



2005 ANNUAL REPORT

UNIVERSITY OF MEDICINE & DENTISTRY OF NEW JERSEY

NEW JERSEY MEDICAL SCHOOL

DEFINING THE FUTURE OF MEDICINE

C O N T E N T S

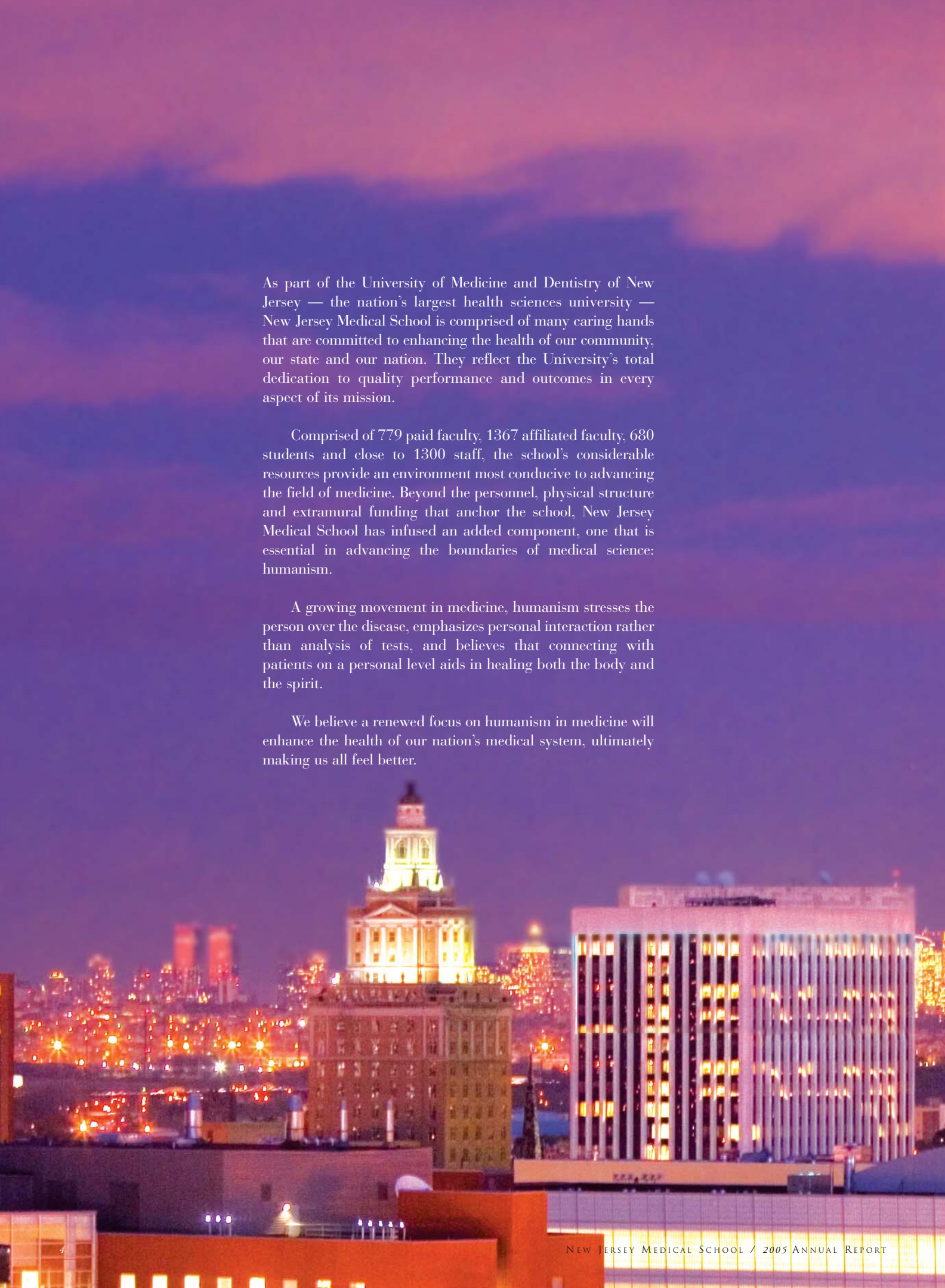
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O U R M I S S I O N

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.



As part of the University of Medicine and Dentistry of New Jersey — the nation's largest health sciences university — New Jersey Medical School is comprised of many caring hands that are committed to enhancing the health of our community, our state and our nation. They reflect the University's total dedication to quality performance and outcomes in every aspect of its mission.

Comprised of 779 paid faculty, 1367 affiliated faculty, 680 students and close to 1300 staff, the school's considerable resources provide an environment most conducive to advancing the field of medicine. Beyond the personnel, physical structure and extramural funding that anchor the school, New Jersey Medical School has infused an added component, one that is essential in advancing the boundaries of medical science: humanism.

A growing movement in medicine, humanism stresses the person over the disease, emphasizes personal interaction rather than analysis of tests, and believes that connecting with patients on a personal level aids in healing both the body and the spirit.

We believe a renewed focus on humanism in medicine will enhance the health of our nation's medical system, ultimately making us all feel better.







Medical schools represent a combination of many strong traditions: teaching, healing, learning and discovery. New Jersey Medical School spent 2004, our Jubilee year, celebrating the success of our first 50 years and our distinct heritage.

During 2005, we have worked to define not only the school's future, but the future of medicine as well. As an institution, and indeed, as individuals, we have embraced humanism as a central component of our approach to medicine. By subscribing to the principles of humanism, we are restoring the tradition of caring and compassion to the field of medicine.

This year's annual report highlights how our latest endeavors reflect a humanistic approach to medicine in all facets of our school. Our commitment is evident in each of our mission areas of education, community outreach, clinical care and research.

From cloaking incoming medical students in their first white coats, to seeking new ways to deliver care to those who need it most, to adopting innovative research methods that speed cures to patients, New Jersey Medical School is guided by the tenets of humanism: empathy, passion, respect, advocacy, service, collaboration, integrity and self-awareness.

By focusing on humanism, we are creating a new tradition and setting the standards for others to follow. We invite you to join us in our quest to define the future of medicine.

In Health,

A handwritten signature in black ink, appearing to read 'R. Johnson'.

Robert L. Johnson, MD, FAAP
The Sharon and Joseph L. Muscarelle Endowed Dean (Interim)
New Jersey Medical School



The white coat is a well-recognized and well-respected symbol of the medical profession, but at New Jersey Medical School, where humanism is not just taught but practiced, it also embodies a life-long commitment to compassionate care.

EDUCATING CARING PHYSICIANS

With great advances in medical technology and a broader understanding of disease, today's doctors have incredible resources at their fingertips. But an added dimension of physician practice must be more widely incorporated to further advance the profession. That dimension is the *human* dimension.

Just as Renaissance scholars looked to the Classical Greek and Roman philosophers to reinvigorate attention to humankind during the 15th century, today's medical community recognizes that a renewed focus on the human characteristics of patients — not the diseases themselves — is vital to advancing the profession. As training grounds for tomorrow's physicians, medical schools must foster the ideals of humanism in both medicine and society. New Jersey Medical School has taken a leading role in promoting humanism in education and, through a number of initiatives, is setting new standards in this growing movement.

THE HEALTHCARE FOUNDATION CENTER FOR HUMANISM AND MEDICINE

New Jersey Medical School has formalized its long-standing history of compassionate care into a keystone initiative, The Healthcare Foundation Center for Humanism and Medicine. Established in 2004 with a \$3.2 million grant from The Healthcare Foundation of New Jersey — the largest single grant ever awarded by the foundation — the center is the first of its kind. As the hub for humanistic activities on campus, the center promotes dignity and respect for the individual,

COAT OF HONOR

Since 1994, New Jersey Medical School has welcomed members of the incoming class with a moving rite of passage that marks the beginning of their four-year journey to become competent and caring physicians. The White Coat Ceremony, developed by the Arnold P. Gold Foundation in 1993, emphasizes the importance of compassionate care for patients as well as scientific proficiency in the delivery of healthcare. The foundation was established in 1988 by Arnold P. Gold, MD, his wife, Sandra O. Gold, EdD, Norman Seiden and several others to nurture and preserve the tradition of the caring physician. New Jersey Medical School was the second medical school in the country to institute a White Coat Ceremony.

In August, 170 students were cloaked with their first white coats during the Barbara and Norman Seiden White Coat Ceremony. Students also received *On Doctoring*, a collection of poems, stories and essays that share a common theme of humanism. As a class, the students then recited the Hippocratic Oath, a creed that they will once again recite at their final class gathering in four years: Convocation.

According to Pamela Hoffman, Class of 2007, the ceremony is of great significance to students. "Humanism in medicine is not that difficult to understand," she says. "But living up to the ideals should be an important lifelong goal, as a physician and a person."

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RAISING THE BAR: ONGOING RECOGNITION ELEVATES THE STANDARDS OF HUMANISM

the Gold Humanism Honor Society seeks to promote humanistic values and behaviors and to transform the culture of medicine. Students, who are selected for membership at the beginning of their fourth year, are evaluated on their academic and clinical experiences. New Jersey Medical School first inducted students in 2003. Nominated by faculty, residents and students, Gold Humanism Honor Society members serve as exemplars for the student body. The graduating Class of 2005 included 39 Gold Humanism Honor Society members, more than one fifth of the class.

"We are looking for students with outstanding personal and interpersonal characteristics such as honesty, integrity, empathy and compassion," says Constancia Uy, MD, acting associate dean for Student Affairs. Students are gauged on their interactions not only with patients, but with faculty, staff and fellow students. The nomination form includes a series of probing questions that help identify students who embody the highest standards. For example:

- Who would you like to have at your side during a medical emergency?
- Who has shown exceptional interest in service to special or underserved populations?
- Who would you want as your doctor or your loved one's doctor when bad news needs to be communicated?

The newest members of the Gold Humanism Honor Society are named in the late fall and formally recognized during Convocation. Biennial conferences sponsored by The Gold Foundation sustain members throughout their careers, providing various presentations and workshops on effective communication, maintaining integrity and becoming effective change agents to improve the healthcare environment.

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commitment to the relief of patient suffering and the delivery of care that is kind, just and humble. It also serves as a touchstone for education, research, clinical practice and community outreach activities that embody the principles of humanism.

In 2004, the center named four Humanism Scholars to pursue humanistic endeavors as part of their New Jersey Medical School education while serving as role models for fellow students; in the second year, seven additional scholars were named. As a group, these scholars develop and implement programs and other opportunities for the entire student body. During an orientation session for first-year students in August, scholars Neil Fernandes, Gopal Patel, Roger Rivera and Shante Aris-Williams, all from the Class of 2008, shared personal experiences reflecting a humanistic approach to medicine. The discussion was facilitated by David Stern, MD, PhD, associate professor of internal medicine and medical education at the University of Michigan Medical School, and a noted scholar on the development and assessment of professional behavior of physicians.

According to Dorian Wilson, MD, the center's director and an assistant professor in the Department of Surgery, "As more students experience and become aware of humanistic principles, that momentum will spark a growing cadre of humanistic physicians. As an overt mechanism for effecting social change, the center is poised to alter not only how students experience their medical education but to impact the way that they go on to practice medicine."

T A NEW CURRICULUM

The 2004-05 academic year marked the inauguration of the Jubilee Curriculum. Named in recognition of the school's 50th anniversary, the new curriculum represents a comprehensive modification in both content and content delivery. The curriculum, developed collaboratively over a one-year period, received unanimous school-wide approval.

The enriched curriculum includes several new goals: demonstration of clinical excellence; mastery of clinical knowledge and basic science integration; demonstration of professionalism and humanism; appreciation and commitment to community and cultural diversity; dedication to lifelong learning; and the development of effective educators and communicators.

Students from the Class of 2008 (the first class to follow the new curriculum) benefit from several



Students at New Jersey Medical School begin clinical encounters as early as their first month of medical school, learning the tenets of compassionate care from faculty practicing at the medical school as well as community physicians who volunteer their time as mentors. Here, Dorian Wilson, MD, assistant professor, Department of Surgery, monitors the progress of his patient Allen Sanford as first-year student Jennifer Hughes and second-year student Gopal Patel observe.

innovations. A reduction in lecture hours and exams in favor of small group interactive teaching provides more time for independent study, and offers a way to solidify learning through peer discussions. The integration of basic and clinical science allows students to better apply and assimilate classroom knowledge in clinical settings. The creation of inter-departmental courses in the basic science years also results in a more cohesive curriculum. During a new two-year longitudinal course, the Physician's Core, students learn the fundamentals of doctoring.

T **GETTING TO THE CORE OF DOCTORING**
he cornerstone of the curriculum is in fact the Physician's Core. While close to half of the country's 125 medical schools now offer a doctoring course, New Jersey Medical School is

one of only a few schools to devote an entire day each week for two years to the academic and clinical aspects of ethics, humanism, professionalism, cultural competency, medical-legal issues and the doctor-patient relationship.

Each module lasts between two and four months. For one half-day each week, students attend lectures or presentations concerning their module topic, then break out into small discussion groups facilitated by faculty. This participatory, problem-based approach provides students with opportunities to learn from both faculty and their peers, fostering a strong sense of collegiality that hopefully extends into the students' professional practices. "Moving from a passive learning environment to an active one seems to have energized students," notes Linda Boyd, DO, director of Pre-Clerkship Clinical Education, who developed the Physician's Core.

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Small group discussions help students integrate classroom knowledge with clinical experiences by creating an active learning environment. engages students in a discussion of pregnancy and thyroid disease.

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The other half-day is spent in a clinical setting, working with a practicing physician who serves as a volunteer preceptor. After a one-month introduction to taking patient histories and conducting physical exams, first-year students start their preceptorships and begin building their clinical experience. Students spend the entire year working with the same physician, completing approximately 18 half-day sessions. According to Dr. Boyd, medical students at most other schools do not enter clinical settings until the spring semester of the second year. “We believe that the added clinical experience in the first year reinforces classroom learning, leading to better trained physicians,” says Dr. Boyd.

The most significant innovation of the Physician’s Core is the seamless integration of classroom and clinical experiences. For example, students studying the biochemistry of glucose can better understand a clinical manifestation of diabetes, while a lecture on cholesterol takes on new meaning when a student meets a patient with heart disease. When combined with discussions regarding humanism in medicine, students also gain

greater insight into how to discuss these health issues with future patients.

At the end of the first year, students’ clinical skills are put to the test during an Objective Structure Clinical Examination (OSCE) with standardized patients — actors who work with medical schools to portray patients with varying symptoms. The exam is conducted in New Jersey Medical School’s state-of-the-art Clinical Skills Training Center. The center’s 12 exam rooms feature advanced video monitoring systems that allow faculty to observe and record encounters so that they can provide feedback to students. This year, standardized patients reported that the first-year students who treated them exhibited clinical skills that were more advanced than some third-year students from other schools — a sure sign that the Physician’s Core is providing quality medical education.

Early feedback from the Class of 2008 indicates that the Physician’s Core is valuable to students. Stefanie Brown, MD, assistant professor in the Department of Medicine, believes that how students learn ultimately affects how they practice. In 2004, she



Alex Stagnaro-Green, MD, associate dean for Curriculum and Faculty Development and professor of Medicine and Obstetrics, Gynecology and Women's Health,

began a longitudinal study to assess if the Jubilee Curriculum has positively shaped students' perceptions regarding the field of medicine and helped them to maintain the enthusiasm, quality of life and idealism they display before beginning medical school. Students from the Class of 2008 were surveyed during orientation and again after their second semester about how they perceived their quality of life and about their impressions of the school's basic science and clinical programs. The results, when compared to results of the Class of 2005, were encouraging. "Integration of basic sciences with clinical experiences has improved how students perceive the quality of their basic science education," explains Dr. Brown. Students also report that their quality of life has not been negatively affected since starting medical school, an indication that the changes in the curriculum have had their desired effect. Ongoing evaluation will indicate how New Jersey Medical School's broad curriculum is shaping the future of medicine.

"We are teaching the core of what every physician should know in order to be a good doctor," says Dr. Boyd. "By focusing on the ideals of medicine, we hope

to provide students with the strength to be the doctor that they want to be. The Jubilee Curriculum is part of an important culture shift and it will take time before what we are teaching becomes the norm. Our students are setting that new standard, and we must do everything we can to make them successful."

P **LCME ACCREDITATION AFFIRMS MISSION**
 erhaps the most significant accomplishment for the school this year is a favorable review by the Liaison Committee for Medical Education, the accrediting authority for medical education programs. After perusing an extensive database and a comprehensive self-study report and completing a site visit, the review committee voted to continue the school's accreditation for another eight years, the highest level of accreditation.

In its review, the LCME team identified a number of institutional strengths at New Jersey Medical School: a senior staff committed to medical education that has allocated substantial resources to

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support program improvements, including the recruitment of a dynamic and talented group of associate deans; accessible and supportive student services departments; a commitment to community service by both faculty and students; a diverse student body; and increased research efforts as a result of growing NIH extramural funding.

Areas to which the school will continue to devote its energies include developing greater consistencies in clerkships, enhancing the clerkship evaluation process, and developing a formal counseling program for residency selection and career choices. The next review is scheduled for the 2012-13 academic year.

S **TEACHING CULTURAL COMPETENCY** ituated in Newark, the state's largest city with a concentrated minority population, New Jersey Medical School has long understood that a connection between healthcare delivery and cultural understanding is necessary to ensuring a healthy community. One of the goals of the Jubilee Curriculum relates to cultural competency, an awareness of patients' cultural beliefs and background that can impact health outcomes, improve relationships with patients and even enhance patient compliance. In order to graduate, students at New Jersey Medical School are expected to demonstrate the ability to obtain patient histories and conduct physicals that accommodate patients' varied belief systems; demonstrate cultural and linguistic competency; and demonstrate the ability to develop treatment plans that accommodate all patients' cultural, social and economic needs.

"The goal is to understand that culture is both a group dynamic and an individual set of beliefs and values," says Linda Boyd, DO, director of Pre-Clerkship Clinical Education. Students learn that there is no "cookbook" recipe for dealing with one particular culture. Instead the importance of understanding each patient as an individual is emphasized, echoing the tenets of humanism. The need for culturally competent physicians is increasingly evident considering that by 2050, the proportion of the population classified as non-Hispanic white will drop from 71 percent to 53 percent, according to the United States Census Bureau.

F **THE CENTER FOR MULTICULTURAL HEALTHCARE COMMUNICATIONS**

rom a clinical perspective, New Jersey Medical School has led efforts to create and

New Jersey Medical School Admissions By the Numbers

Incoming Class	170
Males	86
Females	84
 New Jersey Residents	 141
Out-of-State Residents	29
 Average Age of Incoming Students	 26
Youngest	19
Oldest	41
 Underrepresented in Medicine (Black, American Indian, Hispanic)	 53
Caucasian	64
Asian Indian	32
Chinese	7
Korean	6
Filipino	4
Vietnamese	1
Unidentified	3

provide quality healthcare to patients who are not fluent in English so that they are able to communicate with physicians. Through funding from The Robert Wood Johnson Foundation, New Jersey Healthy Initiatives, Debbie Salas-Lopez, MD, MPH, division chief of Academic Medicine, Geriatrics and Community Programs in the Department of Medicine, created The Center for Multicultural Healthcare Communications. The center's core program trains bilingual hospital employees in medical interpretation and cultural competency. These employees are trained as medical interpreters to work with patients that are limited in English proficiency. The use of interpreters reduces the likelihood of misinterpretations between doctors and patients that could compromise the quality of healthcare services. Since its inception, the center has trained 94 interpreters in 16 languages, including sign language. They currently serve in all areas of University Hospital including clinics, hospital wards and physician practices.

This training program, "Bridging Language and Culture in Healthcare Communications," is currently being used at University Hospital as a cost effective way to bridge the language and cultural gap. Dr. Salas-Lopez is working with other national experts to develop best practices for training of bilingual healthcare employees. The New Jersey Department of Health and Senior Services Office of Minority and Multicultural Health helped fund this project, representing an important step toward ensuring that all New Jersey residents receive high quality healthcare regardless of their language.

C **CULTURAL COMPETENCY – IT'S NOW THE LAW**

cultural competence has gained attention as a potential strategy to improve quality and eliminate racial/ethnic disparities in healthcare. Cultural competence is defined as the ability of systems to provide care to patients with diverse values, beliefs and behaviors including tailoring delivery of care to meet patients' social, cultural, and linguistic needs. The ultimate goal is a health care system and workforce that can deliver the highest quality of care to every patient, regardless of race, ethnicity, cultural background or English proficiency. Fundamentally, cultural competence is the assimilation and transformation of knowledge about individuals and groups of people into specific standards, policies, practices and attitudes used in suitable cultural settings to augment the quality of services, thereby producing better healthcare outcomes.

Cultural competence has emerged as an important issue for three practical reasons. First, as the United States becomes more diverse, clinicians will increasingly see patients with a broad range of perspectives regarding health, often influenced by their social or cultural backgrounds. For instance, patients may present their symptoms quite differently from the way they are presented in medical textbooks. They may have limited English proficiency, different thresholds for seeking care or expectations about their care, and unfamiliar beliefs that influence whether or not they adhere to providers' recommendations.

Second, research has shown that provider-patient communication is linked to patient satisfaction, adherence to medical instructions and health outcomes. Thus, poorer health outcomes may result when sociocultural differences between patients and providers are not reconciled in the clinical encounter. Ultimately, these barriers do not apply only to minority groups but may simply be more pronounced in these cases. Finally, two landmark Institute of Medicine (IOM) reports — *Crossing the Quality Chasm* and *Unequal Treatment* — highlight the importance of patient-centered care and cultural competence in improving quality and eliminating racial/ethnic health care disparities.

Presently, cultural competence training is a critical area of interest to regulatory bodies and policy makers in charge of overseeing the operations of healthcare institutions. For example the Liaison Committee on Medical Education (LCME), which accredits programs of medical education leading to MD degrees, and the Accreditation Counsel for Graduate Medical Education, which evaluates and accredits medical residency programs in the United States, have established guidelines and standards requiring medical students, residents and faculty to receive cultural competence training.

Recently, the State of New Jersey recognized the importance of patient-centered care and cultural competence in improving quality care and eliminating racial/ethnic health disparities. On March 23, 2005 New Jersey became the first state to require all physicians to complete cultural competency training as a condition of licensure or re-licensure. Now, as a result of this legislation, physicians will be provided with educational programs to help them keep abreast of the necessary knowledge, skills and attitudes they need to care for New Jersey's diverse population. ■



New Jersey Medical School's community encompasses not only the city of Newark, but the state, nation and world as well.



ENHANCING THE HEALTH OF THE COMMUNITY

As an institution committed to public health, New Jersey Medical School devotes considerable resources to serving the community. As early as their first year, students engage in community service activities facilitated by a student organization called SHARE — Student Health Advocates for Resources and Education.

The comprehensive nature of the SHARE program is a testament to the commitment students have for health education and disease prevention. Each year, as many as 40 students volunteer their time to provide vision screenings, staff health fairs, mentor at-risk youth and, under the supervision of New Jersey Medical School faculty, administer free medical care to uninsured and underinsured patients.

Faculty are particularly skilled at effecting collaborative partnerships aimed at enhancing the health of the community at every stage of life from improving immunization rates of children to ensuring that seniors receive prompt cancer screening, diagnosis and treatment.

IMPROVING CHILDHOOD IMMUNIZATION RATES

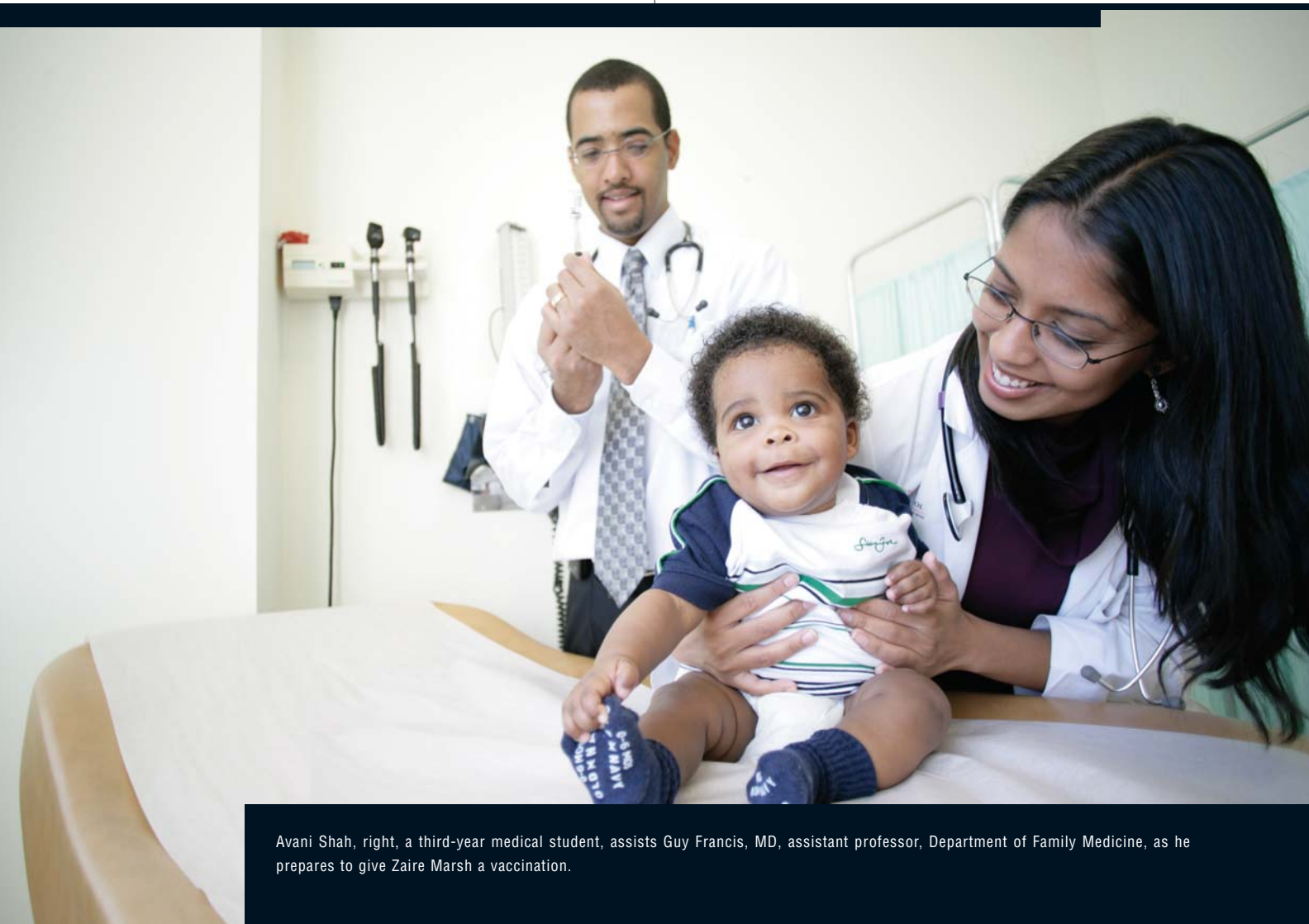
Childhood immunizations play an important role in keeping children healthy. But in urban areas, circumstances often prevent many children from being fully immunized in a timely manner. Scheduling challenges for working and single parents,

FACILITATING CANCER SCREENING FOR SENIORS

Recently, the Center for Medicare and Medicaid Services (CMS) requested applications from the medical community for cancer screening and facilitation diagnosis programs that would benefit minority Medicare patients. Ana Natale-Pereira, MD, MPH, assistant professor, Department of Medicine, developed a plan to facilitate cancer care for elderly Latinos in Newark. Her goal is to reduce disparities in screening while accelerating the timetable for receiving diagnosis and treatment services. Collaborators include University Hospital, the New Jersey Medical School-University Hospital Cancer Center, The Institute for the Elimination of Health Disparities, the Department of Family Medicine and three community-based organizations in Newark. The proposed \$2.8 million budget spans four years.

Dr. Natale-Pereira is currently involved in a CMS-funded program to assess the colorectal cancer knowledge base of Newark's minority population. The information will help develop materials that community leaders can use to share health information, thereby increasing colorectal cancer screening rates. This project is a partnership with Leadership Newark, an organization dedicated to engaging community leaders.

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Avani Shah, right, a third-year medical student, assists Guy Francis, MD, assistant professor, Department of Family Medicine, as he prepares to give Zaire Marsh a vaccination.

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changing or lapsed insurance coverage, frequent vaccine shortages and prioritizing limited financial resources all play a role in determining whether a child receives up to 20 vaccinations against 11 serious infectious diseases before age 3. A measles outbreak in Newark in the early 1990s brought the issue to the forefront of public health initiatives, and a coalition of community organizations joined together to ensure timely, age-appropriate immunizations for all children in Newark.

Project Vaccinate, established in 1998 with grant money from the Centers for Disease Control, brings together New Jersey Medical School, the Newark Department of Health and Human Services and community-based organizations to educate the public concerning the importance of timely immunizations. Peter Wenger, MD, associate professor, Department of Preventive Medicine and Community Health, serves as

medical director. He divides his time between community outreach, speaking before various community groups about the importance of timely immunizations, and professional training for healthcare providers, particularly the front line staff who direct clients to places to receive immunizations.

The premise is simple: connect with families in locations where they are already receiving services to improve on-time vaccination rates. For example, many women visit the WIC (Women, Infants, Children) center on the Newark campus of to obtain food vouchers. Project Vaccinate staff in these types of locations are trained to inquire about the immunization status of clients' children and to provide appropriate information in response.

As a result of this coalition, immunization rates for Newark children increased 25 percent between 2001 and

2004. But as Dr. Wenger points out, new children are born to Newark residents every day, underscoring the programs' continued importance.

"We are working in a constantly changing environment," Dr. Wenger explains. "While a simple solution to eradicating the health disparities that impact on-time vaccination may not exist, the value of Project Vaccinate lies in the fact that we now possess an inherent understanding of the challenges of urban living and its impact on public health. Having an infrastructure in place that takes those issues into account will pave the way to a healthier future for children."

J STRATEGIES FOR REDUCING YOUTH VIOLENCE AMONG TEENS

Just as immunizing children is of particular importance in urban areas, so is protecting older children — adolescents and teenagers — from youth violence. In 2005, a survey of New Jersey municipal police departments estimated the state's gang population at 17,000. Often acting as surrogate families, gangs provide members with a sense of belonging, a hierarchy and specific rules of conduct — psychological needs that are often not met at home. Robert L. Johnson, MD, FAAP, The Sharon and Joseph L. Muscarelle Dean (Interim), professor and chair, Pediatrics, is a nationally recognized expert on youth violence who chaired the National Institutes of Health's Adolescent Violence Committee in 2004. The panel determined that scare tactics and increased law enforcement do not dissuade youth from joining gangs.

"We need to find more and better ways to strengthen families and communities so that kids do not need to seek the 'family' support of a gang," says Dr. Johnson.

The Pediatric Department's Division for Adolescent and Young Adult Medicine has gained a national reputation for its expertise in adolescent and young adult health care and is the only comprehensive and inner-city-based program in the state. The division hosts a support group for parents where participants can share information about the issues they face and learn strategies for building and enhancing family bonds.

"Parents or similar role models provide the most important intervention and prevention entity in the life of a child. Building a stronger family may save a child from becoming a victim of gang-related violence," says Dr. Johnson.

But it may also serve the broader community as well. One-fifth of all murders in the state of New Jersey

are gang-related; homicide rates among 15- to 19-year-old African-American males are also on the rise.

"Keeping teenagers out of gangs keeps other people safe, too," says Dr. Johnson.

P BRINGING HEALTHCARE TO THE COMMUNITY

Partnerships with other community-based organizations are focusing on innovative, efficient and convenient ways to deliver care.

Through a relationship with the St. James African Methodist Episcopal Church, New Jersey Medical School operates the University Center for Family Medicine on the campus of the St. James Preparatory School. Congregants and employees of St. James comprise part of the patient base, and over the past two years word of mouth has attracted additional community members to the flourishing practice. The center also provides care for the students at the school.

According to Mark Johnson, MD, professor and chair, Department of Family Medicine, the center provides an opportunity for innovative practice methods in an inviting and trusting setting, and serves as a model for other community-based healthcare initiatives.

Guy Francis, MD, the center's medical director and assistant professor, Department of Family Medicine, works full-time at the center which is attached to the school facility. Judy Washington, MD, assistant professor, Department of Family Medicine, spends two days a week at the center seeing predominantly female patients. As a family practice, the center offers primary care as well as preventive care including check-ups, physicals and health screenings.

Dr. Washington believes that identifying with a healthcare provider is important to her patients. A native of Alabama, her knowledge of Southern cooking is particularly handy when counseling patients about proper eating habits.

"Many of my patients simply don't know how or what to cook," she says. "Consequently, they eat a tremendous amount of fast food. Also, food shopping can be a challenge, particularly when people depend on public transportation."

Understanding the root cause of diseases like hypertension, diabetes and obesity — conditions prevalent among the center's predominantly African-American patient base — is critical in helping her patients lead healthier lives. This cultural awareness enhances the delivery of appropriate care for her patients. It also serves to enhance the "family" part of family practice.

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Valentina Orellano, left, and three generations of her family rely on New Jersey Medical School to stay healthy, from her grandson Joshua LaBoy, center, to her sister and brother-in-law Maria and Louis Roman, right, to her mother, Rosa Flores, second from left.

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“I feel that we are steadily gaining the trust of our patients and the community,” says Dr. Washington. “We have to let the community know that we are here to take care of them.”

To that end, Dr. Washington and Dr. Francis conduct many local educational programs. In April 2005, Dr. Washington formed a women’s weight loss support group. The safe and secure environment has helped all of its members lose weight. Dr. Francis devotes much of his time to prostate cancer screenings at churches and other community-based organizations, and sets aside one day a week for free screenings at the center.

Dr. Francis also works with University Hospital and UMDNJ’s Institute for the Elimination of Health Care Disparities to engage and train area barbers as health educators for their customers. Most men visit a barber regularly and are captive audiences while sitting in the barber’s chair. The program, called the Barbershop Initiative, was created in 2004 by a non-profit group called The Prostate Net.

“We know that the mortality rate from prostate cancer among African-American men is much higher than for whites and Hispanics so increased outreach is critical,” says Dr. Francis. “It’s all about helping people.”

IRONBOUND COMMUNITY CORPORATION
 Another successful community health collaboration involves the Ironbound Community Corporation (ICC), a non-profit organization that operates programs and services that improve the quality of life for Newark residents. This past year, a New Jersey Medical School nurse practitioner stationed part-time at the ICC Community Center provided free health education and health screening services. She also served as a liaison, connecting clients with additional health services provided at New Jersey Medical School and University Hospital.

This innovative approach to care combines the expertise of both community-based organizations and healthcare providers, facilitating the delivery of care to



Nicole and Hassiem Furr have grown closer thanks to support they received through the Brotherhood Health Initiative, a program coordinated by the Pediatric Department's Division of Youth and Adolescent Medicine.

those who may find it challenging to seek medical attention from traditional practice sites.

The next step in this collaboration will be to expand the health practitioner's role, making primary and secondary preventive care services available at the center. Primary prevention services include health education, health promotion and disease prevention. The goal is to increase immunizations rates, promote smoking cessation and reduce risk factors before diseases start. Secondary prevention services, which identify diseases early on and help prevent exacerbation, include medical exams, diagnostic screenings and check-ups.

"People with limited resources may not prioritize preventive health," says Dr. Natale-Pereira. "This approach to care offers community residents a convenient way to be proactive in maintaining good health in a familiar setting, ultimately improving the quality of their lives."

In addition to expanding the scope of the on-site healthcare services, New Jersey Medical School plans to further develop this model through collaborations

with other community-based organizations including La Casa de Don Pedro and the New Community Corporation.

Perhaps the most important part of this initiative is education, says Dr. Natale-Pereira. Delivering the necessary health information to patients enables them to understand why adopting a certain behavior will be beneficial to them.

"We are applying a behavioral health theory model using the stages of change as a framework," she says. "Patients must believe that the things that we ask them to do will make a difference to their health. Education is critical to improving health because it can increase compliance and even prevent disease in the first place."

The collaboration also provides medical students with opportunities to work in a diverse community and experience the realities of providing healthcare in an urban setting.

"With all the great advances in medicine, we have yet to translate this knowledge to all of our communities,

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particularly the urban and rural ones,” says Dr. Natale-Pereira. “Through community-based partnerships that focus on health education, medical schools are perfectly positioned to bridge that gap.”

A BREATHING BETTER WITH INNOVATIVE ASTHMA CARE

According to the Centers for Disease Control, asthma accounts for 14 million days of school missed annually and is the third-ranking cause of hospitalization among those younger than 15. The estimated cost of treating asthma in those younger than 18 is \$3.2 billion per year.

Among urban dwelling children, the incidence of asthma is higher than their suburban counterparts due to increased exposure to indoor allergens including second-hand smoke, cockroach and dust-mite allergens, mold, pets and nitrogen dioxide, a by-product of gas stoves and space heaters.

To help children — and their families — breathe more easily, New Jersey Medical School established the Sanofi-Aventis Pediatric Asthma Program in 2004. Using a holistic approach to care, the center employs nurse case managers to coordinate the many aspects of asthma control and prevention. The relationship between doctor and patient is complemented by the support of family members, school nurses, pharmacists and insurance companies, all of whom play a critical role in proactively managing the disease. This approach can also reduce exacerbations of the condition leading to emergency room visits.

In addition to providing an innovative approach to asthma care, New Jersey Medical School is the only institution in New Jersey with a state-of-the-art diagnostic tool, the NIOX, which measures a patient’s output of nitric oxide to determine the effectiveness of prescribed drugs.



Thanks to innovative asthma care and management support provided by the Sanofi-Aventis Pediatric Asthma Center at New Jersey Medical School, children can fully enjoy their childhood.

S **COMING TOGETHER FOR THE COMMUNITY**
eptember also marked the beginning of a partnership between the Newark Department of Health and Human Services and New Jersey Medical School to provide specialty care for uninsured children affected by asthma, diabetes and obesity at the Health Department's William Street office. The arrangement establishes a satellite location of the Sanofi-Aventis Pediatric Asthma Program, providing area residents with another site from which to receive services. This is the first time specialty care is being offered at the center. While asthma care is the initial specialty service being offered, the long-term goal is to also include the management of other health issues such as diabetes and obesity.

According to Deborah Johnson-Rothe, MD, FAAP, associate dean for Clinical Enterprise, "The traditional primary care physician model does not work in this patient population. People get lost in the system when you send them somewhere unfamiliar for specialty care.

We have to establish relationships that we can build upon to improve the health of the community."

Catherine Cuomo-Cecere, Newark's director of health, agrees. "The health disparities in the city of Newark, and in any major city, make it incumbent upon the providers of care to find ways to attract people to service delivery sites."

Ms. Cecere and Dr. Johnson, the architects of this innovative partnership, share a common goal: to improve and maintain the health of the community's children. "They are, quite simply, our future," says Dr. Johnson.

Isabel Gonzalez, MD, a graduate of New Jersey Medical School, serves as the director of pediatrics for the center and is a member of her alma mater's faculty. "This rare partnership between a medical school and a city department of health truly embraces the mission of public health," says Dr. Gonzalez. "We can positively impact thousands of children." ■



Barbara Tornichia's hair is now growing in after a successful course of chemotherapy she received under the care of Lillian Pliner, MD, assistant professor of Medicine in the division of Hematology/Oncology at New Jersey Medical School.

RESEARCHING CURES FROM BENCH TO BEDSIDE

Advances in care delivery systems are equally as important as advances in medical care itself. Research efforts at New Jersey Medical School focus on clinical and basic science as well as translational research. The school has designated eight Areas of Excellence to highlight disciplines that have a strong group of outstanding investigators and to foster interdepartmental and interdisciplinary collaboration at the school. The areas are Brain Injury and Stroke, Cancer/Oncology, Cardiovascular Biology, Cellular Signal Transduction, Immunology, Infectious Diseases, Neurosciences, and Psychiatry/Behavior Sciences. New Jersey Medical School received close to \$104 million in extramural support in 2004 — a 17 percent increase over the previous year — from the National Institutes of Health, the Centers for Disease Control and other federal agencies as well as private organizations. The NIH plays a key role in furthering the body of medical knowledge by providing grants to support medical research. In 2004, New Jersey Medical School received more than \$46 million in NIH support.

Recently, the NIH developed a roadmap for accelerating medical discoveries as a way to improve health.

INFECTIOUS DISEASE RESEARCH EFFORTS BOLSTERED

An important development in infectious disease research came in November with the announcement that the Public Health Research Institute (PHRI) would become part of NJMS. The Public Health Research Institute, an independent, not-for-profit research organization founded in 1941 by New York City Mayor Fiorello H. LaGuardia, moved to Newark in 2002 to join the International Center for Public Health (ICPH). Comprised of The New Jersey Medical School National Tuberculosis Center, the school's Department of Microbiology and Molecular Genetics and PHRI, the ICPH fosters interdisciplinary and interagency collaborations. These collaborations have attracted large federal grants, establishing Newark as a major center for infectious disease research.

As one of the few private research institutions focused on infectious disease research, PHRI is one of the world's leading centers for TB research, a distinction that will continue once the institute is part of a public university system. Dr. David Perlin, scientific director of PHRI, now called the PHRI Center at New Jersey Medical School, believes the change is important. "This evolution in PHRI's relationship with New Jersey Medical School ensures that the highly productive collaborations we have enjoyed over the years will be both preserved and enhanced in the future," he says.

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Researchers at New Jersey Medical School are looking for ways to speed new and better cures for patients, advances that put smiles on the faces of Barbara and Michael Tornichia.

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Translational research — research that can be quickly brought from the scientist's bench to the patient's bedside — plays a key role in meeting roadmap goals. This new trend in biomedical research relies on a growing cadre of scientists and physicians who actively conduct translational research. New Jersey Medical School's growing MD/PhD program and new PhD programs emphasizing translational and interdisciplinary research are being developed to build this pipeline.

T GENERAL CLINICAL RESEARCH CENTER ESTABLISHED

he school is also building an infrastructure to support translational and clinical

research projects, including the recently established General Clinical Research Center (GCRC) at University Hospital. Internally funded, the center currently consists of a two-bed unit, complemented by access to laboratories where highly specialized diagnostic tests can be conducted. A biostatistics core is available to investigators, with an informatics core under development. The GCRC is in the initial stages of development. The ultimate goal is to staff the facility with talented researchers, state-of-the-art equipment and other vital resources.

In 2005, the center hosted a variety of studies in areas such as sleep disorders, chronic fatigue syndrome and pediatric AIDS. As the GCRC grows, it will be able to accommodate additional studies that can help speed treatments and cures to patients not just in Newark, but across the country and around the world.

In 2006, New Jersey Medical School will submit a proposal to the NIH for extramural funding to assist in expanding the GCRC. Charles Kellner, MD, assistant dean for clinical research and GCRC program director, says, "Having a state-of-the-art clinical and translational research unit at New Jersey Medical School and University Hospital will be a major asset to the healthcare community of New Jersey. The school's research mission is growing dramatically and the GCRC is a key resource for our clinical investigators."

Today, approximately 80 GCRCs in major academic medical centers across the country form a prestigious network dedicated to bringing more and better treatments to patients as quickly as possible.

S UNDERSTANDING IMMUNE RESPONSE

Senior Associate Dean for Research William Gause, PhD directs research efforts at NJMS. He joined the school's Department of Medicine in 2004 as a University Professor, a designation given to highly accomplished research faculty who are leaders in their respective fields. Dr. Gause, an expert in the immunology of infectious disease, is currently studying the cell lineages and molecules that influence T-cell differentiation during early stages of the immune response to infectious pathogens. These differentiated T-cells orchestrate the developing immune response by secreting specific molecules called cytokines that regulate the strength and type of the immune response that develops. In this way T-cells tailor an immune response to optimally protect against the particular pathogen invading the body. Dr. Gause is

well-known for his seminal studies examining the development of T-cells producing the cytokine IL-4, which mediates protective responses against multicellular parasites and also harmful responses that can culminate in allergies and asthma.

Ironically, a wide variety of diseases are actually a consequence of the immune system attacking the body's tissues, including allergies and autoimmune diseases such as juvenile onset diabetes, multiple sclerosis and Grave's disease. An important area of biomedical research is currently focusing on understanding how the immune response normally regulates itself to prevent these diseases.

A newly identified population of regulatory T-cells appears to be particularly important and recent studies have shown that these cells can be induced following infection with certain parasites. Dr. Gause is studying whether stimulation of these regulatory T-cell populations may be useful in the development of new therapies for autoimmune disease and allergy.

"We are examining the molecular basis of the ability of certain parasites to stimulate the development of regulatory T-cells," says Dr. Gause. "If we can isolate the specific factors that trigger their activation, we may be able to develop drug therapies to help control certain diseases in which the immune system is dysregulated, including diabetes and asthma."

Dr. Gause is collaborating with several colleagues from the Department of Medicine on related projects: David Bleich, MD, associate professor, whose research concerns diabetes, and Padmini Salgame, PhD, professor, whose work in tuberculosis examines how dendritic cells direct T-cell development.

A **ADVANCES IN NEUROSCIENCE ARE KEY TO MANY CURES**
Another University Professor, Teresa Wood, PhD, joined New Jersey Medical School in October 2005 to teach and further her research in neuroscience. Dr. Wood investigates how a basic protein called insulin-like growth factor (IGF) affects cell growth and function in both normal and pathological states. In the central nervous system, IGFs are essential for normal brain development of neurons and the cells that form the protective covering of nerves, oligodendroglia. Understanding the mechanism of these proteins has the potential to advance our knowledge of diseases like multiple sclerosis, in which the nerve's protective sheath

deteriorates leaving scar tissue which impedes the nerve's ability to conduct electrical impulses. As the Rena Warshaw Chair in multiple sclerosis research, Dr. Wood hopes her work paves the way to design effective therapies to treat the damaged areas of the nerve sheath.

Dr. Wood's work with IGFs also has breast cancer research applications. It is known that many breast tumors respond to IGFs and that the outcomes of these responses are likely different from the response of normal breast epithelial cells. Understanding the particulars of these mechanisms may help to identify a way to stop tumor growth.

Dr. Wood's research efforts, applicable in two distinct areas, are indicative of a larger development in medical research which brings together scientists from different disciplines to collaborate on research problems. Her research includes collaborations with other neuroscientists, cancer biologists as well as mathematical modelers, who help unravel the complex mechanisms involved in normal tissue growth and in disease states. The NIH — and New Jersey Medical School — believe that an interdisciplinary approach involving scientists from different fields such as biology, chemistry, mathematics and computational science can speed scientific breakthroughs. Dr. Wood will facilitate the school's future advances in neuroscience as she leads the committee in charge of developing New Jersey Medical School's Neurological Research Institute, which will be housed in a new 350,000 square-foot building devoted to interdisciplinary and translational research.

R **THE LINK BETWEEN STEM CELLS AND CANCER**
Recent developments in stem cell research have the potential to answer questions in many different areas. Pranela Rameshwar, PhD, an associate professor in the Department of Medicine, is interested in the relationship between adult stem cells and breast cancer. Her laboratory examines breast cancer stem cells that have infiltrated bone marrow to understand how they enter and integrate within the bone marrow microenvironment to evade detection. One focus of Dr. Rameshwar's work is to understand how mesenchymal stem cells in the bone marrow, those with the ability to produce fat, bone, cartilage, muscle, tendon or marrow stroma cells, are able to not only facilitate the entry of breast cancer stem cells into the bone marrow but also to protect them.

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Kriti Goel, center, took advantage of the Summer Student Research Program, and spent the summer after her first year of medical school working on cancer research with Ian Whitehead, PhD, left, and Nike Olabisi, a fourth-year PhD student in Dr. Whitehead's laboratory.

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One of the working theories is that a protein marker on the breast cancer stem cells is attracted to the structural environment of the bone marrow — the stroma. Once inside the stroma, breast cancer cells can live quietly without reproducing for 10, even 20 years, protected from the body's immune system, resistant to drugs and undetected by clinical tests. Understanding the protein's role in the interaction between breast cancer stem cells and stromal cells could help develop a way of coaxing the breast cancer cells back into the blood stream. Then, through a blood filtering system such as dialysis, the breast cancer cells could be removed from the body — essentially effecting a cure for cancer.

A number of PhD students are working on the project with Dr. Rameshwar. They feel confident that they will witness tremendous breakthroughs in their lifetimes.

"I just hope I am the one holding the breakthrough pipette," says Kelly Corcoran, who is in the final year of her doctoral program.

It is this electric enthusiasm that resonates with Dr. Rameshwar, who admits she loves the fact that she is helping to cure health problems.

"My passion for research comes from knowing

that I can make a difference and I try to share that outlook with all of my students," she says.

AN INTERDISCIPLINARY APPROACH TO STEM CELL RESEARCH

One area that holds high hopes for scientific breakthroughs is stem cell research. The applications of stem cell therapy are far-reaching from spinal cord injury and Parkinson's disease to diabetes and cancer. By understanding the biology of stem cells and what causes them to differentiate, drugs could be developed to prevent the dysfunction of stem cells that leads to disease.

In July 2005, New Jersey Governor Richard Codey allocated \$10.5 million in support of stem cell research in the state, funds that complement an already active research community. The New Jersey Stem Cell Research and Education Foundation (NJSCREF), launched in July 2005, represents a collaboration of the state's medicine, science, technology and engineering institutions joined in a common goal of bringing stem cell therapy from bench to bedside, a truly interdisciplinary effort.

The partnership is unique in that it connects existing intellectual resources and infrastructure without constructing a new building. Members include New Jersey Medical School, the Center for Applied

Genomics of the Public Health Research Institute, Coriell Institute for Medical Research and New Jersey Institute of Technology, the host institution.

A key component of the collaboration is educating the public, particularly elementary and high school students, about stem cell research. “Early exposure to the field and its promise can help build greater public support for future initiatives,” says Marcello Taborga, a graduate student who is active in NJSCREF’s educational outreach efforts.

BUILDING FOUNDATIONS FOR THE FUTURE

In addition to their research, New Jersey Medical School faculty are playing a key role in developing the scientists of the future by mentoring medical students in their laboratories. Each year, through the Summer Student Research Program, students compete for opportunities to conduct mentored research in the laboratories of the school’s faculty.

In its 38th year, the program is one of the country’s largest. Coordinated by the Office of Research and Sponsored Programs, it is supported by a number of funding mechanisms that provide students with stipends to work in a faculty research setting. One component consists of 25 internally-funded research opportunities with New Jersey Medical School faculty; a second component, an NIH-National Cancer Institute Education grant, has provided continuous funding for 25 years to support 30 students focusing on cancer-related projects. Another grant, the Short Term Training for Minority Students, funded through the NIH-National Heart, Lung, and Blood Institute, supports 22 minority students pursuing projects related to cardiovascular, lung and blood disease.

In the summer of 2004, the school expanded summer research opportunities by incorporating federally-funded work study projects. Grants from the Department of Education fund “student assistants” at 75 percent, with New Jersey Medical School departments sponsoring the projects funding the remainder. According to Letitia Dean, program administrator, most of the projects are clinical in nature and include retrospective chart reviews and data collection. During the summer of 2005, 10 students participated.

Thanks to these one-on-one mentoring experiences, a number of New Jersey Medical School students have been accepted into the prestigious Howard Hughes Medical Institute-NIH Research Scholars Program. This highly competitive program — only 42 spots are awarded each year — is the premiere medical

student training program in the country. After completing the first two years of medical school, these scholars spend one year at NIH involved in basic biomedical research before completing the final two years of medical school. The experience was so compelling for Shakti Ramkissoon, who spent a second year at the NIH as an advanced scholar, that he enrolled in New Jersey Medical School’s MD/PhD program to pursue a career as a physician scientist.

MD/PHD PROGRAM INTEGRATES MEDICINE AND RESEARCH

In the last two years, the number of MD/PhD students has doubled under the direction of Assistant Dean Richard Howells, PhD. This seven-year dual degree program is offered jointly by New Jersey Medical School and the Graduate School of Biomedical Science and trains students to be physician scientists.

The 28 students currently enrolled are in various phases of the program. The first two years consist of the pre-clinical medical school courses offered at New Jersey Medical School, with summer rotations in several faculty laboratories. Years three through five involve full-time research in one lab under the guidance of a faculty mentor, culminating with the doctoral dissertation, one or more journal publications and the awarding of the PhD. In the final two years, students also gain clinical experience in a variety of clerkships, and, after passing the United States Medical Licensing Exams and earning an MD, move on to residency programs or postdoctoral research fellowships. New Jersey Medical School’s commitment to increasing the pipeline of translational researchers is reflected in its financial support of MD/PhD students, who receive tuition remission and a stipend through all seven years of the program.

“The real value of the program is that it provides the preparation necessary to do translational research. Students leave with a unique perspective — they have a rigorous training in both biomedical disciplines and the scientific method of developing and testing hypotheses and interpreting results,” says Dr. Howells.

A competitive program, it attracts highly qualified undergraduate students with strong research experience. In order to further develop the program, Dr. Howells is seeking NIH funding for additional stipends so that the school can double the incoming class from five to 10 students for the next five years. ■



New Jersey
Medical School
Defining
the future
of medicine

By embracing a humanistic approach to providing care, Neil Fernandes and his fellow students will define the future of medicine.

R E A L I Z I N G T H E F U T U R E O F M E D I C I N E

A second year-student at New Jersey Medical School, Neil Fernandes' first career was in investment banking. "I couldn't have been farther from where I wanted to be,"

Fernandes says of his one-year stint in the industry. "I very quickly realized that I didn't want to focus on the bottom line. I knew there had to be more."

The son of two doctors (his mother, Helen, a PhD, works in the Molecular Diagnostics Laboratory at University Hospital and his father, Gregory, is a pathologist at St. Mary's Hospital in Passaic), Fernandes' sister is a student at UMDNJ-Robert Wood Johnson Medical School. He always thought he wanted to become a doctor and working on Wall Street confirmed it for him.

"In medicine, the bottom line is your patient's health," he explains. "That is far more motivating to me."

As a Humanism Scholar, Fernandes is charged with spreading the concept of humanism in medicine to his peers, a challenge and responsibility he has taken on gladly. In addition to promoting general awareness of The Healthcare Foundation Center for Humanism and Medicine, he and the other Humanism Scholars also host open discussions on topics related to humanism. He hopes to establish a new non-credit elective at the school called The Healer's Art, a seminar series focusing on self-reflection as a way of being aware of the roots of behaviors, particularly in professional medical settings.

"If you are aware of why you are acting a certain way, it prevents you from doing things mechanically and increases your level of personal involvement with patients," Fernandes explains.

He has seen this firsthand as a volunteer in the school's student-run health clinic. "It's all in the manner of delivery: sitting down in the exam room versus standing up, letting patients speak without interrupting and actively listening are all ways to improve the quality of time you spend with patients."

One of Fernandes' biggest concerns for the future is the challenge of balancing the need for efficiency and profitability with being a compassionate caregiver.

"We really need to step up to the challenge of finding creative ways to overcome these obstacles so that people can still feel good about coming to the doctor and so that we can provide the care that they deserve."

As a participant in the Student Summer Research Program, Fernandes worked in the laboratory of Pranela Rameshwar, PhD, professor, Department of Medicine, studying breast cancer stem cells. Although he is leaning toward a career as a clinician, he believes strongly in the importance of research.

"It is vital to understand what you are treating and to keep up with new developments," he says.

Fernandes does not seem to have trouble keeping up with any part of his medical education. In fact, he says, "I'm excited about coming to school every single day and doing something I love."

As a medical professional who has embraced compassionate care, continuous learning and the mission of public health, Fernandes embodies the physician of the future. And he is not alone.

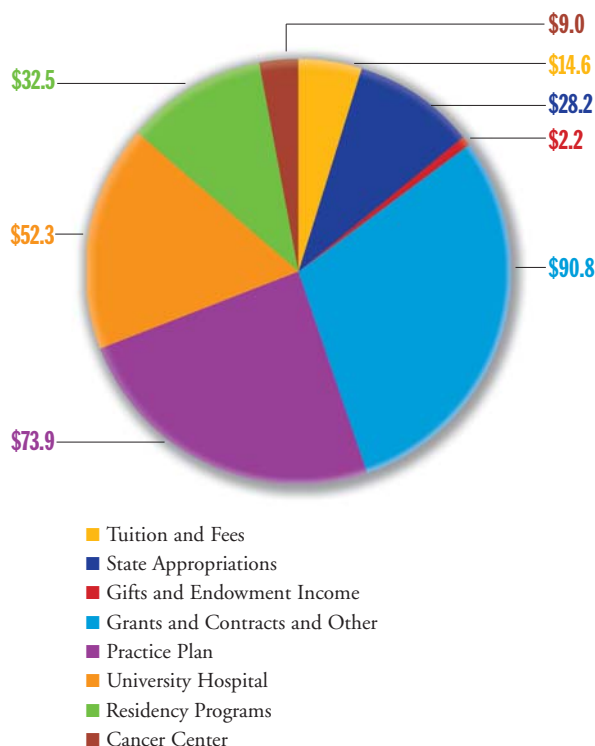
With a special focus on humanism, Fernandes and his fellow classmates will, one by one, subtly define the future of medicine to reflect the highest standards of humanistic practice. These students serve as agents of change, supported by the faculty, staff and patients who comprise New Jersey Medical School. Leaving the campus does not mean they lose their support system. Indeed, their departure only serves to strengthen the connections and build a growing network of compassionate caregivers. Their embrace of humanism in medicine, combined with New Jersey Medical School's commitment to compassionate care, community outreach and cutting-edge research, ensures a healthy future for us all. ■

Financial Overview

FY 05 Revenue by Source

Total Revenue \$303

(in millions)



Externally Sponsored Awards (in millions)



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