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NEW JERSEY  
MEDICAL SCHOOL  
University of Medicine & Dentistry of New Jersey

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# CONTENTS

1

Message from the Dean



2

Expanding Education



6

Pioneering Research

10

Innovative Care

16

Community Outreach



20

Growing Specialties



32

Donors

35

Financial Overview



35

Growing our Campus



36

Administration

## GROWING OUR SUCCESS

In 2003, New Jersey Medical School (NJMS) experienced remarkable growth on a number of fronts. Such progress is truly a mark of our success as an academic medical institution. Each and every day, the many achievements of our faculty, staff and students strengthen our position among the nation's leading medical schools.

**Growing Our Success** is a critical undertaking that is only achievable through the collective efforts and careful cultivation of the entire medical school community.

As student applications to NJMS increase, we are expanding our educational offerings to provide medical students and residents with meaningful experiences that reflect the latest in medical education. An examination of our curriculum — and the challenges facing tomorrow's physicians — will yield a new curriculum in August 2004. An increased focus on clinical experiences and humanistic medicine ensures that our students are prepared to meet the changing needs of patients in New Jersey — and beyond.

Our research efforts are growing exponentially. As our total number of research awards increase to include groundbreaking discoveries in biomedical, clinical, behavioral and health services areas, funding is also rising rapidly. During fiscal year 2003, funding reached an unprecedented \$88.9 million, representing a 27 percent increase over the previous year. Research funding has increased more than twofold since 1996, surpassing UMDNJ's goal of doubling research dollars by 2005.

On the clinical front, our physicians continue to treat patients with a variety of innovative tools and techniques — innovations that also offer our students and residents unique learning experiences. Major construction of new cancer and ambulatory care centers has also begun in earnest. Both of these facilities will offer patients unparalleled care in convenient, welcoming and state-of-the-art environments.

All of these steps forward are achieved within the context of our local community. We value our community and its role in helping us achieve success. We remain committed to recognizing and responding to the needs of our neighbors and strive to make a difference in their lives.

This report represents just a small sampling of our achievements during 2003. I am pleased to share these stories with you, and recognize the efforts of all those who are helping NJMS in **Growing Our Success**.



Russell T. Joffe, MD  
Dean, New Jersey Medical School



*Sylvia Christakos, PhD  
Professor, Biochemistry and Molecular Medicine*

From first-year orientation  
to commencement, NJMS  
provides an educational  
setting that transforms students  
into first-rate physicians.

# EXPANDING EDUCATION

**A** progressive medical school cannot rest on its laurels.

That is why New Jersey Medical School constantly assesses and refines its academic programs and extracurricular offerings.

This year, admissions applications increased 30 percent, reversing a six-year decline felt at NJMS and nationwide. The Class of 2007 comes from a diverse pool of more than 2,900 applicants; more than half (51 percent) of the class is female for the first time. This class, like others before it, is encouraged to not only learn basic science and clinical concepts, but to embrace the human, compassionate aspects of medicine.

Although more than a year away, New Jersey Medical School is preparing for a visit in 2005 from the Liaison Committee on Medical Education (LCME). The 17-member committee of medical educators and administrators, physicians, medical students and public representatives is the accreditation authority for MD programs throughout the United States and Canada.

In January 2003, NJMS hosted a mock visit led by Harry Jonas, MD, former LCME secretary. Later that month, 130 faculty and students attended a retreat that reviewed the exercise and introduced them to a major initiative: development of a new curriculum.

This project is progressing rapidly. A New Curriculum Steering Committee, comprised of department chairs, faculty and students, was formed in May; feedback from the entire student body and faculty is ongoing. In January 2004, the group presented its findings and recommendations to the NJMS community, paving the way for department meetings and ratification

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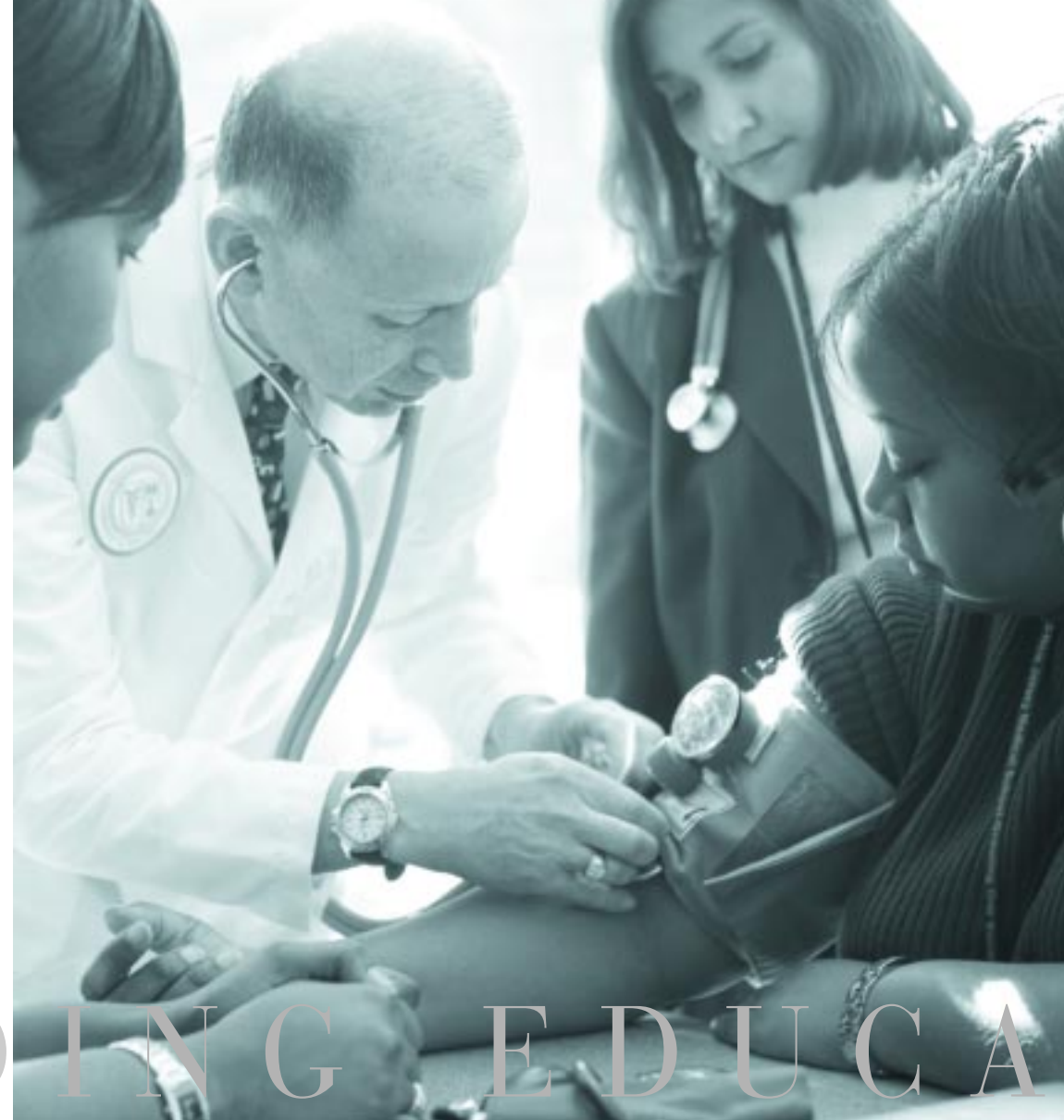
in early 2004. The new program will be introduced to students in August 2004.

The revamped curriculum reflects the latest in medical education. "Today, lecture classes are less common, and courses that encourage active learning are on the rise," says Alex Stagnaro-Green, MD, associate dean for curriculum and faculty development. "More clinical classes in the first two years of medical school and courses that integrate multiple disciplines are common." In considering these new approaches, NJMS tapped into the expertise of curricular deans from other medical schools, including Weill Medical College of Cornell University; University of Rochester, School of Medicine and Dentistry; and Indiana University School of Medicine.

#### Practice for Future Practitioners

For students, the Clinical Skills Center is a familiar place. This state-of-the-art facility utilizes a controlled environment for teaching, observing and assessing a variety of healthcare-related skills.

The center features 12 "simulated" patient examination rooms, complete with video equipment that monitors mock patient encounters. Here, medical students have the opportunity to develop their



*Kenneth Friedman, MD  
Associate Professor, Pharmacology and Physiology*

history, physical exam, and, most important, their communication skills through interactions with standardized patients (people who are trained to portray a variety of patient scenarios). The center's sophisticated computer programs enable faculty to evaluate student performance, serving as the basis for preparing future physicians for the clinical experience. Clearly, the Clinical Skills Center and its faculty's expertise go a long way in preparing students for the new United States Medical Licensing Exam (USMLE) Step 2 Clinical Skills

year, some pursue external programs. In July, Arun Singh '04 and Shakti Ramkissoon '05 began prestigious one-year appointments to the Howard Hughes Medical Institute-National Institutes of Health Research Scholar Program. Each year, this elite program selects 42 medical or dental students nationally to work with senior NIH investigators.

Singh's preceptor is William Doug Figg, PharmD, of the National Institutes of Health's Cancer Therapeutics Branch; the lab is trying to develop ways to control metastatic prostate cancer. The project combines Singh's interests in oncology and research. At NJMS, he worked with Robert Ledeen, PhD, professor of neurosciences, to develop a model for multiple sclerosis.

Jane Fant, MS, assistant dean for research, and Pranela Rameshwar, PhD, associate professor of medicine, encouraged Ramkissoon, who worked in Dr. Rameshwar's lab and was eager for additional research training, to apply. Ramkissoon partnered with Elaine Sloand, MD, and Neal Young, MD, at the hematology branch of the National Heart, Lung, and Blood Institute. His research is on myelodysplastic syndromes, which are disorders associated with bone marrow failure. ■

#### Students Chosen for Prestigious NIH Research Program

Students have many research opportunities on campus, but every

#### Engaging Students

Before they attended their first class, each of the 170 members of the Class of 2007 received the most visual symbol of their future profession: a white coat.

Ten years ago, NJMS was the second medical school to hold a White Coat Ceremony; now, it is a common rite of passage nationwide. Quite fittingly, Arnold P. Gold, MD, and Norman Seiden, both of the Arnold P. Gold Foundation, the organization that instituted the NJMS event, spoke at this year's ceremony. Dickson Despommier, PhD, a well-known professor of public health and microbiology at Columbia University, delivered the keynote address.

During the moving ceremony, students recited the Hippocratic Oath — a pledge that traditionally was not made until commencement. This year, students also received sound advice from Dean Russell T. Joffe, MD. "Understand and practice the art of medicine and the importance of humanism in medicine," he said. "The most sought-after doctors are the highly competent and compassionate."

In October, Dean Joffe initiated a forum for students and faculty addressing pressing issues in medicine. Harvey Fineberg, MD, MPA, PhD, president of the Institute of Medicine and past provost of Harvard University, was the inaugural speaker. An expert on health policy and medical decision-making, Dr. Fineberg outlined the forces that impact healthcare quality. He also hosted a dialogue on how to change health professions education to improve patient care.

NJMS researchers continue  
to make groundbreaking  
discoveries critical to shaping  
the future of medicine.

# PIONEERING RESEARCH

**R**esearch at New Jersey Medical School is growing on every front. For the past five years, funding from the National Institutes of Health has more than tripled, and about 60 research faculty were placed on the tenure track or received tenure. Research facilities expanded with the opening of the International Center for Public Health (ICPH) in 2002. In the future, a new regional biocontainment laboratory and the New Jersey Medical School-University Hospital Cancer Center will provide additional research space.

Under the leadership of Harvey L. Ozer, MD, senior associate dean for research, NJMS's research programs continue to advance. Strategies for continued growth include encouraging interdisciplinary research, recruiting more biomedical research scientists and partnering with research institutions in Newark — and beyond.

## The Best Defense

Since September 11, 2001, scientists have entered an era of collaboration. A prime example: NJMS is one of a 32-institution consortium awarded a \$65 million federal grant to develop a regional center of excellence for biodefense and emerging infections. The creation of the Northeast Biodefense Center and nine other regional research centers throughout the country was announced in September 2003 by the Department of Health and Human Services. Some of the other members include the Public Health Research Institute,

*continued on page 8*





Nancy Connell, PhD  
Director, Center for BioDefense

continued from page 6

Rutgers University, Columbia University, Mount Sinai School of Medicine and Yale University School of Medicine.

With the increased possibility of bioterrorism and the reality of infectious diseases such as SARS, these researchers are charged with developing new and sophisticated diagnostic tests, vaccines and strategies to combat threats.

“There’s no more room for white tower research,” says Nancy Connell, PhD, director of the Center for BioDefense, vice chair for research in the department of medicine and executive committee member of the Northeast Biodefense Center. “Real deliverables, such as therapeutics and vaccines, are critical to ensuring the safety of Americans.”

NJMS will also receive nearly \$21 million from the NIH to construct a regional biocontainment laboratory for infectious disease and biodefense research adjacent to the ICPH. The facility, which will add 13,000 square feet of Biosafety Level 3 and animal support space, provides Northeast Biodefense Center researchers with a centralized place to work.

Five principal investigators studying selected agents form the nucleus of a team that will grow to include several new biodefense experts. The center will also be shared with visiting scientists and outside researchers.

The lab furthers NJMS’s reputation in the infectious disease realm; the school is already well known for the National Tuberculosis Center, the Ruy V. Lourenço Center for the Study of Emerging and Re-emerging Pathogens and the Center for BioDefense. Overall, NJMS boasts nine labs that conduct pathogen research.

#### Understanding Low-Dose Radiation

Millions of people are exposed to low doses of radiation every year — patients undergoing diagnostic radiology; workers cleaning up nuclear sites; and those who live in regions where there are high levels of radon gas. But the effects of exposure are not fully known.

Edouard Azzam, PhD, assistant professor of radiology, has demonstrated that stressful effects on human cells, including genetic damage, occur in both irradiated cells, and non-irradiated, adjoining cells. His goal is to define the effects of exposure on normal “bystander” cells. With the help of a three-year, \$790,000 grant from the National Institutes of Health, Dr. Azzam is exploring the basic biochemical and molecular processes that cause this bystander effect. He is joined by NJMS faculty Roger W. Howell, PhD, and Andrew Harris, PhD, as well as researchers from the Harvard School of Public Health and Iowa University.

In another three-year study funded by an \$890,000 Department of Energy grant, Dr. Azzam and NJMS colleagues Venkatachalam Perumal, PhD, and Sonia M. de Toledo, PhD, are analyzing cellular response to energy radiation. They are investigating whether this exposure induces processes that lead to cancer.

#### Making the Connection

Although there is no cure for chronic myelogenous leukemia (CML), much is known about this rare cancer of the bone marrow. Following a chronic phase that produces no symptoms for several years, CML progresses to an acute “blast crisis” in which overproduction of white blood cells occurs. “About 95 percent of CML patients have an abnormal chromosome,” explains Ian Whitehead, PhD, assistant professor of microbiology and molecular genetics. “CML patients also produce two abnormal proteins associated with cancer: Bcr-abl and c-Myc, the latter linked to tumor development.”

Researchers knew that patients had high c-Myc levels, but not why. The answer was learned in Dr. Whitehead’s lab. “In leukemic cells, Bcr-abl binds directly to c-Myc, acting as a regulator. Bcr-abl is therefore responsible for high levels of c-Myc,” says Gwendolyn Mahon, MSc, who served as first author for the published research, which appeared in *Current Biology*. The research suggests that c-Myc protein can be targeted to treat this disease.

This finding offers hope for some patients. A new drug, imatinib mesylate, slows production of these leukemic cells. ■

#### Rewarding Research

Under the leadership of Andrew Thomas, PhD, the Department of Pharmacology and Physiology received special recognition this year during University Day. This annual event celebrates the accomplishments of the entire University and honors departments that encourage and develop faculty scholarship. Pharmacology and Physiology was presented with a Departmental Award for Academic Excellence in recognition of its growing research efforts.

Since Dr. Thomas’ arrival as chair in 1997, extramural funding has grown from \$1,025,515 to \$4,841,351; active NIH grants have risen from two to 17. Pharmacology and Physiology shared the University Day spotlight with another NJMS department: Family Medicine, which was honored for its innovative curriculum.





At NJMS, faculty are  
dedicated to combining  
sound medical practices  
with the latest innovations  
in patient care.

# INNOVATIVE CARE

Innovative patient care comes down to identifying patients' needs and finding new and better ways to meet them. Sometimes that involves using highly sophisticated equipment; in other cases, it is providing vital information at the correct reading level or applying the caring principles of hospice to dying patients and their families.

At New Jersey Medical School and its teaching affiliates, a team effort ensures that students and residents are introduced to innovative approaches to competent patient care.

## Transplant Training

For those in need of a new liver, having an experienced transplant team on-call is critical. The Liver Transplant Program team at University Hospital (UH) has performed more than 700 transplants since 1989. According to the United Network for Organ Sharing, New Jersey's first liver transplant program is also the nation's 12th largest for adults.

In addition to saving many lives, the center provides unique learning and training opportunities for NJMS students and residents, says Baburao Koneru, MD, associate professor of surgery at NJMS and chief of the liver transplant program. When a

*continued on page 12*

*Baburao Koneru, MD, Associate Professor, Surgery  
Chief, Transplant Program*



The Liver Transplant Team

continued from page 11

transplant occurs, students in the six-week clerkship in the Department of Surgery play a role in the organ procurement process. “For most students, it’s their first experience with organ donation. They gain a greater understanding of organ procurement and the importance of organ donation,” Koneru says. Fourth-year medical students can also take an elective focused on liver transplant surgery.

When the liver transplant program began 14 years ago, one second-year resident rotated through the program each year. Today, there are four residents, representing each year of residency. “We train residents at various levels and provide them with many opportunities, including managing patients with difficult liver diseases; complicated surgeries of the liver and bile ducts; and recognizing the complications and side effects of immunosuppressant drugs after transplant,” he says. Clearly, their teaching efforts are paying off; faculty members on the liver transplant team have been selected by students for the school’s prestigious Golden Apple Teaching Award.

#### A Quiet Revolution in End-of-Life Care

Hospice programs are known for providing palliative services — such as pain relief and emotional support — for the terminally ill. However, it is much less common to find comparable care for patients who die from trauma.

At University Hospital, a specially trained palliative care team has been in place for patients admitted to the Surgical Intensive Care Unit and their families for three years. However, two team members had a broader vision to increase staff training and enhance services, developing a program for urban trauma centers to emulate.

Anne Mosenthal, MD, associate professor of surgery and director of surgical intensive



Ellise Delphin, MD, MPH, joined NJMS as professor and chair of anesthesiology in February 2003. At New York University School of Medicine, Dr. Delphin was director of medical education and also served as co-chief of cardiac and thoracic anesthesia services at both Tisch Hospital - New York University Medical Center and Bellevue Hospital Center.

Since her arrival, Dr. Delphin has enhanced the NJMS anesthesiology residency program by adding case conferences, a grand rounds visiting professor program and six new faculty members. A cardiac anesthesiologist with research interests in neurologic and myocardial outcomes following cardiac surgery, Dr. Delphin is working to further develop clinical subspecialties and a department research program.

care at UH, and Patricia Murphy, RN, PhD, advanced practice nurse for ethics and bereavement, were awarded a three-year, \$375,000 grant from the Robert Wood Johnson Foundation program, “Promoting Excellence in End-of-Life Care.” Their grant was one of four awarded nationwide. The model combines a protocol for trauma and critical care doctors and nurses balanced with more personal elements. For example, a mobile comfort care cart offers simple pleasures such as CD players, lamps and even massage oil to patients. Teaching this approach to practitioners is beneficial to patients and their families. Dr. Murphy says, “It is a very difficult time in a family’s life. Our program attempts to ease the burdens for patients and families.”

#### Increasing Patient Understanding

A best seller for nearly twenty years, the book *What to Expect When You’re Expecting* provides valuable information for pregnant teens and women — unless they are unable to read. About one-third of patients at urban medical centers are functionally illiterate; the Newark Literacy Campaign estimates that 60 percent of functionally illiterate adults read below a fifth-grade level.

In the spring of 2003, the Department of Obstetrics, Gynecology and Women’s Health and University Hospital partnered with the What to Expect Foundation. The foundation provided 2,000 copies of an easy-to-read pregnancy book, *Baby Basics*, or in Spanish, *Hola Bebé*, to NJMS obstetricians. “*Baby Basics* is essentially *What to Expect* written on a third- to fourth-grade reading level,” explains Theodore Barrett, MD, assistant professor of obstetrics, gynecology and women’s health. “In addition to explaining each stage of pregnancy, the guide addresses specific health, economic and social needs of low-income women.”

continued on page 14



continued from page 13

Low-literacy patients receive the book at their first prenatal appointment. Doctors and nurses refer to specific parts of the book throughout pregnancy, and Dr. Barrett says there is discussion with the Literacy Volunteers of America about developing a curriculum for patients based on *Baby Basics*.

The initiative undoubtedly fills a void, says Dr. Barrett. "Low literacy is a huge issue. If the patient cannot read the information we give her, she will not be able to follow instructions. We hope this pilot program paves the way for more patient literacy programs."

#### Hospital of the Future

Historically, the telephone and the elevator revolutionized the way information was delivered throughout hospitals. At its genesis, the X-ray offered pictorial data to physicians in a novel way. Now, signs of the next transformation — an information technology-driven paperless hospital — are taking shape at University Hospital.

The radiology department is now filmless, thanks to a Picture Archival and Communication System (PACS) based on web-server technology. "Images are sometimes simultaneously needed for several different purposes," explains Stephen R. Baker, MD, professor and chair of radiology. "With PACS, multiple people

with proper security clearance can access images, either on-site or thousands of miles away. The images are reliably transferable and ubiquitously available." In fact, one radiologist is based in Israel. Charles Levine, MD, an associate professor at NJMS and a UH staff member from 1992 to 1997, wanted to remain a member of Dr. Baker's team when he relocated.

Maintaining a part-time appointment in the department, he returned to Newark for two- to three-week assignments several times each year. Now, through PACS, he telecommutes. Dr. Levine logs on to the secure system and reviews images taken at UH during the East Coast night shift — daytime hours in his part of the world. This arrangement eliminates his need to travel to serve UH patients and ensures that the department is staffed around-the-clock, improving turnaround time for patients.

At NJMS's primary teaching facility, the move to technology-based systems is also altering how radiology is taught. "Information technology is the new driver of change that complements other treatments," says Dr. Baker. "We provide residents with early exposure to innovations that will greatly change and enhance radiology practices of the future."

#### A Partner off the Ice

While most people at ice skating championships anticipate the next jump combination, Scott Nadler, DO, professor of



Before joining NJMS in July, Mark Jordan, MD, was a staff urologist and professor of urology at the University of Pittsburgh for 14 years. As the Harris L. Willits Professor of Surgery and chief of the division of urology, he has recruited two faculty members with specialties in urologic oncology and laparoscopic urology. Dr. Jordan plans to add a specialist in neurology/female urology in late 2004. His clinical expertise includes urologic oncology, renovascular surgery and laparoscopy, with research interests in urologic immunology and oncology. Recently, the division received \$1.5 million of new equipment to provide patients with the latest in urologic imaging, prostate thermotherapy, urologic laparoscopy, robotic surgery, ultrasound and videourodynamics. These tools raise the division's visibility, especially in Newark, where an aging population and heavy concentration of African-American males create a demand for urologic care.

physical medicine and rehabilitation, keeps a professional eye out for potential injuries to the athletes.

Since 2000, Dr. Nadler has served on the medical faculty for the U.S. Figure Skating Team, tending to the physical needs of the skaters at training camps and competitions. He was at the U.S. Figure Skating Championships in January 2003, along with Olympic medalists Michelle Kwan and Sarah Hughes, and attended other skating events throughout the year.

Dr. Nadler's expertise in lower back injuries — a common skater complaint — makes him a logical choice to assist the team. "They are prone to back injuries and stress fractures; the lifting required of male pairs skaters can cause shoulder pain," says Dr. Nadler, who is also a team physician for four New Jersey colleges. "The complexity of jumps, such as the quadruple jump series, can be very hard on the body."

Off the ice, Dr. Nadler's approach to physical medicine and rehabilitation has caught the attention of patients, the medical community and students. Embracing non-surgical, multidisciplinary care, he is known for conservative treatment regimens that reflect all aspects of patient health. "On a national level, Dr. Nadler is regarded as a role model for academic musculoskeletal practitioners," says Joel A. DeLisa, MD, MS, professor and chair of physical medicine and rehabilitation. "He is also among a select group of NJMS faculty whose clinical judgment and reputation as caregivers earn them outstanding professional respect and personal credibility in the eyes of community-based private practitioners."

Dr. Nadler's expertise recently earned him several awards. In October, he received a national award from the American Academy of Physical Medicine and Rehabilitation for his advancements in non-surgical care of lower back pain; in December, the NJMS Faculty Organization named him a Faculty Member of the Year, along with Patricia Fitzgerald-Bocarsly, PhD, professor of pathology and laboratory medicine. ■

By fostering strong  
relationships with the  
local community, NJMS  
is improving the health  
and well-being of  
its neighbors.

# COMMUNITY OUTREACH

**A**t New Jersey Medical School, faculty, staff and students share a commitment to community service. Located in the heart of Newark, the school, through a variety of outreach programs, addresses many pressing needs within the local and surrounding communities. These efforts not only deliver vital healthcare information and services to patients in need, but also help individuals pursue promising career paths and achieve personal success.

## The House that Caring Built

Currently, construction workers at NJMS are building a better campus; meanwhile, faculty and staff are helping build a better community. During 2003, members of the Department of Orthopaedics and other employees sponsored the 51st Habitat for Humanity house in Newark.

Fred Behrens, MD, professor and chair of orthopaedics and a long-time financial contributor to Habitat, initiated the project. He and some colleagues first lent a hand on homes being built in Newark by Habitat, a nonprofit organization. That led Dr. Behrens to consider sponsoring a house. Carolyn Suzuki, PhD, assistant professor of biochemistry and molecular biology and a Habitat volunteer, introduced him to the executive director of Habitat-Newark.

Dr. Behrens' enthusiasm caught on, with volunteers giving of their skills — and their Saturdays — to get the job done. “Everybody was involved — faculty, residents, department staff and nurses,” says Dr. Behrens.

“Administrators and technicians from other departments also

*continued on page 18*



Augustine Eleje, MD  
Clinical Assistant Professor of Medicine

continued from page 16

contributed their time.” Located within a cluster of Habitat homes near the NJMS campus, the house will be owned by a single mother with three children.

Not only did NJMS volunteers work on the house, they reached their goal to raise \$80,000 (the cost to fund one house in Newark) through generous contributions from faculty, staff and associates affiliated with the department.

#### The Ability to S.H.A.R.E.

Beginning with their first year, NJMS students are offered many community service opportunities. The umbrella organization that facilitates these programs — Student Health Advocates for Resources and Education, or S.H.A.R.E. — has been student-run since its inception in 1996.

S.H.A.R.E. supports six programs that serve residents of Newark and neighboring communities. The newest, Unite for Sight, provides free vision screenings and education, and accepts eyeglass donations. The other established programs are: the Early Start Mentoring Program, which pairs students with at-risk youngsters; the Student Family Health Care Center, which offers free medical care to the uninsured and underinsured; the New Moms Program, in which first- and second-year students assist young



Ana Natale-Pereira, MD,  
Assistant Professor of Medicine  
Medical Director, FOCUS  
Community Health Center

mothers-to-be throughout pregnancy; Students Teaching AIDS to Students, an educational outreach program for middle school and high school students; and Community 2000, a patient outreach and education initiative which includes monthly health fairs hosted throughout Newark. S.H.A.R.E. advisor Maria L. Soto-Greene, MD, senior associate dean for education notes, “The success of our programs are a testament to student-led initiatives strongly supported by faculty advisors.”

John Fontanilla, student director of S.H.A.R.E. and a second-year medical student agrees. “It is a unique opportunity for first- and second-year students to have clinical exposure, while working in the community that is the setting for their medical education. You gain as much as you give,” he says.

#### From Classroom to Career

Sometimes, everyone wins. A new School-to-Career Program, a collaborative effort with the Newark school system, introduces and trains Newark high school students in some of the less-known, yet essential, healthcare careers. When the students

graduate, this training could lead them to pursue jobs in the healthcare profession, perhaps at NJMS or University Hospital. “This program exposes teens to a full range of healthcare career opportunities that they might not realize exist: respiratory technician, lab assistant, medical recordkeeping, patient services representative and more,” says Robert L. Johnson, MD, professor and interim chair of pediatrics and director of the Division of Adolescent and Young Adult Medicine. He is also NJMS’s representative to the School-to-Career Committee.

For an initiative that required a curriculum and approval by the city and state boards of education, the program quickly took shape. Discussion between Dr. Johnson, Sidney E. Mitchell, FACHE, University Hospital president and CEO, and Marion A. Bolden, Newark Public Schools district superintendent, began in March 2003. By October, the program was in place, enabling 22 sophomores from Central

High School and Weequahic High School to participate in the first phase. Students learn about job opportunities by rotating through 12 UH departments. By February 2004, the internship component of the program — hands-on training in departments — is expected to be available to high school seniors.

#### Brotherhood Health Initiative

In November, The Robert Wood Johnson Foundation, through its New Jersey Health Initiatives program, awarded \$450,000 to The Brotherhood Health Initiative. The initiative is part of the NJMS Division of Adolescent and Young Adult Medicine in the Department of Pediatrics. Although only two years old, The Brotherhood Health Initiative has made a significant impact on the local community through its dedication to helping minority youth. The program creates a safety net for at-risk urban minority males by providing case management, targeted outreach and prevention services. This proactive approach helps youth by providing assessments of their social services needs, follow-up on referrals and peer group sessions. To date, more than 80 young males have participated in the program. ■

#### New Practice Opens its Doors

When the Department of Family Medicine decided to open a second off-site practice, it was searching for a location that would allow it to build strong ties with the community while partnering with an innovative faith-based organization.

The department found such a place at the St. James Preparatory School in Newark. A 3,500 square foot office now houses the University Center for Family Medicine. Staffed by Judy Washington, MD, and Guy Francis, MD, assistant professors of family medicine, the practice provides care to adults and children, including congregants of the St. James AME Church, located across the street. It is one of the city’s largest congregations.

The practice brings a new level of personal care to the neighborhood. “This is an opportunity to introduce innovative practice methods in an inviting setting,” says Mark S. Johnson, MD, professor and chair of Family Medicine. Family Medicine also has locations at the Doctors Office Center and the University Family Practice Center at Vailsburg.

Other NJMS departments also serve the community. The Department of Medicine’s FOCUS Community Health Center in downtown Newark is staffed by bilingual physicians who provide culturally competent care to Latino patients throughout Essex County.



A focus on specialty areas  
of medicine is helping  
NJMS grow its reputation  
and expand its expertise.

# GROWING SPECIALTIES



**A**t New Jersey Medical School, five priority areas — infectious diseases, cardiovascular science, neurological and visual sciences, trauma and cancer — demonstrate the importance of growing the specialty areas of medicine. These specialties attract world-class researchers and clinicians to the Newark campus, forming the cornerstone of an innovative medical school.

## **Infectious Diseases**

### **New Directions**

When David Alland, MD, associate professor of medicine and Jessica Mann, a research teaching specialist, joined NJMS, neither of them knew that they would soon be working on some of the country's most advanced and well-funded biodefense projects.

Dr. Alland, who came to NJMS to continue his research on drug-resistant tuberculosis in 2002, has several new projects in progress. His laboratory's work includes a population-based study of resistance to one of the first-line TB drugs, isoniazid. His diagnostic work, along with long-time Public Health Research Institute colleagues, Fred Kramer, PhD, and Sanjay Tyagi, PhD, has exciting biodefense applications. The researchers developed a way to monitor polymerase chain reactions (a technique by which scientists can replicate DNA in a vial) in real time with

*continued on page 22*

continued from page 21

special fluorescent probes called molecular beacons. "By using a smaller number of probes, we can more efficiently differentiate between closely related DNA sequences," Dr. Alland says. Applied to bioterrorism agents, hundreds of infectious pathogens could be detected from a single assay well. His lab is working on this project with Nancy Connell, PhD, as part of NJMS's contribution to the newly designated regional center of excellence for biodefense and emerging pathogens.

When Dr. Connell, who is the director of the Center for BioDefense, spoke on bioterrorism at Ohio Wesleyan University three years ago, she captured the interest of Jessica Mann, a senior microbiology major. Mann began working for Dr. Connell upon graduation, initially conducting TB research and managing the Biosafety Level 3 lab. When Department of Defense grants started increasing, "I was asked to shift direction," Mann says. Today, she is the manager of the Ruy V. Lourenço Center for Emerging and Re-emerging Pathogens. Her responsibilities include coordinating biodefense research, training personnel, overseeing regulatory affairs and serving on numerous UMDNJ biosafety committees.

### Testing a New Vaccine

Food and Drug Administration approval of a new smallpox vaccine may depend on whether an inoculated person's body responds, as it should, by making neutralizing antibodies. Two new laboratory tests to measure this are being developed by Thomas Denny, MSc, associate professor of pathology and laboratory medicine, and pediatrics, as part of a \$6 million, three-year NIH grant. "With the old vaccine, testing was labor intensive," says Denny. "These tests will be more sophisticated. As part of the grant, we will analyze about 10,000 blood samples to determine how quickly and effectively these tests work."

As director of the Center for Laboratory Investigation, Denny has been studying smallpox for several years at NJMS. For another longstanding research interest, HIV, he is developing an infrastructure for testing HIV antiviral drugs and treating patients in resource-poor nations.

In 2003, Denny balanced these projects with a prestigious fellowship in Washington, D.C. As one of seven Robert Wood Johnson Health Policy Fellows, he served on the Senate Committee on Health, Education, Labor and Pensions. He worked to gather support for Project BioShield, President George W. Bush's \$6 billion program to facilitate development and purchase of vaccines and treatments against possible bioterrorism agents.

### Looking Out for an Unwanted Visitor: SARS

Each June, the Portuguese Festival in Newark attracts thousands of visitors. Many come from another city with a large Portuguese population: Toronto. While that is usually of little consequence, the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS) in Toronto spurred the Newark Health Department to quickly implement an enhanced surveillance program at city hospitals.

"Every patient who came into the emergency room was screened against a checklist of SARS symptoms and questions that we developed," notes Peter Wenger, MD, assistant professor of preventive medicine and community health. Wenger serves with William Halperin, MD, DrPH, MPH, professor and chair of preventive medicine and community health, as a consultant to the city health department. Patient logs were reviewed daily for possible cases. Fortunately, no one met the complete criteria for SARS. "There was one case in which a potential patient was identified right away — proof that enhanced surveillance works," Dr. Wenger says.



Thomas Denny, MSc  
Associate Professor, Pathology and Laboratory Medicine, Pediatrics

### Detecting Pathogens

The Department of Pathology and Laboratory Medicine is well-known for its molecular diagnostics lab. According to vendor data, the lab performs the greatest volume and variety of molecular infectious disease tests of any lab associated with a hospital in the state. With more than 35,000 tests performed in fiscal year 2003, the lab plays a key role in detecting and identifying diseases and pathogens. Known for its infectious disease focus, which includes a full spectrum of HIV and other pathogens testing, the lab is expanding its services to include molecular oncology. External clientele are growing to include research partnerships with Bristol-Myers Squibb and Gilead Sciences.

### Cardiovascular Science

#### A Robot in the OR

While the idea of a robot assisting with cardiac surgery might sound futuristic, New Jersey Medical School and University Hospital have been using a robotic system for several months.

continued on page 24

For years, scientists have worked to understand genomes, the set of genetic instructions that comprise species. In 1994, a term was coined to describe a new realm of scientific discovery: proteome, which is the protein complement of the genome. Proteomics involves the identification of proteins in a cell, describing their function, exploring what happens when cells are damaged or diseased and much more.

Highly sophisticated equipment and a specially trained team is needed to run a proteomics lab. Both are found at the NJMS Center for Advanced Proteomics Research (CAPR), directed by Hong Li, PhD, assistant professor of biochemistry and molecular biology. The facility is equipped with state-of-the-art proteomics instruments and bioinformatics systems that analyze protein structure and function.

With proteomics of prime interest to researchers and pharmaceutical companies, CAPR currently serves 50 investigator groups from academia, private industry and the scientific community. CAPR is currently working with Stephen F. Vatner, MD, professor and chair of cell biology and molecular medicine, and the Cardiovascular Research Institute to investigate causes of heart failure and gender differences in heart diseases at the proteomic level.

potentially can be used to treat heart failure. The researchers are also working toward discovery of new mechanisms to control stroke.

Increasingly, CVRI researchers are collaborating with non-traditional basic science partners, such as biomechanical engineers from New Jersey Institute of Technology, and scientists from other areas of medicine, such as cancer. “We are combining disciplines to explore problems from different areas of expertise,” says Dr. Vatner. And for the clinical aspects of research, CVRI will partner with UH as well as two other Newark hospitals — Newark Beth Israel Medical Center and Saint Michael’s Medical Center.

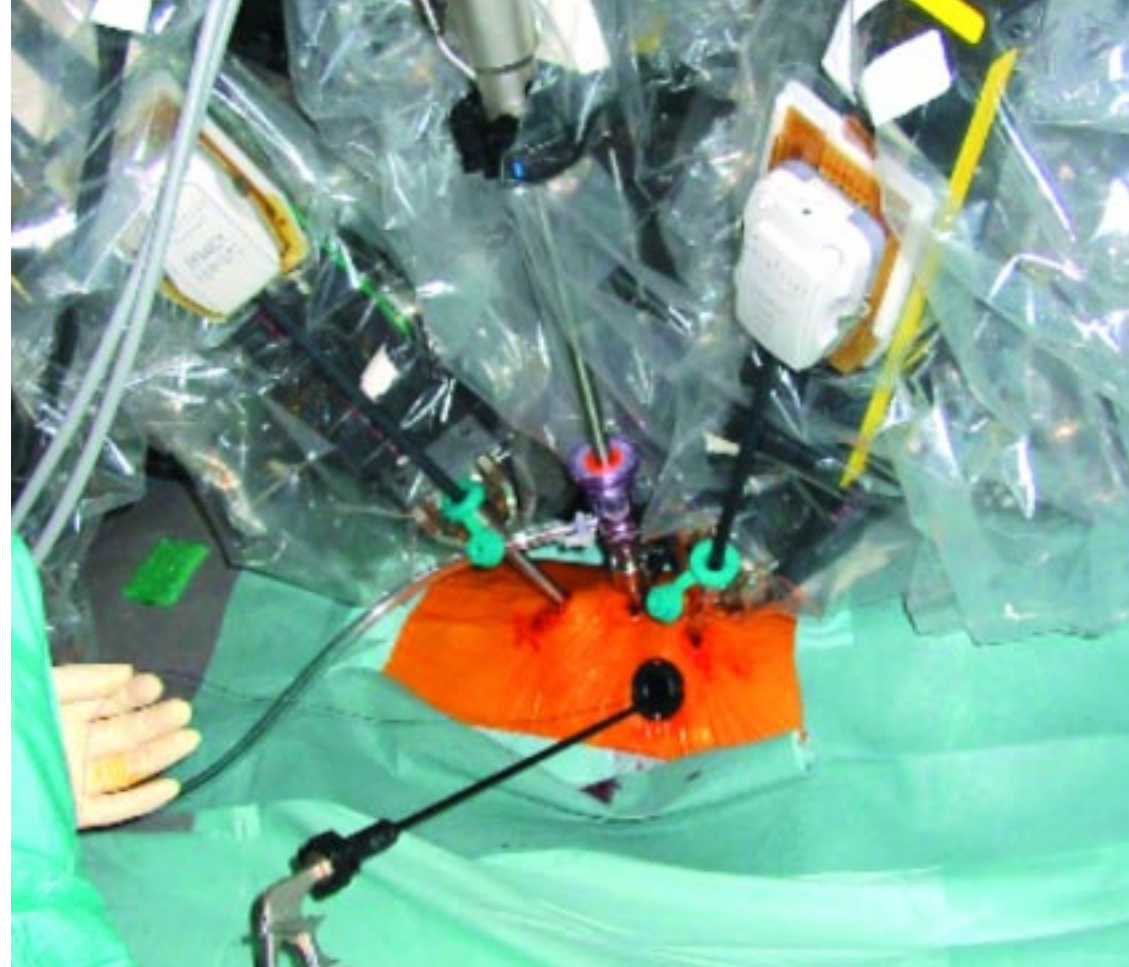
**Neurological and Visual Sciences**

**Going to BAT Against Stroke**

Even before a stroke patient arrives, the Brain Attack Team (BATeam) at New Jersey Medical School and University Hospital is ready. “Every minute that a stroke patient is not getting treatment, brain cells are dying,” says Adnan Qureshi, MD, professor and UH director of the cerebrovascular program.

A dedicated, interdisciplinary

*continued on page 26*



*The da Vinci Surgical System*

complex procedures to come. “These are all stepping stones toward using the system for Totally Endoscopic Coronary Artery Bypass, or TECAB,” says Dr. Banker. “The technology is still very new. The operations performed with robotics in five years will look nothing like what we are doing today.”

**An Integrative Approach**

In September 2003, the National Institutes of Health unveiled its Roadmap for Medical Research. One of the major themes of this initiative is a more integrative approach to the research process. And yet Stephen F. Vatner, MD, professor and chair of cell biology and molecular medicine and director of the Cardiovascular Research Institute (CVRI),

In March 2003, several nurses and Michael Banker, MD, assistant professor of surgery and director of cardiac surgery at University Hospital, traveled to Baylor University for training on the da Vinci Surgical System. Now in use at the hospital, the robotic system has two main parts: a viewing and control console and a surgical arm. During a cardiac procedure, Dr. Banker is stationed at the console, and the robotic arm is inserted through small incisions in the patient’s chest. A three-dimensional image provided to the surgeon via a computer bank facilitates precise control and movement of the robot’s arm.

Cardiac robotic surgery offers many benefits to patients, says Dr. Banker: tiny incisions; the ability to perform procedures with more accuracy and efficiency; and faster recovery times. At UH, the da Vinci Surgical System is used either to harvest a mammary artery for cardiac bypass or for epicardial pacemaker lead placement for biventricular resynchronization. Dr. Banker has performed about 50 robotically assisted internal mammary artery harvests; he also performed the first robotic epicardial lead placement in New Jersey. He anticipates using the system for mitral valve repair in 2004, with more

G R O W I N G S P E C I A L T I E S

*continued from page 23*



# G R O W I N G S P E C I A L T I E S

greater accuracy. The results offer patients real options of survival without disabilities.

### A Vision to Restore Hope

Age-related macular degeneration (AMD) is the leading cause of legal blindness among Americans over 55. For many more, AMD impairs vision, making everyday tasks difficult or impossible to perform. With a growing population of older Americans, the disease will become even more prevalent.

“AMD affects central vision, precisely what’s needed to read or to drive,” says Marco Zarbin, MD, PhD, professor and chair of ophthalmology and visual science. Central vision is provided by a specialized part of the retina called the macula. “Not only can vision be lost, so can the ability to live independently.”

There are two types of AMD: dry, in which cells within the macula break down and die, and wet, where abnormal vessels grow under the macula. The current remedies for AMD are sight-preserving; Dr. Zarbin’s research focuses on development of sight-restoring treatments through the transplantation of healthy retinal pigment epithelium (RPE) cells.

RPE cell transplantation faces two barriers: rejection of the healthy cells and ability of the transplanted cells to grow properly. Of the latter, Dr. Zarbin explains, “There’s something about the transplant surface that is bad for cell survival. I’m working to discover exactly what that is, and how to reverse it.”

*continued from page 25*

cadre of stroke specialists formed in June 2003, the team is always on call to combat the nation’s leading cause of long-term disability and third most frequent cause of death.

Rapid response time and an established medical protocol play an essential role in improving patient outcomes. According to the NIH guidelines for acute ischemic stroke, there is a “golden window” of rapid identification and treatment in which to save lives. At NJMS and UH, BAT is accomplishing this in half the recommended time and with

### Ten Years of Discovery

In 1993, Monique Roy, MD, professor of ophthalmology, began a study of 725 African Americans with Type I diabetes — the first population-based study of its kind. A decade later, the retina specialist is evaluating data from the study’s first phase that reveals some interesting preliminary observations about Type I diabetes and its complications. Diabetic retinopathy, abnormalities of the retina’s blood vessels, occurred most often and was most severe in African-American women. Dr. Roy also discovered a link between diabetic African-American men and kidney disease. “Men who developed mild kidney disease were at much greater risk of dying than women,” she says. “This could underscore the importance of protecting kidney function in African-American men diagnosed with this disease.”

The ongoing second phase of the study, funded by the National Eye Institute and the National Institutes of Health, assesses diabetes progression among the 600 people who remain in the study.

### Using Technology to Combat Brain Tumors

Staffed by a team of highly trained specialists, the Department of Neurological Surgery is known for using state-of-the-art equipment and advanced techniques to treat a variety of neurological needs. The department is led by Peter Carmel, MD, DMedSc, professor and chair of neurological surgery and a world-renowned professor of neurological surgery.

One innovation employed by Dr. Carmel’s team is Polestar N-10, an intraoperative MRI system that images the brain during surgery. University Hospital was the first in North America and second hospital worldwide to use the powerful tool. Equipped with .12 tesla magnetic fields, optical probe and infrared cameras, Polestar is connected to a normal operating table and operated via a control mouse. The system helps neurosurgeons differentiate between tumor and brain tissue while surgery is in progress, ensuring that tumor remnants are not left behind. It also helps compensate for shifting of the brain that occurs during surgery, again allowing for more precise tumor removal. More than 200 brain tumor patients at UH have benefited from Polestar.

But access to state-of-the-art equipment is only part of the reason for the department’s success and growing reputation. “Ours is a unique service of extremely high quality,” Dr. Carmel notes. “Together, we are working to discover the causes of central nervous system disease and are promoting innovative therapies for treating these disorders.”

### The Big Picture

Autoimmune conditions such as rheumatoid arthritis and lupus affect the whole body, including the eyes. “These patients can develop inflammatory conditions in their eyes, which are often treated unsuccessfully with steroid drops,” explains David Shu-Chih Chu, MD, assistant professor

*continued on page 28*

During the past five years, the New Jersey Trauma Center (NJTC) at University Hospital experienced a 4 percent average increase in trauma patients per year. In 2003, NJTC had a 6 percent increase in patients from the previous year. One of only three Level 1 trauma centers in the state, NJTC treats a wide variety of patient injuries, ranging from everyday slips and falls to serious injuries requiring life-saving techniques. As of December 31, 2003, physicians at NJTC:

- treated 3,194 patients and admitted 1,587

- Of the trauma patients who were admitted, 673 patients were involved in vehicular accidents; 589 had violence-related injuries; and 325 were seen for miscellaneous causes, such as falls or sports-related injuries.

- NorthSTAR, University Hospital's emergency medical services helicopter, completed an average 50 missions per month, including flying critically ill patients to the trauma center and providing interhospital transport for ICU patients.

*continued from page 27*

of ophthalmology and an ocular immunologist. "This is because the problem goes far beyond the eyes."

His approach for these patients is similar to that of a rheumatologist: the use of chemotherapy agents, such as methotrexate, to suppress the immune system and preserve sight. Even children with juvenile arthritis who develop uveitis — inflammation of the iris, choroid or the ciliary body — can benefit.

"Not many ophthalmologists or uveitis specialists are comfortable treating these young patients," says Dr. Chu. "I give them the best care I can with immunosuppressants to control the inflammation and prevent blindness."

### Trauma

#### A Grant to Train Trauma Researchers

The surgeons at the New Jersey Trauma Center (NJTC) are not only excellent clinicians, they also are outstanding researchers. In 2003, NJMS received a \$1.5 million prestigious, five-year National Institutes of Health training grant that will enable surgical residents to



*Pranela Rameshwar, PhD, Associate Professor of Medicine*

work alongside these trauma researchers.

Officially, the grant is an NIH National Research Service Award Institutional Research Training Grant, but is more informally known by its code, T32. Grants can be in any health-related discipline, but there are fewer than 25 awarded to critical care programs nationwide.

"The T32 enables surgical residents to gain invaluable experience working in the labs of outstanding trauma researchers," says David Livingston, MD, professor

are preventable, the National Society to Prevent Blindness attributes one-third of eye loss in children under 10 to injury.

When accidents happen, the Eye Trauma Center for New Jersey at University Hospital is ready. "An ophthalmology resident is available around the clock. No matter how unusual the injury, the appropriate subspecialist is on call," says Marco Zarbin, MD, PhD, professor and chair of ophthalmology and visual science.

The 20 ophthalmologists affiliated with the center represent three main areas of ocular expertise: the retina, the anterior segment and oculoplastic surgery.

Serving patients for 10 years, the center is directed by Roger Turbin, MD, assistant professor and director of ocular trauma at University Hospital. The center's experience

with many types of eye injuries, from common to complex, has earned it a solid reputation. "We average two to five surgical emergency calls a week," notes Dr. Turbin. "That kind of frequency builds expertise — and our reputation." The proof of the center's quality is evidenced by an increased number of referrals from community-based ophthalmologists.

### Cancer

#### Masters of Deception

Pranela Rameshwar, PhD, associate professor of medicine, has identified two types of cells that, in the very early stage of breast cancer, leave the breast and enter the bone marrow. "Both progenitor cells and the cancer stem cells are present," she notes. "However, the

*continued on page 30*





New Jersey Medical School-University Hospital Cancer Center

*continued from page 29*

cancer stem cells are somehow able to act as healthy cells, remaining undetectable.” Dr. Rameshwar is nearing completion of a four-year, \$873,000 National Institutes of Health grant that examines the biomechanism of breast cancer cell integration into bone marrow.

Dr. Rameshwar is studying the bone marrow of breast cancer patients and healthy women with samples supplied by the National Cancer Institute. In addition to the

stem cells, she has also identified HGFIN, a gene that plays an important role in containing breast cancer cells in bone marrow.

#### Comprehensive Cancer Care

As the new Cancer Center takes shape on the Newark campus (see page 35), NJMS and University Hospital are focusing on a joint goal to establish a nationally competitive cancer program.

Achieving this goal is attainable. In 2002, a total of 1,100 new cancer cases were seen, representing a 37 percent increase in cases since 1997. Of these, 35 percent were orphan cancers (those that are less prevalent overall); 67 percent were minority or underserved patients. In total, 35,000 cancer-related patient interactions are reported each year.

Researchers at NJMS are also making great strides forward in the fight against cancer. Currently, more than 20 investigators are conducting 30 major cancer-related studies and research.

NJMS is using National Cancer Institute (NCI) guidelines to direct its growth to become an NCI designated comprehensive cancer center. Among the critical priorities and qualities that the NCI has established for cancer centers is a commitment to research that advances the field while promoting collaboration between researchers and clinicians. To achieve this, NJMS has launched a pilot program that encourages

these partnerships. With a focus on discovering new ways to find and treat cancer, Cancer Center Pilot Projects will be grant-funded for one year.

#### Turning Off a Problem Protein

Hormone therapy can slow the progression of prostate cancer or shrink the size of a tumor, appearing for a time to bring about remission. But when hormone therapy loses its effectiveness, cancer recurs and can metastasize. Chemotherapy is ineffective against hormone refractory prostate cancer, and radiation is an option only when cancer is confined to the prostate.

This problem has researchers such as Beverly Barton, PhD, assistant professor of surgery and urology, searching for answers within the prostate cell itself. Her research focuses on the transcription factor STAT3, a protein that links signals outside the cell to the nucleus. “STAT3 can be an essential part of normal cell function, but in prostate cancer cells, STAT3 is abnormally activated, interfering with gene expression that regulates the cell cycle and normal cell death,” she explains.

Dr. Barton has designed and synthesized molecules that appear to inhibit STAT3 directly and its function in prostate cancer cells. She applied for a patent on these molecules in October 2003 and her research continues. “There needs to be additional *in vitro* and animal studies. The mechanism

by which the molecules work has to be established, along with a more formal analysis of function,” Dr. Barton says. Her research is funded by the Ruth Estrin Goldberg Memorial for Cancer Research.

#### Relief is in Her Hands

For cancer patients, chemotherapy and radiation treatments can be difficult to tolerate. In January 2003, a nationally certified massage therapist, Margaret O’Connor, began developing a special therapy program for oncology patients.

“Studies show that massage therapy can help relieve pain, improve function and increase patients’ ability to relax,” says Charles Cathcart, MD, assistant professor of radiology and director of radiation oncology.

Massage therapy is offered to chemotherapy inpatients and chemotherapy and radiation outpatients, either before or after treatment. Therapy is tailored to the patient’s needs; for example, someone with a headache might benefit from foot reflexology. A stereotactic radiosurgery patient, who has a “halo” attached to his or her head, can receive massage therapy while sitting in a chair. Massage therapy may be just the beginning, with additional research projects and other therapies to follow. “We are looking into a full complement of alternative medicine options for the new cancer center,” Dr. Cathcart notes. ■

## Donors Making a Difference

The growing success of New Jersey Medical School would not be possible without strong support from philanthropic organizations, the community and many generous individuals. In Fiscal Year 2003, the Foundation of UMDNJ received a total of \$6,274,223 in gifts to benefit New Jersey Medical School, including the largest single gift ever received from an alumnus of a UMDNJ school. Together, these gifts are making a difference as NJMS broadens its educational offerings, expands its research capabilities and provides top-quality patient care and services. All gifts, whether large or small, are an investment in the future of healthcare in New Jersey.



*Frederick F. Buechel Sr., MD*

### Alumnus Teaches Lesson in Giving

Since graduating from NJMS in 1972 and the orthopaedics residency program in 1976, Frederick F. Buechel Sr., MD, has had a distinguished career. The award-winning inventor and surgeon travels the world, giving lectures and surgical demonstrations of the New Jersey LCS Total Knee Replacement System, of which he is co-inventor.

Despite his international reputation, the NJMS clinical professor of orthopaedic surgery has not forgotten his roots. In 2003, he gave the largest single gift ever received from a UMDNJ graduate — \$2 million to the NJMS Department of Orthopaedics to create the Frederick F. Buechel, MD, Chair for Joint Replacement. “My wish is for the Buechel Chair holder to push the frontiers of human joint replacement research into practical, clinical applications,” Dr. Buechel says.

To encourage scientific exchange and research collaborations, the Buechel Chair will work with the New Jersey Institute of Technology (NJIT) to establish the Buechel-Pappas Biomechanical Engineering Liaison — a partnership between the NJMS Department of Orthopaedics and the departments of Biomedical Engineering

and Mechanical Engineering at NJIT. The program encourages collaboration in the same way that Dr. Buechel, as an orthopaedic surgical resident at NJMS, sought assistance from his NJIT biomechanics professor, Michael Pappas, PhD, in constructing a prosthetic ankle. Since then, the two have received more than 100 patents for implants and instruments related to replacement ankles, hips, shoulders, knee and finger joints. Both men were also inducted into the New Jersey Inventors Hall of Fame.

The endowment also establishes the Buechel-Pappas Award for Outstanding Biomedical Engineering Research, which will be presented every other year to a surgeon-engineer team from the two schools. The endowment allows for the establishment of a clinical research unit on the Newark campus to promote cutting-edge research.

### A Humanistic Approach

For today’s patients, finding physicians with well-documented medical and scientific expertise is a priority. But patients also voice concerns about physician professionalism, integrity and the ability to deliver compassionate care.

With the help of the Healthcare Foundation of New Jersey (HFNJ), New Jersey Medical School will become the first school in the nation to establish a center dedicated to the humanistic practice of medicine. The goal of the Healthcare Foundation of New Jersey Center for the Humanistic Practice of Medicine is to support the education of medical students dedicated to providing culturally competent, compassionate and humanistic care to New Jersey’s increasingly diverse patient population.

HFNJ has awarded \$3.2 million to NJMS to establish the center and a scholarship program; it is the largest grant ever awarded by the foundation. A \$2 million endowment will be created to sustain the center’s growth and development. Faculty associated with the center will develop a wide range of learning opportunities for all residents and medical students affiliated with NJMS. Learning opportunities will explore behaviors, attitudes and approaches to patient care, colleagues and the practice of medicine.

*continued on page 34*

continued from page 33

The remaining \$1.2 million will be awarded over four years to create the HFNJ Scholar Program. In addition to providing scholarship funds to 10 students, the unique program will offer recipients a variety of ongoing enrichment and leadership development programs involving seminars, preceptorships, one-on-one mentoring, original research and community service projects. To further supplement the scholars program in future years, NJMS will match the \$1.2 million gift.

### Promoting Scholarship

This year, NJMS alumni and other friends of the school and UMDNJ were quick to support a new endowed scholarship program to benefit students. By making a gift of \$25,000 or more, donors can name their scholarship, select the school to which it will be allocated and even help determine criteria for recipients. Earned income from the endowment is awarded in perpetuity. To date, \$875,000 has been contributed to UMDNJ schools; \$600,000 of which was designated for NJMS students. Included in that amount is a \$250,000 gift made by the NJMS Alumni Association.

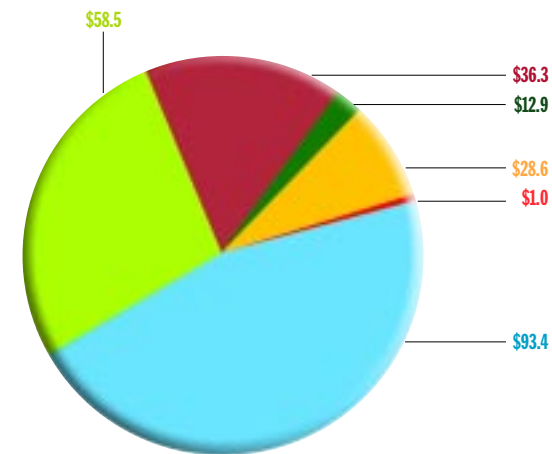
While the reasons for giving vary, many donors express a desire to give back to the school that gave them their start. "Supporting the NJMS scholarship program was a natural decision because of the support that I received as a medical student to meet my educational goals," notes Gerard Malanga, MD '87, associate professor of physical medicine and rehabilitation. "I hope that the personal satisfaction I feel from my achievement is duplicated for years to come by deserving medical students." ■

For more information or to find out how you can make a difference at NJMS, please visit [www.umdnj.edu/foundweb](http://www.umdnj.edu/foundweb) or contact the Foundation at 973-972-4264.

## Financial Overview

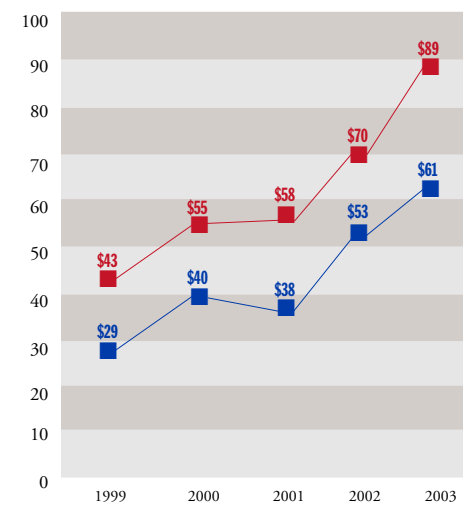
FY '03 Revenue by Source

Total Revenue \$231  
(in millions)



- Tuition and Fees
- State Appropriation
- Gifts and Endowment Income
- Grants and Contracts
- Practice Plan
- University Hospital

Externally Sponsored Awards  
(in millions)



- Total Externally Sponsored Awards
- Federal Awards (including NIH)

## Growing Our Campus

### New Cancer and Ambulatory Care Centers Take Shape

In 2003, two new foundations for New Jersey Medical School's future went from blueprints to construction. Work began on the New Jersey Medical School-University Hospital Cancer Center and the Ambulatory Care Center.

On the former site of University Behavioral HealthCare (which relocated in 2002) the footings and foundation have been set for the \$100 million, nine-story Cancer Center. In addition to providing patient care and education, the center will focus on reducing cancer incidence, mortality and morbidity among minority populations. Connected to University Hospital on three levels, the center will feature welcoming clinical and treatment areas, highlighted by healing gardens and atriums. The upper floors will house high-tech research laboratories and administrative offices. Construction will continue throughout 2004, with an expected opening in late 2005.

Not far from this site, steel has been erected on the six-story Ambulatory Care Center at the front entrance of University Hospital on Bergen Street. This outpatient center, scheduled for completion by the end of 2004, boasts 183,000 square feet of space for hospital clinics and faculty practices. Adam Henick, vice president of Ambulatory Care Services, notes that the center will increase outpatient care capacity by one-third, up to an estimated 400,000 visits each year. "We will be able to dramatically increase the number of community members we serve in a beautiful, caring environment," he says. ■

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*Cell Biology and Molecular Medicine*

Carol S. Newlon, PhD  
*(Interim) Microbiology and Molecular Genetics*

Andrew P. Thomas, PhD  
*Pharmacology and Physiology*

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*Neurology and Neurosciences*

Stanley Cohen, MD  
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Newark, NJ 07101-1709

University Behavioral HealthCare  
Newark Campus  
183 South Orange Avenue  
PO Box 1709  
Newark, NJ 07101-1709

Department of Veterans Affairs  
New Jersey Healthcare System  
385 Tremont Avenue  
East Orange, NJ 07018-1023

Kessler Institute for Rehabilitation  
1199 Pleasant Valley Way  
West Orange, NJ 07052-3327  
■ East Facility: East Orange  
■ North Facility: Saddle Brook  
■ West Facility: West Orange  
■ Welkind Facility: Chester

Hackensack University  
Medical Center  
30 Prospect Avenue  
Hackensack, NJ 07601-1980

**O U R M I S S I O N**

The mission of New Jersey Medical School is to educate students, physicians and scientists to meet society's current and future healthcare needs through patient-centered education; pioneering research; innovative clinical rehabilitative and preventive care; and collaborative community outreach.

**O U R V I S I O N**

The vision of New Jersey Medical School is to create, transmit and utilize knowledge to shape the future of medicine and to enhance the quality of life for the people of New Jersey.

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