

The future is now.

University of
Massachusetts
Medical School

1999
ANNUAL REPORT

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University of
Massachusetts
Medical School

School of Medicine, opened in 1970
Graduate School of Biomedical Sciences, opened in 1979
Graduate School of Nursing, opened in 1986

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Message

from the Chancellor/Dean

In the closing days of 1999, we embarked upon an ambitious course that will define the future of UMass Medical School. Breaking ground for the new research laboratory building was at once the pivotal event in this 30th year of the school and a harbinger of what this campus will become in the new century.

With one of the highest growth rates of funded research in the country, we are already among the top 40 medical schools in research, currently, at \$93 million annually. But to meet our goal of becoming one of the premier academic research institutions, we need more space to continue growing our research enterprise.

Our immediate course is well charted, following more than a year of planning for the building. We expect to open it in the fall of 2001, providing state-of-the-art laboratory space for 100 principal investigators whose associates and staff members will number in the hundreds.

This building, together with the recently completed Irving S. and Betty Brudnick Neuropsychiatric Research Institute, will be key to sustaining our ability to recruit leading researchers, who in turn attract external funding in their quest to alleviate suffering and cure disease, the hallmark of our mission.

At the same time, it will help us retain our best and brightest scientists, who are highly sought by other institutions. Consequently, the building holds significant promise for the greater Worcester area and its economy, as well as for the Medical School. Indeed, the impact on biomedical research will be felt beyond our immediate communities. We are indebted to the volunteers who have stepped forward to lead the capital campaign for construction funds.

In accord with the theme of this report, "the future is now," the articles on the following pages call your attention to a few of the outstanding faculty, students and scientists who, through their dedication and drive, are finding that the future, with all its promise, is within our grasp. As always, I welcome your interest in our endeavors and invite your comments.

A handwritten signature in blue ink that reads "Aaron Lazare".

Aaron Lazare, MD

The future is now.



Leading the Research Revolution

There is a revolution going on in biomedical research across the country," declared John L. Sullivan, MD, newly appointed director of the Office for Research, "and we have all the right things in place to make UMass Medical School a leader of that revolution."

Charged with managing an infrastructure which supports an annual research budget of over \$93 million and facilitating the work of more than 250 researchers on the Worcester and Shrewsbury campuses and at facilities in the Massachusetts Biotechnology Research Park, the Office for Research is a critical component in what many consider the most exciting time in UMMS' recent history.

"We are in the unique and enviable position of having leaders who are free to focus their energy, creativity and innovation on research to lead us to the next level," said Dr. Sullivan, UMMS professor of

pediatrics, pathology and molecular genetics & microbiology. "There aren't many medical schools whose chancellors have that enviable position."

Backed by an energized and committed senior administration, Sullivan has taken the reins of leadership of the Office for Research just as UMMS prepares to expand its capabilities with a \$100 million, 360,000-square-foot research laboratory building that, Sullivan predicted, "will stand alone in the Northeast." More than 100 current and newly recruited researchers will begin to conduct investigations once the facility is complete in the fall of 2001. (See stories on pages 4 and 12.)

The Office for Research is also working with Chancellor Aaron Lazare and the Research Advisory Council to develop a plan for infrastructure improvements in UMMS' basic and clinical science wings. "Over time, we must create an environment in the current building appropriate for the outstanding science that takes place there," Sullivan noted. "The work our investigators do is so important, not only to UMass Medical School, but to science as a whole, and we must support them." Sullivan himself has been with UMMS since 1978.

With new and upgraded facilities and an unparalleled research staff, the Office for Research predicts an acceleration of growth in many areas of research, including genetics and neuroscience, two particularly dynamic fields UMMS

is already pursuing. The laboratories of the Irving S. and Betty Brudnick Neuropsychiatric Research Institute, under the direction of Edward Ginn, MD, PhD, UMMS professor of psychiatry and world-renowned neuroscientist and geneticist, and the newly developed

Program in Gene Function and Expression, led by Michael R. Green, MD, PhD, professor of biochemistry & molecular biology and an investigator for the Howard Hughes Medical Institute, promise breakthroughs in neuroscience and genetics that will have a revolutionary impact on current studies well into the future. (See stories on pages 4 and 12.)

Translational research, which takes basic research findings and applies them to patients and the disease process, is a field Sullivan is passionate about. Under his guidance, the Office for Research is moving to create a clinical trials office to capitalize on pharmaceutical and biomedical company-sponsored trials, by seeking NIH funding. Robert W. Finberg, MD, the new professor and chair of the Department of Medicine for UMMS and UMass Memorial, is expected to recruit a number of clinical investigators. (See related story on page 8).

"The work our investigators do is so important, not only to UMass Medical School, but to science as a whole, and we must support them."

John L. Sullivan, MD, Director, the Office for Research

Sullivan's office will also help physician researchers navigate the protocol- and application-writing processes for the Human Subjects Committee, which resides within the Office for Research.

As UMMS moves toward becoming a leader in medical research, senior administration will rely on Sullivan and the Office for Research to support the work of hundreds of researchers across UMMS and manage tens of millions of dollars in funding, all the while keeping an eye to the future. Sullivan is energized. "The next five years," he stated, "will be incredible."



Mental Illness Unveiled

In the history of mental health research, there is special significance in the location of the Medical School's Irving S. and Betty Brudnick Neuropsychiatric Research Institute on the grounds of Worcester State Hospital, one of the oldest public psychiatric facilities in the United States. In stark, but somehow fitting, contrast to the state hospital's stoic 19th century clock tower, this 21st century institute dedicates its state-of-the-art laboratories to the study of the biological bases of mental illnesses and to the development of more effective treatments and methods of prevention.

A century ago, Adolf Meyer, MD, came to Worcester to serve as the state hospital's director of clinical and pathological studies. In his quest to gain a better understanding of the origins of mental illness, the Swiss-born Meyer promoted the integration of research with clinical services through the

assembly of an accomplished staff of scientists and physicians. Now, in the last year of the 20th century, Edward Ginns, MD, PhD, has come to Worcester to serve as the executive director of the Brudnick Institute, and, with the same goals in mind, facilitate mental health research through the collaboration of

"Our focus will be on identifying genetic and environmental factors that predispose an individual to mental disorders, as well as those components that might protect individuals from developing these devastating illnesses."

Edward Ginns, MD, PhD, Executive Director, the Brudnick Institute

UMMS' basic and clinical scientists, across departments and disciplines, for years to come.

Dr. Meyer's research techniques included the preparation of brain slides in his pathology lab. In addition to a broad range of the disciplines of neuroscience and neurobiology, Dr. Ginns and his colleagues will utilize the tools of behavioral science, imaging, genetics, cell biology and molecular biology to unlock the mysteries of anguished minds.

"The identification of the causes of mental illness involves understanding the normal and abnormal processes of the brain, by looking at how the manifestations of behavior are caused at a molecular level," explained Ginns. "Our focus will be on identifying genetic and environmental factors that predispose an individual to mental disorders, as well as those components that might protect individuals from developing these devastating illnesses. A good analogy would be the findings emerging in diabetes, AIDS and cancer research, where both susceptibility and protective factors interplay to determine the manifestation or prevention of illness."

Ginns, an internationally renowned neuroscientist and geneticist educated at Rensselaer Polytechnic Institute, Johns Hopkins School of Medicine and Albert Einstein College of Medicine, comes to the Brudnick Institute from a position as chief of the Clinical Neuroscience Branch at the National Institute of Mental Health in Bethesda. He will administer a facility constructed and partially funded by the Commonwealth on behalf of the Department of Mental Health and operated by UMMS through its Department of Psychiatry.

"The Medical School, in fact the whole medical complex, is in a growth phase," said Ginns. "This growth, coupled with initiatives in other departments, will enhance our programs in neuroscience and attract more investigators who will tackle the complexities of mental illness. It's a terrific time to start this program that will bridge the basic and clinical issues facing mental illness research today."

The Brudnick Institute's research into the causes, treatment and prevention of mental disorders will be complemented by its training programs, aimed

at attracting to mental health research more basic and clinical researchers whose expertise in a variety of disciplines will enhance the Brudnick Institute's goals. "This is a factor that has been particularly important for other research on campus. Now, neuropsychiatric research will enjoy this crucial cross-fertilization through departments," said Ginns. Institute seminars and educational programs will strengthen the efforts between basic researchers, physicians, patients and their families to understand and reduce the burden of mental illness.

"Thanks to individuals like Irving and Betty Brudnick, there will also be a strong link between the lay public, patients, scientists and clinicians." In 1998, Irving S. and Betty Brudnick contributed \$2.5 million toward the Institute's establishment. According to Ginns, "The tremendous effort that the Brudnicks and their colleagues have put together to help make this research institute possible will have a major impact on mental health research, as well as on the other initiatives in neuroscience on campus."



The Healing Power of the Pen

Confronted with a diagnosis of breast cancer, most women will think first and only about lifesaving medical treatment. But along with their physical illness, some 30 percent of breast cancer patients will experience significant psychological distress. A growing body of research concludes that psychosocial interventions to relieve emotional stress as part of a total treatment plan can positively impact the lives of many breast cancer patients.

Expressive writing (EW), the written disclosure of emotions associated with stressful or traumatic events, is one such intervention that has already been shown to be therapeutic for persons without cancer. The theory behind EW is that it takes measurable physiological work to actively inhibit negative emotions. Conversely, when individuals air their emotions in writing, the physical drain of holding back is reduced, resulting in improved health.

Susan M. Bauer, DNSc, RN, an assistant professor in UMMS' Graduate School of Nursing and the Medical School's Division of Preventive &

Behavioral Medicine, is studying "Disclosure: Effects on Women with Metastatic Breast Cancer." Her hypothesis is that women with metastatic breast cancer who participate in an expressive writing intervention will have better quality of life, slower disease progression and lower health care costs than those who do not.

Dr. Bauer's study is being funded by a grant from the prestigious Susan G. Komen Breast Cancer Foundation, a national organization fighting to eradicate breast cancer by advancing research, education, screening and treatment. Its National Grant Program

selects innovative projects worthy of seed funding that, once launched, can attract larger federal research grants. "The Susan G. Komen Breast Cancer Foundation is very pleased to sponsor this important work," said Elda Railey, director of the Komen Foundation's International Grant Program. "Dr. Bauer's research is significant because of the scientific approach to breast cancer patients' quality of life. It is an opportunity to explore and impact this issue."

"The premise is that internalized stress is bad for us," said Bauer, whose current study builds on prior research that showed advanced breast cancer patients who participated in support groups survived twice as long as those who did not participate in support groups. "However, I've found that a lot of people don't like [support] groups, and very sick patients may have limited access. I think individual expressive writing is an ideal alternative."

The fact that a GSN faculty member is the first and only nurse scientist nationwide to receive a Komen grant is a great honor for UMMS, whose philosophy is epitomized in Bauer's work. "Dr. Bauer is one of an emerging number of internationally accomplished

"I've found that a lot of people don't like [support] groups, and very sick patients may have limited access. I think individual expressive writing is an ideal alternative."

Susan M. Bauer, DNSc, RN

Diagnosed with a recurrence 14 years after her initial bout with breast cancer, Wendy Driscoll decided to chronicle her mixed emotions. "Writing gives me an opportunity to pay attention to what's going on inside of me and honor it," she said. Driscoll wrote this poem while participating in an expressive writing group workshop:

The Parable

*Fast-growing, it comes from nowhere
And takes over
invades
strangles
engulfs
obscures the beauty of the host.
But wait, what's here?
Can it be, near the end,
That the selfsame strangler is offering
up a beauty of its own?
ripe
passionate
broken open
bursting with riotous color!
How so, leech and lover, two-in-one?
Ah, but it's in the name . . . bittersweet.*

Wendy M. Driscoll

November 11, 1999

'On the Cusp of a New Era'

Robert W. Finberg, MD, can succinctly describe the reason he chose to leave a senior position at the Harvard Medical School and the Dana-Farber Cancer Institute to become chair of the Department of Medicine at the University of Massachusetts Medical School. "This is a unique opportunity to build a department of medicine at a particularly auspicious time in an institution's history," he said. "Medical research and its clinical applications are on the cusp of a new era, and UMass Medical School, with the construction of the new research laboratory building, is also on the cusp of a new era. I wanted very much to be a part of that."



"We are committed to promoting the growth of the Department of Medicine, the Medical School and the clinical system in the next century, and I anticipate that we will have unparalleled opportunities."

Robert W. Finberg, MD, Chair, the Department of Medicine

Prior to his arrival in November, Dr. Finberg was professor of medicine and chief of the Infectious Disease Program in the Adult Oncology Department at Dana-Farber. As an active scientific researcher at an institution devoted to applying the fruits of research to clinical care, Finberg recognized the promise and the possibilities that UMMS offered. "I think it's widely acknowledged that our progress in understanding biology is really on the edge of dramatic breakthrough," he said. "In areas such as genetics, the biology of aging, cancer and autoimmune diseases, medical research is rapidly approaching the point where we'll be able to take advantage of this fundamental knowledge and connect it directly to patient care."

Finberg's own research is key to this progress; he is a principal or co-principal investigator for six research studies, four funded by the National Institutes of Health and two by pharmaceutical companies for drug discovery. In his laboratory, he focuses on three principal areas of cell biology: the mechanism by which viruses infect cells; how certain proteins on the surface of the body's cells stimulate cell

growth; and the mechanisms involved in the development of protective immunity. His clinical expertise includes work with the range of infectious diseases that can cause cancer in humans, such as papilloma, herpes and hepatitis viruses, and bacteria such as *H. pylori* (recently implicated in the cause of ulcers and stomach cancer). Finberg is also pursuing the use of a certain class of viruses as "delivery vehicles" for gene therapy.

This intersection of the mechanisms of infectious disease with the causes and potential cures for cancer is at the forefront of much contemporary research, but is also driven by the fact that infections commonly complicate many effective treatments for cancer. In fact, infections account for the majority of deaths among patients with certain cancers.

As chair of medicine at UMMS and at the Medical School's clinical partner, UMass Memorial, Finberg knows he arrives at a special time in institutional history. "The Medical School is a generation old, and that's a good age to be," he pointed out. "I turn 50 myself in this new millennium, and I think that's a good age to be, too. And UMass Memorial is in a phase of growth and development that is very exciting to be part of."



His priorities include medical education ("the rapid change in medical science must be reflected not only in the way we practice medicine, but in how we teach it"); building a "research infrastructure" in the department through recruitment; and evaluating clinical systems for optimization of patient care. In a letter to his new colleagues sent upon his arrival, he put it this way. "We are committed to promoting the growth of the Department of Medicine, the Medical School and the clinical system in the next century, and I anticipate that we will have unparalleled opportunities" to do so.

"I really think," he said, "this is a very exciting time, and a very exciting place to be."



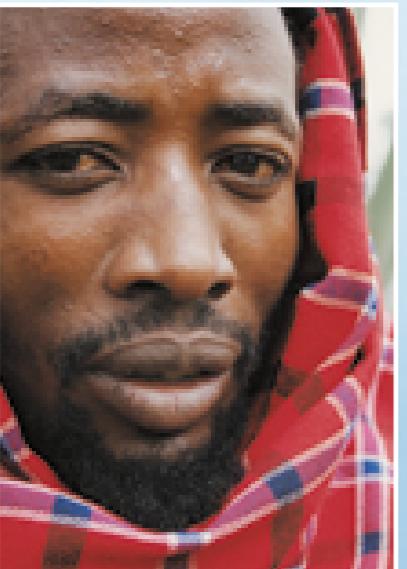
Azul Jaffer, fourth from left

The Medical Student and the Medicine Man

Azul Jaffer climbed into a Land Rover this past summer and ventured into the interior of Tanzania, into the world of a Maasai medicine man and into his own future as a physician.

At the wheel was a Maasai educator named Ndyo (also known as Good Luck), who would serve as Jaffer's guide and translator. Ndyo's brother in the interior was Lolepo, a medicine man who tended to the Maasai villagers living at the foot of Mt. Meru. Driving away from Arusha, the city he grew up in, Jaffer recalled his childhood at the Christian school he attended there, and the Maasai guard who watched stoically over the institution. "I remember he was tall and skinny, but very strong. Some of the Maasai lived in villages around the school, and we students would see them from the soccer field, herding their cattle, sending signals, always walking. I was impressed by them, but they were a mystery to me."

Now, Jaffer, a second-year medical student and native of Tanzania who moved with his parents to the United States in 1984 to further his education, was back in his homeland to learn more about the Maasai's methods of medical care. Through the Pathway on Serving Multicultural and Underserved Populations, a program offered by the UMMS Office of Medical Education's International Medical Education Program and the Department of Family Medicine & Community Health, Jaffer found a way to enhance the development of his physician soul. "I had observed my preceptor, Dr. Harvey Clermont, helping the underserved as director of a free medical clinic in Worcester. Lolepo, the medicine man, would show me that same concern for his fellow man, that sense of brotherhood."



Lolepo

"I am thankful to have met this medicine man, because he brought to life my thoughts, my dreams and my goals. When I do become a physician one day, I will try to merge the two types of medicine together—the African traditional and the high-tech, advanced American—to better serve the patient."

Azul Jaffer, second-year medical student

Arriving in Lolepo's village, and settling into a hut of mud, sticks and hay, Jaffer began his six-week course, taught by the 30-year-old medicine man. "I would follow Lolepo into the countryside. He was chosen by his father and was taught from a very young age about the plants that would serve as his medicines." As Jaffer gazed across the grasslands, unable to distinguish one plant from the other, Lolepo selected roots, leaves and stems that would alleviate stomach pains, headaches and the woes of pregnancy—in just the right doses. "He remembered exactly where to find the plant, took just what he needed, and showed me how to prepare them as medicine, cautioning me about side effects."

Lolepo and Jaffer, who was quickly dubbed "the tail," also made hut calls on foot. "Lolepo cared for about 400 people. Yet he listened intently to them. At UMass we are taught to listen to the patient, to let them talk. I saw that in Lolepo. He also taught me that a large part of the practice of medicine is explaining things well to patients, to look at the big picture."

"I am thankful to have met this medicine man, because he brought to life my thoughts, my dreams and my goals. When I do become a physician one day, I will try to merge the two types of medicine together—the African traditional and the high-tech, advanced American—to better serve the patient."

Jaffer sometimes served as teacher, responding to Lolepo's curiosity about the practice of medicine in America.

"Lolepo was fascinated with the formal education we receive. His was very personal and came from his father. We come to see a professor, sit in a seat and pay our fees to be educated." The medicine man expressed disbelief that medications are dispensed from a pharmacy. "When I explained that some medicine is synthetically made, he felt there must be a lot of distance between people and medicine here."

After his experience in Tanzania, Jaffer is even more determined to eliminate any distance that may exist between the medicine he will practice and the patients he will serve.

"Although his medical practice doesn't depend on machines, or the knowledge of how the medicine works at a cellular level, Lolepo did know how to interact with his patients to determine the best care for them."

Instrumental in Azul Jaffer's return to Tanzania were Deborah Harmon Hines, PhD, and Michael A. Godkin, PhD. Dr. Hines, UMMS associate vice chancellor for school services, introduced Jaffer to nine visiting physicians from Tanzania, who encouraged the student to embark on his trip. Dr. Godkin, director of the International Medical Education Program (IMEP) at UMMS, trusted Jaffer's instincts that the Tanzania experience would prove a pivotal one in the student's education.

The IMEP was formalized in 1995, and Godkin reports that student interest has accelerated since the program's inception; this year, 60 medical students will undertake language, clinical and research electives abroad. "Through this program, students experience cultures and explore medical practice outside the U.S., especially in countries reflective of immigrant and refugee populations in this country, and then bring back their newly developed language and cross-cultural skills to their future practice," explained Godkin.

Students aren't the only group fueling the program's success. Recently, the Luso-American Development Foundation funded an exchange with Portuguese-speaking countries allowing Godkin's office to send first-year students to the Azores and mainland Portugal to learn the language. The students' education will be put to good use here in Massachusetts, as 16 percent of the state's population is ethnic Portuguese, according to Godkin.

"So much is happening with this young program. The Commonwealth's Division of Medical Assistance has provided crucial funds, as it is the agency that is responsible for health care financing and policy for the state's poor, many of whom are immigrants and refugees," Godkin explained. "In addition, students have formed their own international interest groups and produced Web sites that describe opportunities abroad. A review of the program's evaluation data show the positive impact these international experiences have on students vis-a-vis cultural competency."



A Biomedical Science 'Ripe for Discovery'

Understanding a person's genetic predisposition to a disease, even before the illness is diagnosed, is no longer the stuff of science fiction. Today, it's nearing reality. Thanks in large part to the federal government's 13-year Human Genome Project, the thousands of genes that characterize the human body are being sequenced, providing scientists with an increased understanding of their function and expression, be it in the form of good, or ill, health.

This explosion of information makes it the right time in science and the right time at the University of Massachusetts Medical School for the Program in Gene Function and Expression. According to Michael R. Green, MD, PhD, the new program's director and a Howard Hughes Medical Institute Investigator, "Science changes rapidly, creating new areas of opportunity, and we want to be there to capitalize on them. Genetics is one such growing field, and, in that regard, it's

my primary responsibility as director of the new program to expand this area of research at the Medical School."

Through the Program in Gene Function and Expression, which will be housed in the new research laboratory building, Dr. Green and his colleagues will investigate the molecular and genetic bases of diseases like cancer, as well as the mechanisms that regulate how genes are expressed, Green's own area of expertise. The UMMS professor of biochemistry & molecular biology

and member of the Program in Molecular Medicine says that his current priority is identifying investigators who are experts in cutting-edge areas of genetic research. Green has already begun recruiting, but is allowing himself a five-year timetable to fully staff the program in order to gauge most effectively developments in the field. Eventually, as many as 200 staff will make up the Program in Gene Function and Expression, including 14 researchers, who will also hold faculty appointments in one of the existing basic or clinical science departments, postdoctoral and research fellows, and administrative and support staff.

The Program's investigators will hit the ground running: the vast amount of data obtained through the Human Genome Project is a major reason the field of genetics is expanding so rapidly. According to Green, scientists have been using information culled from the complete sequencing of genes from a variety of microorganisms, such as bacteria and yeast, to compare human genomes with

"This is an exciting opportunity that is both beneficial to the Medical School and gratifying to me as a scientist. I've always loved to build things, and this directorship provides me with the means to help construct a world-class program in an evolving area of biomedical science."

Michael R. Green, MD, PhD, Director, Program in Gene Function and Expression

those of these ancestor organisms. For example, he credits the discovery of more effective antibiotics and new anti-fungal drugs, currently in the pipeline for human use, to the availability of information from these studies. Green admits, however, that with such gene analysis, having the "whole collection is much more valuable than the sum of its parts." Once the human set is completely sequenced, the study of normal gene function and the molecular basis of disease will accelerate, leading to the enhancement of human health. "We could eventually identify the defective genes that may predispose a person to a particular illness," he explained.

Green joined the Medical School's faculty in 1990 and was named director of the MD/PhD program in 1994. He earned his medical and postdoctoral degrees from Washington University in St. Louis and completed his postgraduate training, including a fellowship, at Harvard University.

"This is an exciting opportunity that is both beneficial to the Medical School and gratifying to me as a scientist," Green said. "I've always loved to build things, and this directorship provides me with the means to help construct a world-class program in an evolving area of biomedical science that is ripe for discovery."

EDUCATION



UMMS awards conferred

At the springtime Educational Recognition Awards Ceremony, UMMS students and faculty were honored for their contributions to medical education and public service. David M. Clive, MD, associate professor of medicine, and Barbara F. Banner, MD, professor of pathology, received the Medical School's most prestigious educational award, the Lamar Soutter Award for Excellence in Medical Education. The first Graduate School of Biomedical Sciences Dean's Awards were given to graduate student Laurie A. Boyer and Professor of Pathology Raymond M. Welch Jr., MD, and the first Graduate School of Nursing Dean's Awards were given to Mary K. Alexander, EdD, associate dean and professor, and Patricia M. Navin, EdD, assistant professor. The GSN also awarded Elizabeth McGrath '99 (pictured above with GSN Dean *Emerita* Lillian Goodman), its Community Service Award for her work with the underserved citizens of Providence.



25th anniversary celebrated

Since 1974, more than 200 pediatricians have been trained in the Pediatric Residency Program, which marked its 25th year with a fall symposium, dinner dance and the establishment of the Hanshaw Pediatric Society. Named for program founder James Barry Hanshaw, MD, the society will support pediatric residency education programs.

New medical specialty created

Professor of Pediatrics Ellen C. Perrin, MD, played a key role in defining the subspecialty of developmental-behavioral pediatrics that was recently recognized by the American Board of Medical Specialties. The new certification will add information about children's emotional, cognitive and social functioning to pediatricians' medical education and create specialists to advise physicians and families about developmental issues.

Macy grant progresses

UMass Medical School, New York University School of Medicine and Case Western Reserve School of Medicine are collaborating on the Macy Initiative in Health Communication, a national education and training program funded by the Josiah Macy, Jr. Foundation to help improve physicians' communication skills and facilitate the doctor-patient relationship. To date, the three schools have worked together to identify and define the critical communication skills needed by physicians and initiated a process to develop health communication curricula for implementation in the 2000-2001 academic year.



Ho and Skaryak join faculty

Shuk Mei Ho, PhD, an expert in prostate cancer who has garnered more than \$2.1 million in active research funding, was appointed professor of surgery and cell biology in May. In August, Lynne Ann Skaryak, MD, one of fewer than 300 female cardiothoracic surgeons in the United States, was appointed assistant professor of surgery.

RESEARCH

Heart disease treatment advancing

In his clinical study of a genetically engineered protein called fibroblast growth factor, Harold L. Dauerman, MD, assistant professor of medicine, is evaluating an alternative therapy for patients with clogged coronary arteries. The protein promotes angiogenesis, the growth of new blood vessels in the heart, which improves the supply of oxygen and blood to the heart without surgery.



Diverse cancer research projects

The American Cancer Society awarded the University of Massachusetts an Institutional Research Grant to support the cancer research of junior faculty at UMass Medical School and UMass Amherst. Under the direction of investigator Gary S. Stein, PhD, the Gerald L. Haidak, MD, and Zelda S. Haidak Distinguished Professor and chair of cell biology, the three-year grant is funding studies that range from genetic influences on cell division in tumor cells to physiological and behavioral consequences of cancer treatment. As well as directly providing funds for many key investigations, the award has led to other extensive, long-term support from the American Cancer Society and the National Institutes of Health.



Support for poor families

Linda F. Weinreb, MD, associate professor of family medicine & community health, received two significant grants for her work with underserved families. The Substance Abuse and Mental Health Services Administration funded the Worcester Homeless Families Health and Support Program, and the U.S. Department of Agriculture Economic Research Services provided support for the study, "Hunger: Its Risk and Impact on Poor, Female-headed Households with Children." Through its student and residency programs, the Department of Family Medicine & Community Health has had a positive impact on greater Worcester's community health centers for over a quarter century.

Hepatitis C clinical trial

Herbert L. Bonkovsky, MD, professor of medicine, biochemistry & molecular biology and pathology, received \$2.7 million from the National Institute of Diabetes and Digestive and Kidney Diseases to conduct an eight-year clinical trial of a therapy for patients with Hepatitis C. The study will test whether long-term treatment with a long-acting interferon slows down or stops the advancement of liver disease.

Illegal smoking profits

Professor of Family Medicine & Community Health Joseph R. DiFranza, MD, examined underage smoking statistics and found legal prohibition of the sale of tobacco to minors is poorly enforced. In 1997, the nation's 3.76 million underage smokers spent \$1.86 billion on cigarettes, generating millions in tobacco company profits and federal and state tax revenues.

PUBLIC SERVICE



Mini-med school founded

With a \$10,000 educational start-up grant from Pfizer Pharmaceuticals Inc., the Office of Continuing Education launched a mini-medical school to bring faculty together with local residents who want accurate but understandable health care information. Spring and fall terms offered programs on such timely subjects as medical information on the Internet, Lyme disease, organ transplants and healthy eating.

National health advocates visit

Assistant Secretary for Health and U.S. Surgeon General David Satcher commended UMMS for its outstanding contributions to the community at Convocation exercises. C. Everett Koop, MD, former U.S. Surgeon General, spent two days at UMMS as the first visiting professor for the Medical School's chapter of Alpha Omega Alpha, the national medical honor society.



Improving local women's lives

Two members of the UMMS community received public service awards in the spring. For her work with homeless families, Associate Professor of Family Medicine & Community Health Linda F. Weinreb, MD, was presented the annual Worcester Women of Consequence Award. Monica Escobar Lowell, director of Cross-Cultural Health Initiatives for the Office of Community Programs, earned the YWCA's Katharine F. Erskine Award for Women in the Medicine and Science category for bettering education and health care access for Worcester's underserved populations.

Collaborative care for children

UMMS was awarded a federal Substance Abuse and Mental Health Services Administration grant to establish Worcester Communities of Care, a united effort of the Medical School, the Massachusetts Department of Mental Health and local human service agencies to deliver comprehensive, integrated services to children with severe emotional disturbance and their families. The innovative program is the first of its kind in Massachusetts to receive federal funding.

AWARDS & HONORS



Leader in humanity

In recognition of her commitment to the promotion of respect and understanding among people of diverse backgrounds, Deborah Harmon Hines, PhD, associate vice chancellor for school services, was awarded the National Conference for Community and Justice Leadership Award. The honor is bestowed each fall upon citizens who have made exemplary contributions to the greater Worcester area.

Innovative center honored

At the UMass/Smith + Nephew Center for Research in Endoscopic Surgery, physicians and engineers invent medical devices and procedures that solve surgical problems. Center partners UMMS and Smith + Nephew Endoscopy received the Massachusetts Medical Device Industry Council's 1999 Leadership Award for their collaboration.



Young researcher is Kimmel Scholar

Kai Lin, PhD, assistant professor of pharmacology & molecular toxicology, was named a 1999 Kimmel Scholar by the Sidney Kimmel Foundation for Cancer Research. Presented to only 10 investigators each year, the award provides start-up funds for outstanding researchers early in their careers, when their work is still developing and other funding can be difficult to obtain.

Rewarding primary care

On National Primary Care Day, physicians, educators, students and residents were honored for their work in primary care education, research and service. Recipients of awards from the Generalist Physician Initiative were Carol Addy, MD; Eric J. Alper, MD; Frances M. Anthes, MSW; Robert A. Babineau Jr., MD; Robert A. Baldor, MD; Constance A. Cardasis, PhD; Robert J. Cavanaugh, MD, MBA; Jerrold P. Commons, MD (posthumous); William A. Damon, MD; Linda Gifford DeGeus '01; Emily R. Ferrara; Terry S. Field, DSc; Heidi Ginter, MD; Robert Goldberg, PhD; David S. Hatem,

MD; Roger S. Luckmann, MD; Rachel Mott '01; Caitlin O'Donnell '00; Daniel O'Donnell, MD; James S. Pease, MD; Michael R. Rousse, MD; Linda D. Sagor, MD, MPH; Morris Spierer, MD; Susan Starr, MEd; Sarah L. Stone, MD; Robert J. Thomas, MD; and Haya Yankelev '00.

Studying therapeutic agents for AIDS

Maria L. Zapp, PhD, assistant professor of molecular genetics & microbiology and a member of the Program in Molecular Medicine, was appointed to serve on the National Institutes of Health AIDS and Related Research Study Section beginning in February 2000 through June 2003. The focus of the study section is the development of new therapeutic agents for AIDS and related diseases. Dr. Zapp completed her second year on the NIH AIDS Special Advisory Review Panel for the establishment of Centers for AIDS Research.

Facts & Figures

FY '99 Funding and Revenue	
State appropriation to schools	\$ 33.4 million
State contracts*	19.2 million
Research	88.2 million
Other revenue sources**	135.9 million
Total	\$276.7 million

FY '00 Projected Funding and Revenue	
State appropriation for schools	\$ 34.2 million
State contracts*	20.2 million
Research (sponsored activity)	96.8 million
Other revenue sources**	118.5 million
Total	\$269.7 million

* Support public service activity, including provision of mental health and pediatric services for those who cannot afford private care.

**Examples are continuing education and student fees, biologic labs and newborn screening programs and other non-state revenue sources.

Research Funding: Last Five Years



Commercial Ventures and Intellectual Property (\$ in thousands)

	1994	1995	1996	1997	1998	1999
Invention Disclosures	22	31	39	56	43	49
U.S. Patent Applications	14	20	18	28	30	24
Licensing Agreements	2	3	5	5	14	17
Gross Revenues	\$130	214	682	644	1,913	3,925
Sponsored Research Agreements	--	\$1,100	1,965	3,397	2,494	3,349

Number of Faculty

Full-time	681
Part-time	55

School of Medicine

MD students	405
MD/PhD students	10
Alumni	2,224
Residents & fellows in UMMS programs	468



{ **Susan Billings-Gagliardi, PhD**, professor of cell biology, was recently awarded the Alpha Omega Alpha (AOA) Robert J. Glaser Distinguished Teacher Award. Established in 1988, this AOA award recognizes just four faculty members from medical schools nationwide who have distinguished themselves in student education.

Graduate School of Biomedical Sciences

PhD students	184
MD/PhD students	4
Alumni	128

Graduate School of Nursing

MS students	42
Post master's students	7
PhD students	33
Part-time students	15
Alumni	410



{ **Joseph F. X. McGuirl**, executive director for the University System's Office of Commercial Ventures and Intellectual Property, was named a 1999 *Mass High Tech* All Star. One of 14 honored as "the best and brightest in New England's technology industry," McGuirl was credited with increasing University licensing revenues from less than \$200,000 to \$4.1 million in four years, as well as for obtaining corporate sponsors for research and development and starting a business incubator.

The Year in Philanthropy

A Success Story Unfolds

The first chapter of the UMass Memorial Foundation's success story has been written and the achievements reported for the inaugural year foretell a bright future in philanthropy. Through the generosity of donors, the impact of biomedical research is enhanced; new medical treatments save more lives; and unparalleled educational opportunities benefit medical students, nurses and scientists.

These investments in the future of medicine are at the heart of the charitable partnership of UMass Medical School and UMass Memorial Health Care. In 1999, the Foundation raised more than \$22 million, a figure that represents a substantial increase over the previous year's total for the pre-existing organizations—UMass Medical Center, Memorial Health Care and HealthAlliance—that are now under the Foundation's umbrella. The Foundation raised a total of \$10 million in cash alone.

Among the academic achievements were the establishment of seven new endowed professorships or chairs in the areas of quality, AIDS research, basic sciences, cancer research, cell biology and cardiovascular medicine.

The H. Arthur Smith Charitable Foundation, which established one of the two cancer research chairs through the Worcester Foundation for Biomedical Research, also awarded UMass Memorial a three-year, \$150,000 grant to initiate a cancer screening program at Plumley Village Health Clinic in Worcester. The program will serve those at-risk women who may otherwise lack resources for early detection and prevention of cancer.

In fundraising for clinical initiatives, there were significant achievements during the year, including those recorded for three major UMass Memorial campaigns:

- More than half of the \$2 million goal for the Hahnemann Center on Lincoln Street was pledged or contributed. In addition, a 1-for-3 challenge grant of \$250,000 from the George I. Alden Trust will encourage the raising of \$750,000 from the UMass Memorial community. Honorary chair of the campaign is Francis X. Dufault, MD, retired medical director of the former Memorial Health Care, who was also chief of staff at the former Hahnemann Hospital.
- Clinton Hospital's drive for support of new and renovated patient and visitor facilities raised more than \$900,000 toward the goal of \$1.2 million, thanks to generous gifts from local donors supportive of community-based care.
- The \$2.5 million raised by HealthAlliance has reached half of the goal for capital projects that include renovations at the Leominster campus and development of a cancer center at the Burbank campus.

Of critical importance to the Foundation's future was the step taken in 1999 to initiate a strategic planning process, with recommendations to the capital campaign's leadership for the new century. With the enthusiastic participation of key volunteers, including those on its executive committee, the Foundation is preparing to write the next chapters documenting the success of philanthropic support in the improvement of medical care and health for all.



Donald L. Weaver, MD, assistant surgeon general and director of the National Health Service Corps, commended UMMS for its commitment to underserved populations as featured speaker at the Department of Family Medicine & Community Health's first Steven Putterman Memorial Lecture. According to Daniel H. Lasser, MD, MPH, chair of the department, Dr. Weaver congratulated UMMS for the leadership it has demonstrated in the development of service/academic programs. A prime example: the department's 27-year partnership with the Family Health Center to serve the Main South community of Worcester and to train family practice residents and students at federally funded sites. Some 100 graduates have done so through 1999, with a majority of them going on to practice in community health centers and other community service sites.

Educational Partners and Affiliates

Athol Hospital
Barre Regional Family Health Center
Berkshire Health Systems
UMass Memorial-Clinton Hospital
Day Kimball Hospital
Fallon Community Health Care
Family Health Center
Fitchburg Family Practice
Hahnemann Family Health Center
HealthAlliance Hospitals
Heywood Hospital
Holyoke Hospital
Lawrence Memorial Hospital
Lawrence Family Health Center
Metrowest Medical Center
UMass Memorial-Marlborough Hospital
Milford-Whitinsville Regional Hospital
Noble Hospital
South County Pediatrics
St. Elizabeth's Hospital
St. Vincent Hospital
Tri-River Family Health Center
UMass Memorial Medical Center
(Hahnemann, Memorial and University campuses)
UMass Memorial-Wing Memorial Hospital and Medical Centers
Worcester State Hospital

Departments and Programs: Last Ten Years

1992 Department of Emergency Medicine
1993 Cancer Center
1993 Meyers Primary Care Institute
1993 Center for Advanced Clinical Technology
1996 Center for Adoption Research and Policy
1997 Center for Health Policy and Health Services Research
1997 Center for Infectious Disease and Vaccine Research
1999 Program in Gene Function and Expression
1999 Irving S. and Betty Brudnick Neuropsychiatric Research Institute

Construction, Acquisitions and Mergers: Last Ten Years

1991 Worcester City Hospital becomes City Campus
1992 Benedict Building opens to outpatients
1993 Two Biotech is purchased
1996 Goff Learning Center opens
1997 UMMS Jamaica Plain campus established
Massachusetts Biologic Laboratories
New England Newborn Screening Program
1997 Worcester Foundation for Biomedical Research merges with UMMS
Shrewsbury campus established
1998 One Biotech is purchased
UMass Clinical System merges with Memorial Health Care
1998 Four Biotech is leased
1998 Center for Medicaid Studies is located in Auburn
1999 Ground is broken for new research laboratory building

The UMass Memorial Foundation Executive Committee includes three dynamic community volunteers who devote countless time and boundless energy to enlisting philanthropic support of the Medical School-hospital partnership. Together with the officers of the Foundation, they provide leadership for its 83-member board of directors.



Janet Birbara points to the achievements of the Medical School and its clinical partners when she talks about why she serves the

Foundation. Her memory of the school predates the presence of a hospital on the University campus, when she and her husband Charles, a rheumatologist, came to know many of the early medical students he taught.

"Whenever a need arises, I like to help," said Birbara. Although she calls herself a generalist in terms of her fund-raising interests, the former breast cancer patient has high praise for the Cancer Center, where she underwent a stem cell transplant. "The care I received was absolutely outstanding. I left feeling that if there was ever anything I could do to help, I'd do it."

As owners of the Beechwood Hotel, across Plantation Street from the University campus, the Birbaras had an opportunity to honor the intent of a long-ago donor to the former City Hospital. "That's where my husband had been on staff," Birbara said. "When UMass took it over and made it City Campus, the old chapel had to be dismantled. So we had the chapel placed in the hotel!" In doing so, they honored the 100-year-old commitment of the chapel donor, whose intent was to memorialize his wife "in perpetuity."



Cynthia Pitcher's motivation to serve goes back to her longtime support of the former Memorial Health Care. Her particular interests were its

community outreach programs and such services as clinics for the underserved and for young people.

"My own positive experiences with the excellence of my family's health care was another factor," she said, "and I felt I could give something back." Prior to the merger, Pitcher was chair of the Memorial Hospital Foundation. Now the Worcester resident focuses on the campaign for the Hahnemann Center, while

continuing to have a special interest in community services.

"I'd like to help ensure that the combined institutions continue to provide the quality care people expect. I have great respect for the vision of the merged organization and am committed to support it," said Pitcher, who is an owner of Key Executive Offices in Marlborough. The company manages shared office space and a video conferencing center.



Russell E. Fuller believes there's a need for "all of us" to pitch in and help advance the successes being made in health care. It's

been a long-term commitment for him, demonstrated by his former roles as chair of Memorial Hospital's board of directors and of the Memorial Hospital Foundation.

With his energies now focused on enlisting support for UMass Memorial Health Care, Fuller is chairing the campaign for the Hahnemann Center. Conversion of the Hahnemann campus for outpatient surgical services will ease the demand on operating rooms at the Memorial and University campuses. "It's

a great opportunity to get the building in shape and have it used again," he noted. "And it's a joy to talk to people about it. They tell me it's wonderful to know the building is being restored."

Fuller and his wife Joyce live in Boylston, where they founded and until recently owned the Refco Company, a distributor of industrial supplies. Boylston is also the location of the family organization he has chaired for 10 years, the 45-year-old George F. and Sybil H. Fuller Foundation, dedicated to supporting regional efforts in education, health care and other fields.

Volunteer Leadership Set for Building Campaign

With just 18 days left in the 20th century, the Medical School broke ground for a building that's key to its expected achievements in the new millennium: a 10-story research laboratory building at the heart of the campus.

Among the key figures at the "digging in" ceremony were four volunteers whose names were announced as co-chairs of the UMass Memorial Foundation/Worcester Foundation for Biomedical Research campaign to raise \$33 million toward construction of the building. They are Robert and Nancy Edman Feldman of West Newton and John and Linda Nelson of Worcester.

The Feldmans, whose son Adam is a member of the School of Medicine's class of 2000, are chairs of the UMMS Parents Council Executive Committee. Robert Feldman heads the RMF Group, an investment banking and marketing company, and serves on the board of directors of Aero Products International/Imaginair, Inc., a company he founded. A former vice president and general merchandise manager of Montgomery Ward, he has been in the retail field more than 25 years. He has helped the fund-raising efforts of the Richard Welling Foundation and the Anti-Defamation League, among other organizations. Nancy Edman Feldman is an interior designer and principal of Nancy Edman Interiors, based in West Newton.



John Nelson, vice-chair of the Foundation's board of directors, is former chair and CEO of the Wyman-Gordon Company and former president and CEO of the Norton Company, where his career spanned 31 years. He is lead director of the TJX Companies Inc. of Framingham. Among many volunteer interests, he has chaired the board of trustees at both WPI and the Worcester Art Museum.

Linda Nelson's community involvement includes the boards of the EcoTarium and the Worcester Redevelopment Authority. She is a former administrator and trainer for executive leadership development programs around the country and a former feature news reporter for a Colorado NBC-TV affiliate.

The Foundation will aim to reach its goal, approximately one-third of the overall initial cost of the \$100 million building, through private philanthropy, Aaron Lazare, MD, chancellor and dean, told those gathered for the groundbreaking event. The 360,000-square-foot building is expected to be ready for occupancy in the fall of 2001.

Plans for the building and the fund-raising campaign were announced in September. UMMS and UMass Memorial Health Care have already committed \$30 million in support of construction, pledged at the time of the merger between Memorial Health Care and the UMass Clinical System in 1998. The Massachusetts AFL-CIO has pledged to raise \$5 million for the Cancer Center, which will be relocated to the new building. The remainder of the research building's cost will be realized through federal grant overhead recovery.

Alumni Giving on the Upswing

In 1999, the year that UMass Medical School graduating classes reached the quarter century mark, the number of alumni making gifts to UMMS almost doubled.

Indeed, a member of that first "pioneer" class of 1974 set a new standard for alumni giving with a five-year pledge of \$100,000. Richard V. Aghababian, MD, one of those celebrating the 25th anniversary, and his wife Anne made the gift launching an endowment fund for a professorship in emergency medicine.

Overall, UMMS alumni participation in philanthropic gifts has increased from less than 10 percent to more than 20 percent in FY '99. Creation of a reunion giving program contributed to the rise in participation rates, and the number of first-time contributors almost tripled during the past year.

Special recognition goes to the members of the recent graduating classes, who have established class gift funds. Giving participation rates for the classes of '98 and '99 was approximately 60 percent and 50 percent, respectively.

For Dr. Aghababian, professor and chair of emergency medicine at UMMS, celebrating his 25th reunion provided the impetus to make a substantial gift. He expressed the hope that UMMS, in addition to being the first New England medical school to establish emergency medicine as an academic specialty, will be the first to have an endowed professorship in that field.

Taking Steps Toward a Goal



Labor Day '99 became a holiday of commitment for more than 3,000 people who walked around Worcester's Lake Quinsigamond in support of the Cancer Center at UMass Medical School. The first five-mile Walk to Cure Cancer brought together working families and community members, whose enthusiasm to walk overcame rain and steamy heat to raise over \$300,000.

Afterward, the volunteer whose leadership helped pull it off called the walk "one of the most amazing and moving experiences I have had as a labor leader." Robert J. Haynes, president of the Massachusetts AFL-CIO, had brought his organization into this first-of-its-kind partnership between organized labor and a non-profit charitable institution.

The partnership's goal is to raise \$5 million in five years to support the Cancer Center's new research facility, which will be located in the research laboratory building being constructed on the UMMS campus. For the AFL-CIO membership, which represents 400,000 working men and women in 750 local Massachusetts unions, the 1999 walk literally took the first steps toward that goal.

"I was truly touched by the determination and commitment demonstrated by the walkers who turned out on Labor Day to help find a cure for this horrific disease," said Haynes. In testament to the significance of the event, University President William Bulger, state legislative leaders Thomas Birmingham and Thomas Finneran and Worcester Mayor Ray Mariano joined UMMS Chancellor and Dean Aaron Lazare to kick off the walk.

A longtime supporter of UMMS and its Cancer Center, Haynes had announced the \$5 million pledge and plans for the annual walk on Labor Day 1998. The idea grew out of his friendship with Dottie Manning and the late Dan Manning Sr., for whose son the Our Danny Cancer Fund is named. The fund honoring Dan Jr.'s memory has become the Cancer Center's official fund-raising arm.

"I'm extremely excited about next year's walk, which will undoubtedly attract twice as many walkers as this year's event," Haynes said. "And that will bring us even closer to our \$5 million goal."

Red Sox fans throughout New England remember Dwight Evans as the team's star in right field during the 1970s and '80s. His 18-year career included the 1975 World Series, and he led the major leagues in home runs and extra bases during the latter half of that storybook season.

Now there's a different game plan for Evans in central Massachusetts, where friends and fans alike cheer his volunteer efforts for the Cancer Center at UMass Medical School. The Dwight Evans Golf Classic benefits not only from his name, which assures a sellout, but also from his presence as honorary chair of the event.



In June 1999, with a record field of 136 players at the Worcester Country Club, the tournament raised \$90,000 for the Cancer Center. To date, the overall total raised by the six annual golf events is \$430,000, and the tournament has become the Cancer Center's premier event. With Polar Beverages as sponsor and the EMC Corporation coming on board for the first time as presenting sponsor in 1999, the event has a promising future.

At the root of Evans' longstanding dedication to UMMS is the Red Sox link to sports medicine physicians at the hospital. And his family's experience with patient care, as well as friendships made in the Worcester community, have committed Evans to service as a board member of the UMass Memorial Foundation.

But his prime motivation is the "good work" being done at the Medical School in cancer research: "All the money raised in the golf classic goes for research. Everyone pays to play, myself included—we need all the money we can get!"

Plan a Gift

Gifts, bequests and trusts are important sources of support for the University of Massachusetts Medical School and UMass Memorial Health Care. Such gifts provide funding for a wide range of programs, including those that expand treatment options for patients, increase the scope of pioneering biomedical research, and strengthen educational programs for doctors, nurses and scientists.

Gifts can be made in cash, securities or other property and can take many forms: outright gifts, pledges, bequests or various life income arrangements. Contributors may designate their gifts to be used for specific purposes or make unrestricted gifts providing greater flexibility for planning and administering programs in patient care, education and research.

Providing for the Medical School or UMass Memorial Health Care in your estate plan is a significant statement about your commitment to the health and well-being of future generations. We are pleased to provide the following sample bequest language:

"I give, devise and bequeath to the UMass Memorial Foundation, a non-profit organization located in Worcester, Massachusetts, the sum of \$____ [or description of property] to be used for its general purposes [or a specific purpose]."

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