman, PhD; Robert Meenan, MD, MPH, MBA; Ronald Corley, PhD; and Mark Moss, PhD



CLINICAL CHAIRMEN: (seated, l-r), James Becker, MD; and Thomas Einhorn, MD; (standing, l-r), Kenneth Grundfast, MD; Richard Babayan, MD; and Phillip Stubblefield, MD



CLINICAL CHAIRMEN: (seated, l-r), Joseph Ferrucci, MD; J. Stephen Fink, MD, PhD; and Domenic Ciraulo, MD; (standing, l-r), Larry Culpepper, MD, MPH; Joseph Loscalzo, MD, PhD; Shanker Nesathurai, MD; and Barry Zuckerman, MD



DYNAMIC NEW LEADERSHIP IN DEPARTMENTS, CENTERS, AND INSTITUTES

Over the past decade, a series of 25 appointments were made in leadership positions in departments and Centers of Excellence at the School. These leadership changes have helped transform many of the departments, as shown in the following examples.

In the Division of Surgery, James Becker, MD, formerly head of general surgery at the Brigham and Women's Hospital and a world leader in surgery for inflammatory bowel disease, strengthened academic activities in surgery and broadened greatly the clinical programs in the division with several faculty recruitments. R. Armour Forse, MD, PhD, the Laszlo Tauber, MD, Professor of Surgery, was brought in to initiate a program on the surgical treatment of obesity; Gary Gibbons, MD, professor of surgery, to establish a program on diabetic vascular disease; Gregory Antoine, MD, associate professor of surgery, to head the Plastic Surgery Section; Steven Moulton, MD, associate professor of surgery, to head the Pediatric Surgery Program; and several other established surgeons to meet increasing clinical needs in trauma, critical care, and general surgery.

Thomas Einhorn, MD, recruited as chairman of the Orthopedic Surgery Department, appointed several young members to enhance the clinical programs of the department. In addition to his own research, he established an excellent basic research program headed by Louis Gerstenfeld, PhD, research professor of orthopedic surgery. The department now carries out innovative research in fracture healing and connective tissue metabolism and has been awarded several NIH and industry-sponsored grants.

The Department of Otolaryngology was transformed by the new leadership of Kenneth Grundfast, MD, an outstanding pediatric otolaryngologist who had trained previously at the Medical Campus. Dr. Grundfast has developed a strong research program and recently recruited as vice chairman Stanley Shapshay, MD, a distinguished academician who had been chief of otolaryngology at Lahey Clinic

and most recently was department chairman at Tufts University School of Medicine and New England Medical Center.

Keith Lewis, MD, chairman of the Department of Anesthesiology since 1998, expanded greatly the department's faculty and programs. More than 25 anesthesiologists from the Beth Israel-Deaconess Hospital who moved with him to the Medical Center provide excellent clinical services for surgical patients and for individuals with chronic or intractable pain.

The Division of Medicine also added several faculty members following Dr. Loscalzo's appointment as chairman in 1997: Lewis Braverman, MD, an international authority on thyroid diseases, head of the Endocrinology, Diabetes, and Nutrition Section; Barbara Corkey, PhD, chief of the Obesity Center; Rebecca Silliman, MD, PhD, head of the Geriatrics Section; Wilson Colucci, MD, head of Cardiology; Paul Skolnik, MD, head of Clinical HIV Programs; and Caroline Apovian, MD, head of Clinical Nutrition.

Similarly, in the Department of Microbiology, Ronald Corley, PhD, chairman since 1994, brought about major changes that included strengthening programs in immunology in the department and expanding research activities in virology and particularly HIV-related research.

These examples represent only a small snapshot of the many faculty recruited to the School in this period. Unfortunately, many other important faculty and their contributions could not be included in this brief review.



MAJOR LEADERSHIP APPOINTMENTS AT BOSTON UNIVERSITY SCHOOL OF MEDICINE SINCE 1991

PROVOSTS AND DEANS

Norman G. Levinsky, MD, Associate Provost—1997

Marcelle M. Willock, MD, MBA, Assistant Provost
for Community Affairs and Outreach—1998

Deborah J. Cotton, MD, Assistant Provost
for Clinical Research—1998

Thomas J. Moore, MD, Assistant Provost
for Clinical Research—2001

Mark S. Klempner, MD, Assistant Provost
for Research—2001

Robert F. Meenan, MD, MPH, MBA,
Dean, School of Public Health—1996

Phyllis L. Carr, MD, Associate Dean for Student
Affairs—2001

Robert Witzburg, MD, Associate Dean of
Admissions—2002

BASIC SCIENCE DEPARTMENT CHAIRMEN

Anatomy and Neurobiology
Mark B. Moss, PhD—1998

Genetics and Genomics
Michael F. Christman, PhD—2002

Microbiology
Ronald B. Corley, PhD—1994

Physiology and Biophysics
Donald M. Small, MD—2000

Socio-Medical Sciences
Robert F. Meenan, MD, MPH, MBA—1992

CLINICAL DEPARTMENT CHAIRMEN

Anesthesiology
Keith P. Lewis, MD—1998

Emergency Medicine
Peter Moyer, MD—1997–2002

Jonathan Olshaker, MD—2002

Family Medicine
Larry Culpepper, MD, MPH—1997

Medicine
Joseph Loscalzo, MD, PhD—1997

Neurology
J. Stephen Fink, MD, PhD—1999

Obstetrics and Gynecology
Phillip G. Stubblefield, MD—1995

Orthopedic Surgery
Thomas A. Einhorn, MD—1997

Otolaryngology
Kenneth M. Grundfast, MD—1999

Pediatrics
Barry S. Zuckerman, MD—1993

Psychiatry
Domenic A. Ciraulo, MD—1996

Radiology
Joseph T. Ferrucci, MD—1992

Rehabilitation Medicine
Shanker Nesathurai, MD—1999

Surgery
James M. Becker, MD—1994

Urology
Richard K. Babayan, MD—2000

DIRECTORS OF CENTERS AND INSTITUTES

Arthritis Center
Joseph H. Korn, MD—1994

Cancer Research Center
Douglas Faller, MD, PhD—1991

Gerontology Center
Rebecca Silliman, MD, PhD—2002

Primary Care Center
John Noble, MD—1993

Whitaker Cardiovascular Institute
Joseph Loscalzo, MD, PhD—1994

REPRESENTATIVE RECENT MAJOR HONORS, AWARDS, OR RECOGNITION TO FACULTY

Elaine Alpert, MD: American Medical Association's Health Education Award

Joel Alpert, MD: President, American Academy of Pediatrics

Jag Bhawan, MD: President, American Society of Dermatology

Nancy L. R. Bucher, MD: Fellow, American Academy of Arts and Sciences; Distinguished Scientific Achievement Award, American Liver Foundation

Aram V. Chobanian, MD: Freis Award, NHLBI; Modern Medicine Award; First Hypertension Lifetime Achievement Award and Merit Award, AHA; Abbott Award, American Society of Hypertension

Alan S. Cohen, MD: Gold Medal Award, American College of Rheumatology

Barbara A. Corkey, PhD: President-elect, North American Association for the Study of Obesity

Catherine Costello, PhD: President, American Society for Mass Spectrometry

Larry Culpepper, MD: Institute of Medicine, National Academy of Sciences; Hames Family Medicine Career Research Award

Thomas Einhorn, MD: Lanier Award for Research Achievement and Chairman, Council on Research and Scientific Affairs, American Academy of Orthopedic Surgeons

Joseph Ferrucci, MD: President and Gold Medal Award, American Roentgen Ray Society

Haralambos Gavras, MD: Novartis Award; President, American Society of Hypertension; Chairman, Council on High Blood Pressure Research; President, Inter-American Society of Hypertension

Barbara Ann Gilchrist, MD: Institute of Medicine, National Academy of Sciences; President, Society for Investigative Dermatology

Harold Goodglass, PhD: Gold Medal for Life Achievement, American Psychological Association; Distinguished Career Award, American Board of Professional Psychology

Michael Holick, MD: Psoriasis Research Achievement Award, American Skin Association; Osborne and Mendel Awards, American Institute of Nutrition

Terence Keane, PhD: Distinguished Service Award, American Psychological Association

Perri Klass, MD: O. Henry Awards for literary contributions

Jerome Klein, MD: Bristol Award, Infectious Diseases Society; Maxwell Finland Award, National Foundation for Infectious Diseases

Susan E. Leeman, PhD: National Academy of Science; FASEB Excellence in Science Award

Norman Levinsky, MD: Institute of Medicine, National Academy of Sciences; Distinguished Teacher Award, American College of Physicians

Barry Manuel, MD: Distinguished Service Award, American College of Surgeons

Robert Meenan, MD: President, American College of Rheumatology

John Noble, MD: Robert J. Glaser Award; Primary Care Achievement Award, Pew Charitable Trust; Chairman, Joint Commission for the Accreditation of Healthcare Organizations

John O'Connor, MD: Gold Medal, Society of Pediatric Radiology

Marlene Oscar-Berman, PhD: Senior Scientist and Merit Awards, National Institute of Drug Abuse and Alcoholism

Alan Peters, PhD: President, American Association of Anatomists; Henry Gray Award, American Association of Anatomists

George Rosenthal, MD: House Call Doctor of the Year Award, American Academy of Homecare Physicians

Thomas Ryan, MD: James B. Herrick and Gold Medal Awards, American Heart Association

Jeffrey Samet, MD, MPH: President, Association of Medical Education and Research in Substance Abuse

Stanley Shapshay, MD: President, American Laryngological Society

Donald Small, MD: William Beaumont Prize, American Gastroenterological Association; Alton E. Baley Award, American Oil Chemists Society

Gordon Snider, MD: David Worthen Award, Veterans Administration Health System; Alton Ochsner Award

Mary Williams, PhD: Special Achievement Award, American Thoracic Society

Marcelle M. Willock, MD, MBA: President, Society of Academic Anesthesiology Chairs

Philip Wolf, MD: Miller Fisher Award; Connors Lectureship, American Heart Association



Clinical Affiliates

Although much clinical teaching occurs in ambulatory care settings, clinical instruction at the bedside in hospitals continues to be the best introduction to acute care. Boston Medical Center remains the flagship of the BUSM network. Two new affiliates are Roger Williams Medical Center and Quincy Medical Center.

BOSTON MEDICAL CENTER— A REMARKABLE SUCCESS STORY

The viability of both Boston City Hospital (BCH) and Boston University Medical Center Hospital (BUMCH) as independent entities appeared in doubt in 1992 when major changes in health care delivery were causing serious financial problems for hospitals throughout the country. While a new BCH facility was under construction in 1992, Boston Mayor Raymond Flynn appointed a commission, which was chaired by James Segel, Esq., and included Dean Chobanian, to recommend strategies that would ensure BCH's long-term survival in order to meet the health care needs of the population. After eighteen months of delibera-

tion, the commission recommended a fundamental shift in BCH governance structure and other dramatic changes. It also recommended serious consideration of a full integration of BCH with BUMCH. The commission underscored the importance of financial support from the City of Boston to strengthen BCH's role as an urban safety net hospital and to encourage the community health centers to participate in BCH's primary care network.

Soon after taking office in 1994, Mayor Thomas Menino established an Advisory Committee on Health Care, charged with creating a model for a new health care delivery system for the City and a closer affiliation between the Department of Health and Hospitals and BUMCH. The committee was led by former State Senator Patricia

LEFT: Joseph Loscalzo, MD, PhD, discusses a case with medical students during clinical rounds at Boston Medical Center.

McGovern, who had chaired the Senate Committee on Ways and Means. Dean Chobanian headed the Clinical Services Sub-Committee. The Advisory Committee recommended that BCH, BUMCH, and Boston Specialty and Rehabilitation Hospital merge to create an innovative health care system that integrated the specialty services of the hospitals, the primary care capacities of the hospitals and the community health centers, the City's public health programs, and teaching and research capabilities on the Medical Campus. Mayor Menino accepted these recommendations, and after a long and complex process which required passage of home rule legislation by the Commonwealth and approval by the Boston City Council, Boston Medical Center was created on July 1, 1996.

Several factors contributed to the success of the merger. Since 1973, BUSM had an exclusive contract to administer medical services at BCH, and certain clinical programs were already shared by BCH and BUMCH. The integration of activities was accelerated five years prior to the actual merger when clinical departments at BCH, BUMCH, and BUSM in each area were combined under a single leader, and residency and fellowship programs were integrated. In addition, as new chairmen were recruited, faculty practice plans were developed in each department.

A key development during this period was the recruitment of Elaine Ullian, MPH, associate professor of public health, as chief executive officer and president of BUMCH. She was well qualified for the position, having had an outstanding record as chief executive officer of Faulkner Hospital, vice president for clinical operations at New England Medical Center, and director of strategic planning at BUMCH. She also has strong personal qualities that served her well in the intricate negotiations that eventually led to the merger. She brought to BUMCH an excellent staff that included Paul Drew, who had been a vice president at New England Medical Center. Ms. Ullian, working closely with Mayor Menino, spearheaded the process that led to the nation's first full-asset merger of a private medical center with public hospitals in 1996 to form Boston Medical Center (BMC).

Boston University played a crucial role in the creation of BMC. The University committed \$54 million over five



*Boston Medical Center President and CEO
Elaine Ullian, MPH*

years to maintain support of clinical departments, to purchase the Talbot, Evans, and Robinson Buildings from the hospital, and to help fill other capital needs of the hospital. Before this financial commitment was made, the outcome of the merger was in serious doubt.

In its first five years of operations, BMC became a major success. While the hospital has remained strongly committed to its mission to provide care to the indigent inner-city population as well as to suburban residents, BMC is now financially sound as a result of several initiatives, including establishment of special federal and state-funded programs to care for the uninsured and poor. A Medicaid managed health care plan for eligible uninsured patients is in place and now includes approximately 60,000 members. In addition, several high-quality clinical programs have been established or expanded, and many outstanding physicians have been recruited to the Medical Campus. As a result, in the first five years of operations, inpatient volume has increased by approximately 16 percent and outpatient visits by 12 percent. In 2001, BMC contained 547 licensed beds, made 23,889 hospital discharges and 500,000 outpatient visits, and had 3,300 full-time employees. An excellent Board of Trustees is in place, currently led by Marshall Carter, former chief executive officer of State Street Bank, who in 2001 succeeded the first board chairman, Manuel Ferris, prior chief executive officer of Harvard Pilgrim Health Care. Since the merger, BMC has reduced expenses significantly by eliminating duplicative services, consolidating clinical departments, and reducing supply expenses.

The partnership between BUSM and BMC has led to a truly integrated Medical Campus with combined strengths in research, education, and community service. Much of the recent successes achieved at the Medical Campus would not have been possible without this partnership.

ROGER WILLIAMS MEDICAL CENTER

In July 1997, the Roger Williams Medical Center, previously a major teaching site for Brown University, became a clinical affiliate of BUSM. A vital part of the Rhode Island health care community for more than one hundred years, the hospital is well known for its cancer research and clinical programs and has the only bone marrow transplantation and stem cell research programs in Rhode Island. BUSM is significantly involved in governance of the hospital, and Dr. Chobanian sits on its Board of Trustees and its Executive and Long-Range Planning Committees. More than fifty Roger Williams physicians and scientists have become faculty members at BUSM, and some BUSM students now spend time there on clinical clerkships.

QUINCY MEDICAL CENTER

Quincy City Hospital was facing closure in 1999 because of serious financial difficulties when Quincy Mayor James Sheets approached Elaine Ullian and Paul Drew with a proposal to convert the hospital to a private, not-for-profit institution affiliated with BMC. After commitments of financial support from the City of Quincy, the Commonwealth of Massachusetts, and employee unions, Quincy Medical Center was created and is now closely affiliated with BMC and BUSM. Departmental leadership at the hospital was recruited from our faculty; Thomas Barber, MD, associate professor of medicine, became chief of medicine, and Timothy Babineau, MD, associate professor of surgery, became chief of surgery. Several specialists based at the Boston University Medical Campus participate in patient care at Quincy Medical Center, leading to substantial improvements in clinical operations. Furthermore, both BUSM medical students and residents currently train there.

FACULTY PRACTICE PLAN FOUNDATION

In the early 1990s, the School determined to strengthen the academic and clinical missions of the clinical departments and to integrate departmental activities across the Medical Campus. A Faculty Practice Plan Foundation was established and now includes all clinical departments and approximately 650 physicians, all BUSM faculty members. Each department has a separate 501(c)(3) corporation whose president is the department chairman. All physician income flows through the corporations, and Boston University is the paymaster. Approximately 5 percent of revenues are available to the department chairman for enhancement of academic activities. Dr. Chobanian is president and Ms. Ullian is treasurer and clerk of the Foundation Board. Centralization of financial services has led to increased efficiency and enhanced revenues for the individual departments. The total clinical income of the departments, independent of the amounts provided by BMC and BUSM, exceeded \$100 million in the past year. Creation of the Faculty Practice Plan Foundation has been of great value in providing financial stability to all the clinical departments.





Restructuring for the Future

The School conducted an intensive assessment to determine how to ensure its future success. As a result, important changes were instituted to enhance clinical research, develop new educational programs, streamline research administration, expand capabilities in information technology, and reorganize the basic science departments.

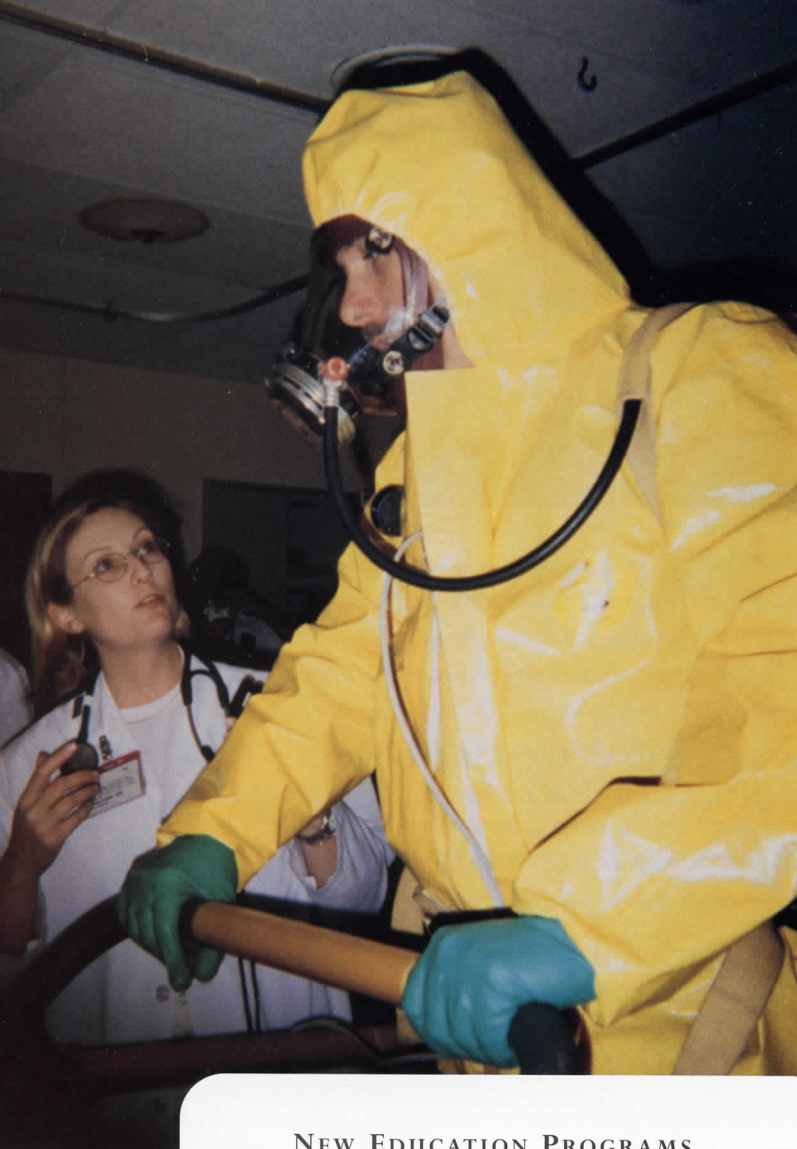
CLINICAL RESEARCH

A single Office of Clinical Research for the Medical Campus was established in 1998, serving not only the School of Medicine but also the Goldman School of Dental Medicine, the School of Public Health, and Boston Medical Center. The various Institutional Review Boards were combined and the infrastructure for monitoring human subjects research was enhanced. Deborah Cotton, MD (BUSM '75), a leading AIDS researcher, was recruited from the Massachusetts General Hospital to head the office and to become assistant provost for clinical research. After her recent appointment as chief of the medical services of the combined Boston Veterans Administration Health Systems, Thomas Moore, MD, a distinguished clinical scientist in hypertension at the Brigham and Women's Hospital and Harvard Medical School, who also had served as a director of clinical research at Merck & Co., was recruited for the position. The clinical research initiative has included development of partnerships with private sector companies and enhancement of translational research activities that facilitate rapid transfer of basic science discoveries to clinical practice.



FINANCIAL AND BUSINESS AFFAIRS: (l-r), Barbara Cole, William Gasper, and Joseph Barabino

The School of Medicine also expanded and modernized the General Clinical Research Center, which NIH has funded continuously for more than thirty years. It provides an excellent, dedicated facility for a large number and variety of investigator-initiated clinical trials. The current NIH grant to operate the center exceeds \$2 million annually.



Sophia Dyer, MD, assistant professor of emergency medicine, conducts hazardous materials research with a Boston EMT in the General Clinical Research Center.

NEW EDUCATION PROGRAMS

The non-MD graduate education programs, led by Carl Franzblau, PhD, associate dean for graduate medical sciences and chairman of the Department of Biochemistry, were expanded in several ways.

The Master of Arts in Medical Sciences Program, which has had a large applicant pool and a history of success in preparing its graduates for admission to medical school, was increased substantially.

A Master of Arts in Clinical Investigation Program was instituted to meet the needs of health professionals



Carl Franzblau, PhD

engaged in patient-oriented research. This program is complemented by a new NIH-funded Training Program in Clinical Research for physicians, dentists, and other health professionals, and by a recently initiated medical student summer fellowship program in clinical research.

A unique PhD program in Molecular Medicine, based in the Division of Medicine, was established to focus on translational medicine.

A new interdisciplinary PhD program in Biomedical Neurosciences brings together many basic and clinical research programs.

A combined MD/Master of Business Administration pathway was introduced to enable students to receive both degrees in five years.

In addition, the MD/PhD program was expanded to include approximately fifteen BUSM students in each class for a total today of about eighty students.

Research Administration—Administrative oversight was strengthened with the recruitment of Barbara Cole, assistant vice president for financial affairs, from the University of Cincinnati, where she led the efforts to modernize the Grants and Contracts Office, and the addition of Joseph Barabino as director of the Office of Research Administration.

Several steps have improved support services for Information Technology. An experienced director of the program, Jack Abercrombie, PhD, was recruited, and services were enhanced. Following the unfortunate death this year of Dr. Abercrombie, another experienced individual, Dr. Vincent LaRosa, PhD, has been appointed to lead these efforts.

Reorganization of the Basic Science Departments—On July 1, 2000, the Departments of Physiology and Biophysics were combined under the chairmanship of Donald Small, MD, who had led the Biophysics Department. The research of both departments has focused primarily in the area of structural biology. Based on the experience to date, the departmental merger has been a major success.

With genetic advances accelerating across all scientific and clinical disciplines, BUSM moved to create a new Department of Genetics and Genomics to promote expansion and coordination of genetic research and train scientists in the most advanced methods for studying gene and protein function. The department complements the work of the Center for Human Genetics, led by Aubrey Milunsky, MBCh, which focuses on genetic diagnosis and counseling and research in molecular genetics. The new department chairman is Michael Christman, PhD, a highly regarded chromosomal researcher who came this year to BUSM from the University of Virginia. He is recruiting

several new faculty and establishing research and educational programs in genomics and bioinformatics, the latter in collaboration with biomedical engineers in the Boston University College of Engineering as part of a large grant award from the Whitaker Foundation. The department will also develop genetic core facilities that will provide in-depth expertise for researchers involved in such clinical research projects as the Framingham Heart Study, in which rich sources of clinical information and DNA are available for study.

ADDITIONAL NEW DEPARTMENTS

DEPARTMENT OF EMERGENCY MEDICINE

Recognizing the importance of emergency medicine and trauma care on the Medical Campus and the growth of academic activities in these areas, the Department of Emergency Medicine was established in 1995 and Peter Moyer, MD, a long-term faculty member and head of Boston City Hospital's emergency medicine program, was appointed chairman. The department has a strong residency program and provides excellent training in emergency care for



Jonathan Olshaker, MD

BUSM students. The research program, headed by Edward Bernstein, MD, vice chairman and professor of emergency medicine, has grown considerably and has a particular emphasis on substance abuse. The excellence of the clinical programs in emergency medicine and trauma care is recognized nationally, as evidenced by its designation

by the American College of Surgeons as an Adult Level 1 Trauma Center, the first such designation in Boston. Dr. Moyer was appointed recently by Mayor Thomas Menino to be head of all emergency medical services in Boston. Fortunately, we have very recently recruited an excellent replacement, Jonathan Olshaker, MD, from the University of Maryland to succeed Dr. Moyer.

DEPARTMENT OF FAMILY MEDICINE

In response to major changes in the health care delivery system and the need to further support the mission of providing accessible and high-quality primary care, in 1997 BUSM and BMC launched the Department of Family Medicine, the first of its type in Boston. Larry Culpepper, MD, MPH, a distinguished academician who previously directed the residency program and research division in the



FAMILY MEDICINE: Larry Culpepper, MD, MPH, and Brian Jack, MD (right).

Department of Family Medicine at Brown University, was recruited to head the department. After coming to BUSM, he was elected to the Institute of Medicine of the National Academy of Sciences. In only five years this department has recruited a strong faculty, including Brian Jack, MD, vice chairman for academic affairs; and John Wiecha, MD, director of the third-year medical student clerkship program. Several physicians located at affiliated neighborhood health centers and other community sites have also been added to the faculty, a competitive residency program and a fellowship program have been created, and several clinical research projects to study the effectiveness of primary care in the management of various medical problems have been undertaken.

Students, physicians, and patients are all benefiting from the department. Students and residents experience a full spectrum of family medicine education from the first year of medical school, to a required family medicine clerkship in the third year, and later with comprehensive residency and fellowship programs. The Family Medicine Center at BMC provides care for ambulatory patients seven days a week. In addition, the department has pooled its faculty with those of several health centers to form the Community Physicians Group, whose members serve as personal attending physicians for patients admitted from the HealthNet Centers.



Community residents learn methodologies of the new science as part of the Mini-Med School.

Community Service

One thing has not changed—BUSM students, faculty, and staff reach out to those in need. Home visits to patients have been part of the required curriculum for 127 years, and the School keeps coming up with new ways to deliver service to the community.

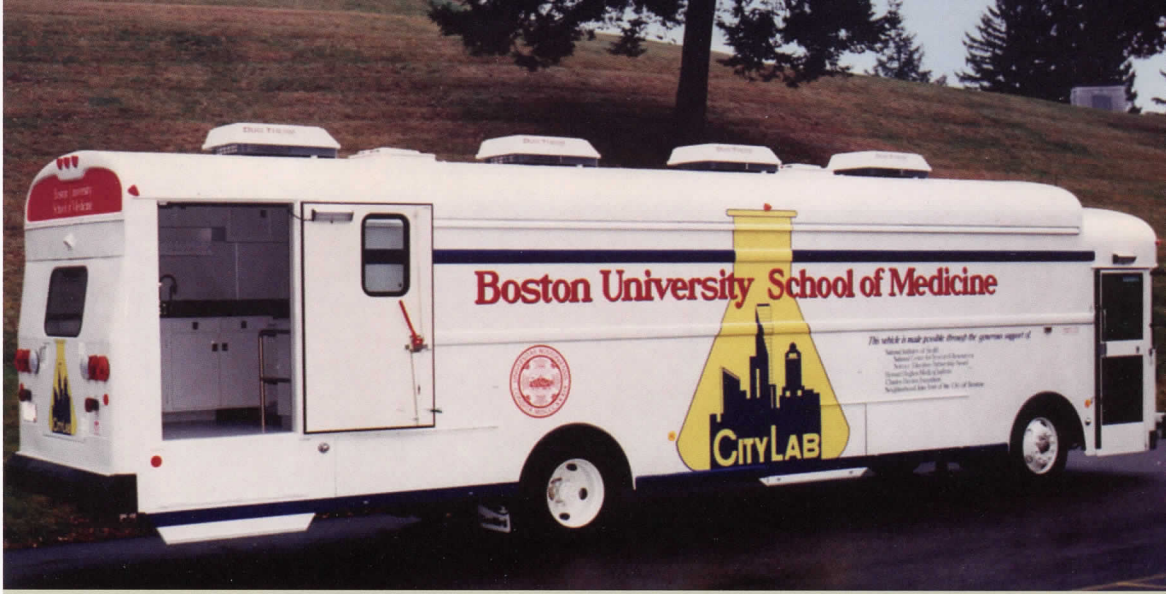
BUSM took particular pride in receiving the 1995 Outstanding Community Service Award of the American Association of Medical Colleges. AAMC President Jordan Cohen, MD, eloquently stated the reasons why the award was presented to BUSM in his remarks at the AAMC's Annual Meeting in Washington, D.C., on October 31, 1995:

The story of the longstanding efforts of Boston University's medical school to improve the health of an inner-city community is critically important for the nation to hear right now, at a time when our leaders are contemplating substantial reductions in the public support that makes this community service possible. The positive impact of Boston University School of Medicine's community service

clearly demonstrates the return our society received for its investment in medical education—an investment that will become increasingly important and powerful as the nation's health care system evolves.

Several BUSM community service programs are worthy of note.

Reach Out And Read (ROAR), a highly innovative program developed by Barry Zuckerman, MD, and associates in the Department of Pediatrics, places books in the hands of inner-city children during their regular checkups and gives each child a book to keep. By integrating this gesture into the normal medical examination, the physician is able to develop a discussion with the parent about the impact



MOBILE EDUCATION: BUSM's CityLab brings biotechnology education to high schools throughout the northeast.

that reading can have on a child's development. In addition, volunteers read books aloud to youngsters in the clinic waiting room. This model program is replicated nationwide at more than 1,200 sites and now serves approximately 1.4 million children, supported by a combination of foundation, corporate, individual, and public funding.

CityLab: A Biotechnology Resource for High Schools—In laboratories on the Medical Campus, students in grades 7–12 and their teachers learn about new scientific developments in CityLab, a learning laboratory that has become a regional resource for area public schools that do not have the resources to train students in modern science and biotechnology. Funded in part by grants from the NIH and the Howard Hughes Medical Institute, CityLab has already trained more than 30,000 students and 1,575 teachers, and is replicated in eight other national sites. In addition, BUSM has developed the MobileLab, a large bus containing a forty-foot, fully equipped traveling laboratory that extends the CityLab concept to distant sites.

The Elders Living at Home Program—Under the direction of Anna Bissonnette, RN (SON '69), associate professor of socio-medical sciences, dedicated volunteers have successfully rallied city, state, and individual support for the purchase and renovation of several buildings in Boston for use as shared living residences, where many formerly homeless elderly men and women are now comfortably housed.

Health Care for the Homeless—Clinical services are provided at 43 sites throughout Boston for more than 6,000 homeless men and women. The organization, led by James O'Connell, MD, assistant professor of medicine, has established the Barbara McInnis House, a 51-bed medical respite unit that has become a national model for recuperative care of homeless men and women who would otherwise require hospitalization. At Boston's largest homeless shelters, BUSM students deal directly with medical aspects of homelessness and conduct one of the largest immunization programs in the city. In addition, BUSM students have been involved in the development of the Outreach Van Project, which provides food, clothing, and medical care to the homeless in East Boston.

Domestic Violence—Led by Elaine Alpert, MD, MPH, assistant dean for student affairs, BUSM is in the forefront of education, research, clinical care, and community outreach in family violence. One of the first medical schools in the country to require that medical students take an integrated curriculum on domestic violence, BUSM has now developed major curricular innovations and public policy initiatives on this critical social issue. Together with Karen Freund, MD, associate professor of medicine, and three medical students, Dr. Alpert authored an award-winning guidebook on partner violence that has been distributed to health care professionals nationwide.



BUSM students have been making house calls in the South End since 1875 as part of the oldest medical-school-based home visitation program in the United States. George Rosenthal, MD, clinical associate professor of medicine (wearing jacket), was named House Call Doctor of the Year by the American Academy of Homecare Physicians in 2000 and also won the School's Stanley L. Robbins Award for Excellence in Teaching.

Mini-Med School Program—In March 2000, BUSM, in collaboration with the NIH and the Smithsonian Institution, initiated an educational program to provide the lay public with a better understanding of science and medicine. The 16-hour educational program includes lectures by senior faculty and laboratory experiences. The first offering was

oversubscribed, with more than 350 participants ranging in age from 17 to 75. Prompted by popular demand, the original program will be repeated annually and will add several separate specialty courses on topics including cardiovascular, neurological, and metabolic diseases.



MINI-MED SCHOOL: BUSM's Mini-Med School continues to attract and educate many professionals of all ages.



Fund-Raising

A marked growth in gifts from alumni, friends, and sponsors demonstrates an abiding commitment to BUSM's future.

Fund-raising for the School has been increasingly successful in the past decade. As shown in Figure 3, total gifts increased from \$9.3 million in FY 1992 to \$25.5 in the past year, with \$2.1 million of the total amount donated by alumni.

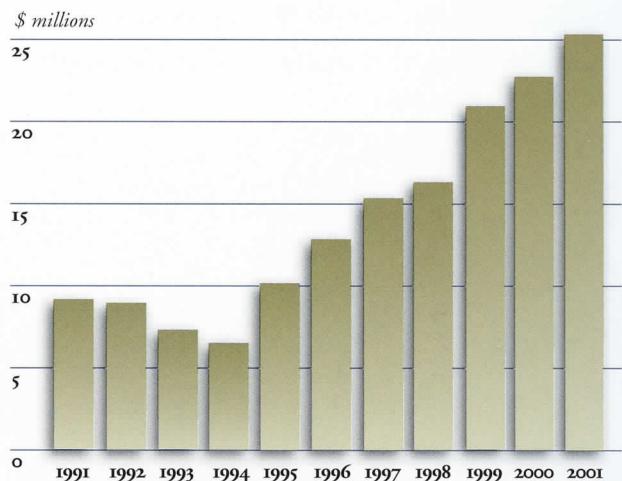
Fifteen new professorships have been endowed since 1991, and two others were established between 1988 and 1990, accounting for most of the overall total of twenty-one endowed professorships at BUSM.

FOUNDATION GRANTS

Several large grants were obtained from foundations to enhance specific research programs at BUSM. These include:

- \$2.4 million from the Robert Wood Johnson Foundation to promote the training of generalist physicians
- \$3.4 million from the Whitaker Foundation to establish new core facilities at the Whitaker Cardiovascular Institute
- \$3 million from the Gerry Foundation for expansion of the Amyloid Research Program
- \$2 million from the Herzog Foundation to support translational research, patient care, and education in dermatology to meet needs of the underserved populations
- \$1.6 million from the Howard Hughes Medical Institute to establish core programs in genetics

FIGURE 3: GIFTS



- \$5 million from the Bayer Company to establish the Institute for Sexual Medicine
- BUSM shares in the \$14-million Whitaker Leadership Grant for research and education in biomedical engineering provided by the Whitaker Foundation to the Boston University College of Engineering.
- BUSM shared a \$7.9-million grant from the Kellogg Foundation to establish the Center for Community Health Education Research and Service with Northeastern University, neighborhood health centers, and the former Boston City Hospital.

GIFTS FROM INDIVIDUALS

Currently under the leadership of Assistant Vice President for Development Lynn Hendricks, activities that reach out to alumni, parents of students, and other friends of BUSM have increased substantially in recent years. Receptions, dinners, and meetings with individual donors are held throughout the country, and gifts from alumni and other individuals have increased substantially. Membership in the Keefer Society, established in 1994 to recognize BUSM contributors of more than \$50,000, now numbers approximately 140 individuals.

SCHOLARSHIP FUNDING

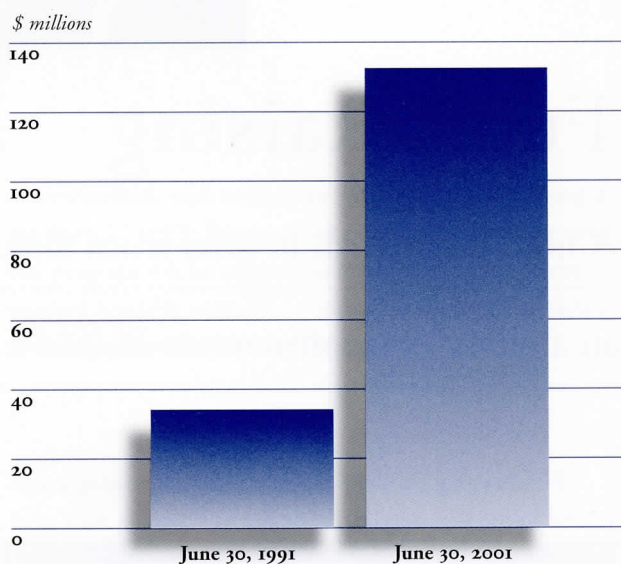
Because of high tuition rates at private medical schools and the steady increases in students' debt load, BUSM embarked on a major program to raise at least \$50 million in new funds for endowed scholarships. In the past three years, more than \$12 million in cash, pledges, and commitments from charitable trusts has been contributed toward this scholarship goal. Major donors include:

- Benjamin Klein, MD (BUSM '27), and Ellen Klein, \$3.7 million
- Sarkis J. Kechejian, MD (BUSM '63), \$2 million
- Laszlo N. Tauber, MD, member of the BUSM Board of Visitors, \$3 million

ENDOWMENT

On June 30, 2001, endowment funds totaled \$130 million, which represents an approximate fourfold increase since 1991 (Figure 4). The growth in the unrestricted endowment and in scholarship funds is becoming increasingly valuable to the School.

FIGURE 4: ENDOWMENT FUNDS



ENDOWED PROFESSORSHIPS AT BOSTON UNIVERSITY SCHOOL OF MEDICINE SINCE 1991

The following professorships have been endowed in the past decade:

- Joel and Barbara Alpert Professorship in Pediatrics
- Alexander Graham Bell Professorship in Health Care Entrepreneurship
- Jag Bhawan, MD, Professorship in Dermatopathology
- Jay and Louise Coffman Professorship in Vascular Medicine
- Alan S. Cohen, MD, Professorship in Rheumatology
- Distinguished Professorship in Cardiovascular Diseases
- Distinguished Professorship in Human Genetics
- Barbara A. Gilcrest, MD, Professorship in Dermatology
- Zoltan Kohn Professorship in Medicine
- Guido Majno, MD, Professorship in Dermatology
- Thomas Ryan, MD, Professorship in Medicine
- Wesley and Charlotte Skinner Professorship in Amyloidosis Research
- Gordon and Ruth Snider Professorship in Pulmonary Diseases
- Sherwood J. and H. Lorene Tarlow Professorship in Ophthalmology
- Laszlo N. Tauber, MD, Professorship in Surgery

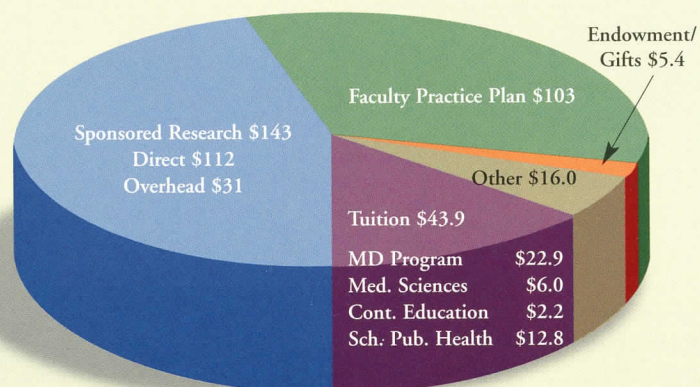


BUSM Comparative Data FY 1992 vs. FY 2002

	FY 1992	FY 2002
STUDENTS		
MD Program	630	630
Graduate Programs	326	435
FACULTY		
Full-Time	650	1,035
Part-Time	1,315	1,399

BUSM Income FY 2002=\$311.3 MILLION

	FY 1992	FY 2002
FINANCIAL DATA (in \$ millions)		
Total Income	\$114.7	\$311.3
Operating Income	36.7	77.2
Total Sponsored Research Support	59.8	143.0
Indirect Cost Recovery	16.5	31.0
Salary Agreements/Practice Plans	23.4	103.0
Endowment	33.3	130.0





The Sesquicentennial Celebration

Throughout 1998, Boston University School of Medicine celebrated 150 years of continuous medical education, honoring the memory of the New England Female Medical College, established in 1848 as the first medical college for women in the world.

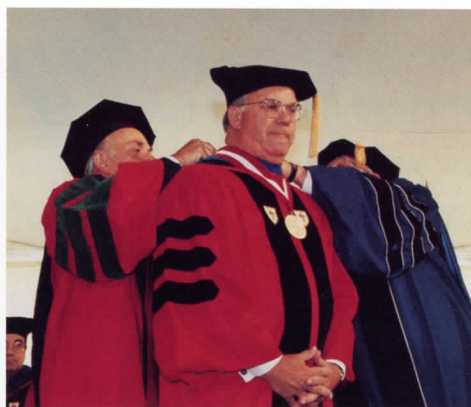
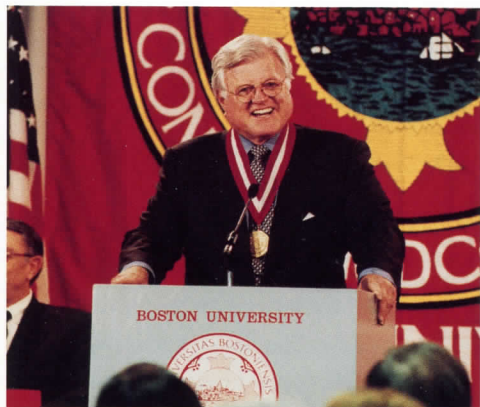
During the year, stories were told of the graduates of that School in the twenty-five years before it merged with Boston University and became co-educational in 1873. The School has been racially integrated since the Civil War, and BUSM proudly honored the nation's first African American female physician, Rebecca Lee Crumpler, class of 1864, with a road race along the Charles River. Other events included symposia on the brain and on cardiovascular diseases and presentation of achievement awards to women scientists.

In the fall of 1998, Surgeon General David Satcher, MD, PhD, and Boston Mayor Thomas Menino, along with several eminent alumni, participated in an academic convocation in which a Gold Sesquicentennial Medal was given to Mayor Menino and honorary degrees were awarded to Dr. Satcher; Jordan Cohen, MD, president of the Association of American Medical Colleges; and BUSM graduates

Mary Jane England ('64), Ralph Feigin ('62), and Rachel Boone Keith ('49). The Gold Sesquicentennial Medal was given in a subsequent ceremony to Senator Edward Kennedy (Hon '70). The celebration closed with a gala ball on October 10.



Provosts Dennis Berkey and Aram Chobanian lead U.S. Surgeon General David Satcher into the Convocation tent, followed by Earle Cooley, Trustees Chairman, and President Jon Westling.



FAR LEFT

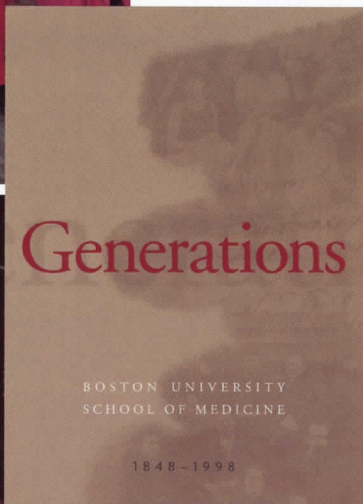
U.S. Senator Edward Kennedy addresses faculty and students after receiving a Sesquicentennial Medal.

LEFT

After receiving his Sesquicentennial Medal, Mayor Thomas Menino saluted the School's early and enduring relationship with the City of Boston.



Recipients of Honorary Degrees at the Academic Convocation, October 1998, included, (seated l-r), Rachel Boone Keith, MD '49; Mary Jane England, MD '64; Mayor Thomas Menino; U.S. Surgeon General David Satcher, MD, PhD; Ralph Feigin, MD '62; President of the Association of American Medical Colleges Jordan Cohen, MD. Standing (l-r), are: Boston University Trustees and Officers Edward Masterman, Laura Freeman Walsh, Marshall Sloane, Jon Westling, Earle Cooley, Aram Chobanian, Christopher Barreca, and Dennis Berkey.



GENERATIONS: In 1998, the School published Generations, detailing the history of BUSM.

TOAST: Dean Aram Chobanian (left) and President Jon Westling toast 150 years of medical education.



Campus Partners

SCHOOL OF PUBLIC HEALTH

As the School pursues its mission of education, research, and service, it has contributed outstanding benefits to the community.

The Boston University School of Public Health (BUSPH) has enjoyed remarkable growth in the past ten years. In 1992, the School enrolled 400 students and had approximately 1,400 alumni. More than 70 percent of its students were Massachusetts residents. Today, BUSPH has nearly 700 students from 37 states and 40 countries, and only 43 percent of the students come from Massachusetts. The School's alumni now number more than 3,600.

In 1992, BUSPH had 60 full-time faculty, offered degree programs in five academic concentrations, and was awarded \$5 million in research funding. Today, the School has doubled its full-time faculty and offers master's and doctoral degrees in eight academic concentrations. Last year the School was awarded nearly \$25 million in research funds.

EDUCATION—BUSPH offers high-quality public health education programs in flexible formats that meet the needs of working professionals and encourage younger students to gain practical experience in parallel with their classroom learning.

The School's cornerstone degree, the Master of Public Health (MPH), provides students with an education in the core areas of public health, including the frequency and causes of diseases in populations, the importance of behavioral and social factors in maintaining health, the improvement of the physical environments where people live and work, the interpretation and implementation of the results of research investigations, and the design and delivery of efficacious health care services.

In addition to the MPH, BUSPH offers master's and doctoral degrees in Biostatistics, Epidemiology, Environmental Health, and Health Services Research, as well as the Doctor of Public Health.

RESEARCH—BUSPH researchers examine public health problems from many different perspectives. However, they share a common interest in pursuing research that has practical applications to improving the health of underserved, disadvantaged, and vulnerable populations.

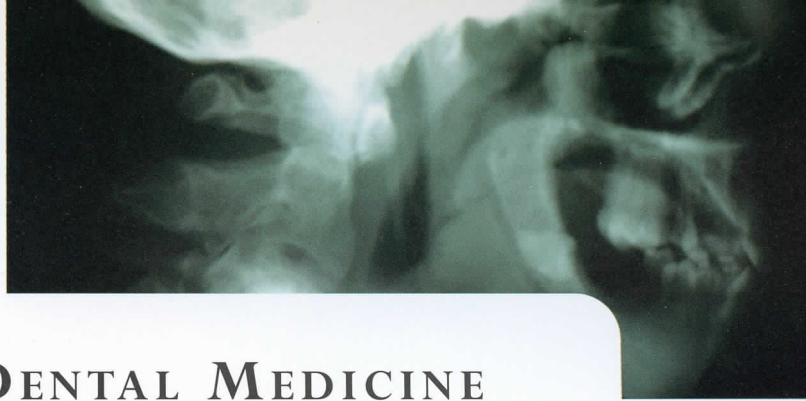
Ongoing research projects address such public health issues as the escalating costs of health care, the economic impact of AIDS in African countries, legal and ethical implications of cloning, college-age drinking problems, caregiver stress, care for survivors of torture, dietary patterns that predict obesity, and elucidation of potential relationships between geography, environment, and cancer.

BUSPH has also been awarded a number of prestigious research center grants. These include the Center for International Health, funded by USAID; Partners in Health and Housing Prevention Research Center, in collaboration with the Boston Housing Authority and the Boston Public Health Commission; and the School's EPA Superfund Program which oversees clean-up activities at 1,227 hazardous waste sites in the U.S.

SERVICE—BUSPH faculty and students are involved in public health service activities at the local, state, national, and international levels, strengthening the capacity of public health organizations to promote the health of the people whom they serve.



*School of Public Health Dean
Robert Meenan, MD, MPH, MBA*



GOLDMAN SCHOOL OF DENTAL MEDICINE

The Boston University School of Dental Medicine (BUSDM) is guided by the belief that the quest for knowledge fuels the teaching enterprise.

Science-based dental education keeps the School of Dental Medicine strong and enhances the pool of investigators and trains new scientists while educating a new generation of practitioners of dental medicine. The curriculum is based on fundamental scientific research, which is the foundation for all significant progress in biology and medicine. The School's major challenge in oral health research is to decipher the genetic, molecular, and biochemical causes of oral health disorders.

Dean Spencer Frankl, DDS, MSD, has provided 24 years of distinguished leadership, ushering the School into a new era of teaching and research. The School is particularly proud of its new virtual care center, a \$3-million teaching facility where students practice simulated patient care procedures to prepare them for their clinical curriculum and rotations. This experience provides the best virtual patient care experience possible in a non-clinical setting.

The School is also the first at Boston University to move to a digital textbook system. Students also access the School's intranet for faculty-generated course materials and electronic mail employing laptop computers equipped for wireless transmissions for use in classrooms, auditoriums, and laboratories.

Research funding has increased steadily from 17 federally funded awards in 1991/92 valued at \$1.6 million, to 51 awards valued at more than \$7 million in 2001/02. The School ranks tenth among the 56 U.S. dental schools in the number of awards conferred by the National Institutes of Health. Areas of interest in research include health policy and health services research, molecular and cell biology, periodontology and oral biology, biomaterials, clinical research, increased interdisciplinary research in bioinformatics, and infectious diseases.

In the past ten years the School has expanded physically and programmatically. At present, there are 102 full-time faculty, 55 half-time faculty, 120 part-time faculty,

and 230 full-time staff. Enrollment of students in the DMD program stands at 414, Advanced Standing 106, and 189 post-doctoral residents. The School has ten departments and in the past five years initiated departments of Molecular and Cell Biology, Health Policy and Health Services Research, and General Dentistry. Clinical affiliates include the Boston HealthNet, Boston Medical Center, HMOs, the Veterans Administration, and various public and military installations.

The School's innovative extramural APEX clinical programs are recognized nationally as models for experiential and service learning, working to improve the oral health of neighborhoods that are medically and dentally underserved. Recently the School received a seven-year award totaling \$11 million as one of five Centers for Research to Reduce Oral Health Disparities. A center for the diagnosis and treatment of HIV/AIDS patients has been established at the School and ranks first among the nation's dental schools for funding awarded by the federal government under the Ryan White CARE Act.

The School has seen its operating budget almost triple in recent years, growing from \$16.3 million in 1991/92 to \$46.6 million in 2001/02. Based on an assessment of the future state of dental education, BUSDM's strategic mission will continue to concentrate on the School's established academic, research, patient care, and community priorities.



*Goldman School of Dental Medicine
Dean Spencer Frankl, DDS, MSD*



Looking to the Future

The many changes at Boston University School of Medicine over the past decade successfully position the School to face the continuing challenges in academic medicine. We enjoy an unusually strong relationship with our University and with our partners on campus, the Boston Medical Center, the School of Public Health, and the Goldman School of Dental Medicine. We have an outstanding faculty with dynamic, innovative leadership and an extremely talented student body, deeply committed to their careers in medicine. Educational programs have been strengthened, close affiliations with community health centers have been developed, new departments have been created to keep up with the many changes in medical

knowledge and clinical practice, research is flourishing, new research and educational facilities have been established, and more are coming. In addition, we have developed BioSquare, an exciting venture that creates a scientific village, bringing pharmaceutical and biotechnology companies to the medical campus and fostering research interactions between the faculty and corporate scientists.

A distinguished tradition of excellence characterizes Boston University School of Medicine's 154-year history. As new directions in academic medicine and biomedical research evolve in the decades to come, the School takes pride in its strengths and achievements and is well prepared for the institutional challenges ahead.



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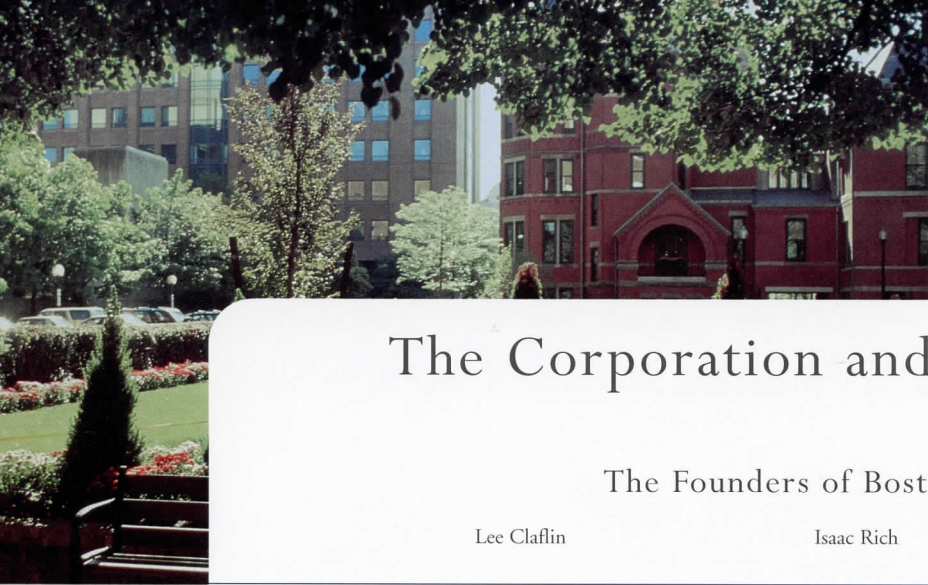
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