State-of-the-Heart Care

Pioneering groundbreaking innovations. Advancing technology in the most extraordinary ways. Robert Wood Johnson University Hospital is moving medicine forward.

Our Heart Center offers the full spectrum of cardiac care, from diagnosis, to medical management, to heart transplantation, led by nationally respected cardiologists, cardiothoracic surgeons, researchers and a Magnet award-winning cardiac nursing team.

In partnership with UMDNJ Robert Wood Johnson Medical School, our cardiac experts are fighting heart disease with every new treatment, the latest technology and the most advanced diagnostic techniques.

Recognized as one of the nation’s top cardiovascular hospitals by Solucient and one of the safest hospitals in America by Consumers Digest magazine.

For information about the Heart Center’s programs and services, call (732) 448-8050, or visit our website at www.rwjuh.edu.
“We believe our first responsibility is to the doctors, nurses and patients, to mothers and fathers and all others who use our products and services.”

Our Credo

Johnson & Johnson
Dear Colleague,

The breadth and depth of topics in this issue reflect the scope of our work at UMDNJ-Robert Wood Johnson Medical School. In “Staff Spotlight” and “RWJMS News” as well as in our feature articles, you will meet a community of people full of commitment, curiosity, and vision, eager to advance our missions in clinical care, community health, medical education, and research.

Our cover story explores the medical school’s leadership in community health, exemplified by the Eric B. Chandler Health Center. Chandler provides a full spectrum of excellent clinical and social services to the community’s medically underserved. Programs and projects school-wide — many of them student-run — evolve to provide for the community in myriad ways. This article profiles not only a successful program but also the people who are dedicated to making it even better.

“Systems Biology: The Simultaneous Solution” takes our readers on a fascinating multi-departmental tour that highlights faculty who are pioneering a new approach to research. In their own laboratories and in collaboration with others, their science is guided by the interactions of biological systems, from molecules to whole organisms.

Graduate medical education at RWJMS has never been stronger, we learn in “To Teach Is to Learn: Graduate Medical Education at RWJMS.” Under a single umbrella, our 36 specialty and sub-specialty programs are minting competent, compassionate physicians through the time-tested yin and yang of teaching and learning.

“Mother and Baby Doing Fine” examines the exceptional research under way in our division of maternal-fetal medicine and the leading-edge science we use to lower risks and improve pregnancy outcomes. In this evolving health care field, in utero surgery, genetic counseling, prenatal ultrasound, genetic sonography, and epidemiology are among the areas in which RWJMS is a pivotal player.

In “The Environment: Friend or Foe?” we learn about MENTOR, a model created by faculty at the Environmental and Occupational Health Sciences Institute to provide the computational tools for a collaborative endeavor between RWJMS and the institute, analyzing the role of human activities in producing a contaminated environment.

Peter M. Howley, MMS ’70, MD, our featured alumnus, is a world-renowned researcher in the molecular biology of the papillomaviruses and their role in human cancer. Dr. Howley, who is the Shattuck Professor of Pathological Anatomy and chair, Department of Pathology, Harvard Medical School, recently participated in a landmark discovery that may lead to molecular treatments for cervical cancer.

We are pleased to bring you this wide-ranging look at the medical school. Our faculty, residents, and students set the bar high in medical education through their commitment to educating the next generation of physicians, to developing cutting-edge science, and to caring for our extended community.

Sincerely,

Harold L. Paz, MD
Dean
That you can make a difference in finding real cures, educating new healthcare professionals, and improving patient care.

That you can choose the specific area of medical research, education or healthcare you wish to support.

That 100% of the dollars you contribute go directly to the program you wish to sponsor, with no administrative fees diluting their power.

That your generosity will work miracles for so many people right here in New Jersey.

Now, imagine how fulfilling it would be if your donation could do all of these things. Through the Foundation of UMDNJ it can, by funding research, education and patient care programs at UMDNJ: Robert Wood Johnson Medical School.

For more information, call Joseph Stampe, vice president of development, toll-free at 866-44-UMDNJ or reach us online at www.umdnj.edu/foundation/imagine.
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## FEATURES

### Systems Biology: The Simultaneous Solution

A pioneer in science’s newest approach to studying biological systems at every level, Arnold J. Levine, PhD, is credited with being the first to recognize how molecules, cells, and organisms interact, and how differences caused by mutations initiate disease at various stages in the life cycle.

*By Rita M. Rooney*

### Community Health at RWJMS

The RWJMS commitment to community health is evident throughout the school’s educational program, clinical services, and training. It has made RWJMS campuses and satellite programs into hubs where the medically underserved find health care and social services and learn health literacy.

*By Kate O’Neill*

### Mother and Baby Doing Fine

Maternal-fetal health becomes a high priority at RWJMS, where complex fetal surgery and other high-tech procedures are performed in the largest academic unit of its kind in the country.

*By Rita M. Rooney*

### To Teach Is to Learn: Graduate Medical Education at RWJMS

The RWJMS educational philosophy creates a robust fusion of teaching and learning that carries its 400 residents and fellows forward as lifelong learners, well prepared to personify teamwork, humanism, and clinical expertise.

*By Kate O’Neill*

### The Environment: Friend or Foe?

Success in pinpointing environmental hazards is achieved by the RWJMS team of Paul Lioy, PhD, and Panos Georgopoulos, PhD, at the Environmental and Occupational Health Sciences Institute.

*By Rita M. Rooney*

### Alumni Profile: Peter M. Howley, MMS ’70, MD: How Idealism, Curiosity, and a Critical Mind Led to a Major Scientific Discovery

Peter M. Howley, MMS ’70, MD, Shattuck Professor of Pathological Anatomy and chair, Department of Pathology, Harvard Medical School, is among the medical school’s most accomplished alumni.

*By Kate O’Neill*
More than 2,000 faculty, students, staff, and alumni joined elected officials and members of the community for the inauguration of the third president to head the University of Medicine and Dentistry of New Jersey (UMDNJ). The event took place Tuesday, April 26, at the New Jersey Performing Arts Center in Newark.

John J. Petillo, PhD, officially took over the reins of leadership of the largest institution of its kind in the United States following his appointment as chair of the Board of Trustees by then Governor James E. McGreevey in June 2003. He assumed the responsibilities of interim president a year later and, in November 2004, was named university president by the Board of Trustees.

Harold L. Paz, MD, dean, says, “The inauguration of John Petillo as the new president of UMDNJ represents a historic and important event for RWJMS, as well as for the entire university. We share a proud record of achievement in the health sciences that can only accelerate as we continue to expand through initiatives such as The Cancer Institute of New Jersey, the Stem Cell Institute of New Jersey, the Child Health Institute of New Jersey, and the Cardiovascular Institute of New Jersey. We welcome Dr. Petillo’s leadership in the collaborative partnership that drives this kind of growth.”

Dr. Petillo brings to his post experience as chief executive officer of several national corporations and chancellor of Seton Hall University. Most recently, he served as the first president and CEO of the Newark Alliance, a nonprofit organization representing the interests of private and civic groups concerned with improving educational opportunities and economic redevelopment in Newark.

He holds a PhD in counseling and personal services from Fordham University, an MA in counseling from Seton Hall University, and an MPA from Rutgers, The State University of New Jersey.

— R.M.R.
Christopher Kosseff, president and chief executive officer, UMDNJ-University Behavioral Healthcare; and Harold L. Paz, MD, dean, congratulate John J. Petillo, PhD, president, UMDNJ.

Dr. Petillo learns about the New Brunswick Community Interpreter Project from Nicholas Napoli, project coordinator.

In the Public Health Seminar, Joseph D. Rosen, PhD, professor of food science, Rutgers, The State University of New Jersey, takes questions on his lecture, “Organic Food: Is It Really Healthier?”

Christopher Kosseff, president and chief executive officer, UMDNJ-University Behavioral Healthcare; and Harold L. Paz, MD, dean, congratulate John J. Petillo, PhD, president, UMDNJ.

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Dr. Paz and Dr. Petillo enjoy talking with students during UMDNJ Students’ Lunch.

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Above: An appreciative audience packed the main auditorium on the Piscataway campus for the N. Ronald Morris, MD, Lecture. Peter Agre, MD, professor of medicine and biological chemistry, Johns Hopkins School of Medicine, spoke on “Aquaporin Water Channels: From Atomic Structure to Clinical Medicine.”

Above: An appreciative audience packed the main auditorium on the Piscataway campus for the N. Ronald Morris, MD, Lecture. Peter Agre, MD, professor of medicine and biological chemistry, Johns Hopkins School of Medicine, spoke on “Aquaporin Water Channels: From Atomic Structure to Clinical Medicine.”


Above: After the lecture, Dr. Agre (center) is congratulated by (left to right) John Lenard, PhD, professor of physiology and biophysics; N. Ronald Morris, MD, emeritus professor of pharmacology; Dr. Paz; and Leroy F. Liu, PhD, professor and chair, Department of Pharmacology.

Robert Wood Johnson ■ MEDICINE 5
breakthroughs in research already are in high gear, months before the ground breaking for the Stem Cell Institute of New Jersey on UMDNJ-Robert Wood Johnson Medical School’s New Brunswick campus. The institute, a partnership between RWJMS and Rutgers, The State University of New Jersey, is a state-funded initiative. Ira B. Black, MD, professor and chair, Department of Neuroscience and Cell Biology, who is widely recognized for early progress in stem cell development, is the founding director of the institute.

Dr. Black reports that new techniques are being applied in an extension of his laboratory’s work with “classic” stem cells.

“Presently, we are differentiating new types of cells into specialized nerve cells,” he says. “We’re hoping to determine the scope of specific cells that may be useful in differentiation, as well as in therapy. This is a new approach. Where it may lead, we can’t say now, but it looks very promising.”

Meanwhile, Dr. Black’s laboratory has made a significant breakthrough related to his work in converting adult human and rat bone-marrow stem cells into presumptive neurons in culture. After infusing the bone-marrow cells into the brains of rat embryos, investigators found that those cells migrated throughout the brain and differentiated into nerve cells or neurons that were appropriate to each part of the brain to which they had migrated. More recently, they learned that the infused cells survived for at least a year.

“This is extraordinary,” Dr. Black says. “We’re now at a middle-age point in the life of a rat. This may well mean that prenatal transplantation has a use throughout life. It is still speculation, but it does raise the possibility that cells transplanted prenatally would migrate throughout the brain, and might be activated to combat adult diseases.”

Although he warns that the possibilities are purely conjecture at this time, he admits they are exciting, and they open up the potential for discovery that was previously beyond the expectations of stem cell research.

“It’s all in the realm of possibility,” Dr. Black cautions. “But imagine the implications of such possibility. It’s the kind of potential that dictates we must keep moving ahead.”

Commenting on the need now to put dollars in place — targeted at $150 million for the building, and $230 million for programs — Harold L. Paz, MD, dean, says, “We’re delighted the State of New Jersey has passed important stem cell legislation. Thanks to the work pioneered in Dr. Black’s laboratory, RWJMS is well positioned to assume the leadership this legislation demands.

“It encompasses a monumental opportunity, not only to partner with Rutgers, but to engage the scientific talents at the medical school, including those at the Center for Advanced Biotechnology.
The Stem Cell Institute’s home as well to the medical school’s Cardiovascular Institute of New Jersey, and in addition to student services and administrative offices and a parking garage, it will include the Stem Cell Institute’s research center for clinical trials, and a Good Manufacturing Practices facility, where scientists will pursue actual production of therapies.

“Among our basic and clinical science departments, and our various institutes, we have faculty members contributing important research on neurotoxicology, and other issues with relevance to stem cell research,” Dr. Paz says. “We have the largest movement disorder group in the state. We have experts in Parkinson’s disease, and we also conduct clinical trials in the disease. Our division of neurosurgery has a group that works with patients with spinal cord injuries. All of this compounds to enormous benefit for the kind of interaction that leads to discovery.”

Such interaction has already taken a giant step in still another direction. Dr. Black reports collaborative partnerships are being negotiated on a multinational scale.

“We currently are in intense discussions with pharmaceutical and biotechnology companies to take our research to the next step,” he says. “New Jersey is one of the world centers in pharmaceutical development. We’re in the right place to do this.”

In fact, collaboration and cooperation are bywords Dr. Black uses for continued progress at the institute.

“This is a worldwide effort that will demand a worldwide commitment,” he says. “I think it’s fair to say that New Jersey and California have assumed the leadership roles in the United States. We already are interacting with California scientists, as well as internationally, to move the field forward.

“Is there competition? Of course. From my perspective, it’s healthy competition. Time is of the absolute essence. This is an explosive field that is moving ahead so quickly that any group that slows its pace will fall behind. New Jersey has established a foremost position that simply must be pursued vigorously. And it will take both collaboration and cooperation to do so.”

— R.M.R.
Hospital President Retires

Harvey A. Holzberg, president and chief executive officer of Robert Wood Johnson University Hospital since 1989, retired recently after 15 years of distinguished leadership, during which the hospital achieved national prominence.

Mr. Holzberg, who spearheaded the hospital’s reputation for excellence in trauma, heart disease, cancer, and pediatric programs, will remain president and CEO of the Robert Wood Johnson Health System, and chairman of the Robert Wood Johnson Health Network Board of Directors.

Harold L. Paz, MD, dean, says, “Under Harvey’s administration, the hospital established nationally recognized centers of excellence and, through cementing a firm bond with the medical school, reinforced the RWJMS emphasis on a mission of clinical care, research, education, and community outreach. He will be missed, but leaves behind a legacy that serves the health interests of New Jersey.”

Programs established during Mr. Holzberg’s tenure include designation of the hospital as a Level I Trauma Center and development of the Heart Center of New Jersey, the Vascular Center of New Jersey, the Centers for Heart, Kidney and Pancreas Transplantation, the Bristol-Myers Squibb Children’s Hospital at Robert Wood Johnson University Hospital, and the Cancer Hospital of New Jersey.

Mr. Holzberg began his stewardship when central New Jersey residents traveled to New York and Philadelphia for specialized care. Since that time, the academic medical campus shared by the hospital and medical school has expended more than $1 billion in capital investment, including hospital and medical school construction. As the principal teaching hospital of RWJMS, Robert Wood Johnson University Hospital has become a premier institution, recognized for world-class medical care.

Commenting on his retirement, Mr. Holzberg says, “I look forward to new challenges ahead at the Robert Wood Johnson Health System and Network. It has been a privilege to lead this great hospital during an exciting era. I am confident it will continue to emerge as a nationally prominent academic medical center.”

— R.M.R.

Clifton R. Lacy, MD ’79, has returned to New Brunswick. On January 3, Dr. Lacy became the president and chief executive officer of Robert Wood Johnson University Hospital (RWJUH), the principal hospital of UMDNJ-Robert Wood Johnson Medical School. He is the first physician to serve the hospital in this capacity.

Dr. Lacy’s appointment begins a new phase in a remarkable career. For the past three years, he served as commissioner of the New Jersey Department of Health and Senior Services. As commissioner, he was widely recognized for his efforts to make New Jersey a national leader in scientific research, for his drive to achieve excellence in health care quality and delivery, and for the high priority he gave to increasing the state’s preparedness to deal with terrorism.

Prior to his cabinet service, Dr. Lacy’s career centered around clinical, academic, and administrative leadership at RWJMS and RWJUH. His professional growth paralleled the evolution of these two closely affiliated institutions.

He earned his medical
Dr. Clifton R. Lacy Named President of RWJUH

degree from RWJMS, where he also completed an internal medicine residency, served as chief resident in medicine, and completed a fellowship in cardiovascular diseases. He then joined the medical school faculty and advanced to associate professor of medicine, chief of the division of cardiovascular diseases and hypertension, and director of the RWJMS Center for Disease Management and Clinical Outcomes.

As the hospital’s senior vice president for medical affairs and chief of staff, Dr. Lacy played a major role in the significant growth of RWJUH from a community hospital into the state’s premier academic health center.

“My goal now is to take the hospital to the next level,” says Dr. Lacy. “Through leading-edge technology, scientifically advanced techniques, and the best clinical talent, RWJUH is poised to become a world-class health care institution.”

Dr. Lacy says these career changes have been a natural progression. As a clinician, he utilized his skills to benefit individual patients. As a medical school chief of cardiovascular diseases and a hospital chief of staff, he employed his expertise and experience to improve health care in the region. As state commissioner, he applied his background in medicine, health care, and administration to positively affect lives statewide.

“The transition from being the state’s top doc to leading a top hospital is equally natural,” he says. His focus on quality and clinical excellence and his knowledge of the health care environment in New Jersey and nationally will serve the patients of RWJUH well. As Dr. Lacy notes, “Being both a clinician and an administrator provides a unique perspective and helps maintain focus on our primary mission — the best in health care for the people we serve.”

A specialist in cardiovascular diseases, Dr. Lacy has been listed as one of the “Best Doctors in America.” His clinical research has been widely published in the medical literature. RWJMS students and faculty selected him repeatedly for top teaching honors. A past president of the RWJMS Alumni Association, he received the UMDNJ Distinguished Alumnus Award and was inducted into the Rutgers University Hall of Distinguished Alumni.

“In Cliff Lacy, Robert Wood Johnson University Hospital has an exceptional leader,” says Harold L. Paz, MD, dean. “He is a renowned cardiologist and a public servant with a demonstrated commitment to the health and health care of the people of New Jersey.”

Harvey Holzberg, who preceded Dr. Lacy as the hospital’s president, says, “Dr. Lacy has had extensive leadership and administrative experience as commissioner of the New Jersey Department of Health and Senior Services and as director of medical affairs of New Jersey’s premier academic health center. He is the ideal choice to lead this hospital into the future.”

Former Governor James E. McGreevey has characterized Dr. Lacy as “arguably the greatest and most competent visionary ever to serve as commissioner of health in our state’s history. He has labored to make New Jersey a national leader in stem cell and cancer research, driven excellence in our hospital and health care delivery system, and ensured our preparedness in the battle against terror.”

Now, Dr. Lacy has come home.

— K.O’N.
Research Day 2004 Demonstrates Excellence

Keynote Speaker Spotlights Translational Research

Scientists from throughout the RWJMS community crowded into the Great Hall auditorium to hear “Beyond Translational Research,” the November 2004 Research Day keynote address. The speaker was Barry S. Coller, MD, David Rockefeller Professor of Medicine and vice president for medical affairs, The Rockefeller University. Dr. Coller was elected to the Institute of Medicine in 1999 and to the National Academy of Sciences in 2003.

“The core principle of academic medicine,” said Dr. Coller, “is the application of the scientific method to alleviating suffering from disease.”

Dr. Coller drew on examples from his career to illustrate the value of translational research. As a young researcher, he said, he hoped to contribute to the body of scientific knowledge but wondered whether his work would ever benefit an individual patient. Yet, ultimately, his research would benefit not just one patient but many.

Dr. Coller described the case of a woman with a rare and intractable bleeding disorder, whose blood he was asked to analyze. Her puzzling condition would repeatedly take him from bench to bedside and back to the bench — even to his world atlas and a history of Jewish migrations in the Middle East. Finally, with the help of his colleagues in Israel and at the Medical College of Wisconsin, Dr. Coller identified the cause of the woman’s condition: a genetic lack of the receptors responsible for platelet aggregation. This led him to an important hypothesis: if a lack of certain receptors prevented platelet aggregation, then it might be possible to prevent or treat thrombosis in people with normal receptors by transiently blocking the receptors on the platelets.

Dr. Coller’s laboratory subsequently created monoclonal antibodies to the receptor (named GPIIb/IIIa or αIIbβ3) that inhibit platelet aggregation, and from one of these, in conjunction with the scientists at Centocor, of Malvern, Pennsylvania, the laboratory developed the drug abciximab. Abciximab has been used to prevent ischemic complications of percutaneous coronary interventions in more than two million patients worldwide since its 1994 approval by the U.S. Food and Drug Administration. Abciximab is currently under investigation for the treatment of stroke.

Commenting after the speech, Kathleen W. Scotto, PhD, professor of pharmacology and senior associate dean for research, said, “Dr. Coller’s address was an eloquent statement of why we’re all here.”
Research Day 2004 was one of many notable RWJMS firsts for Kathleen W. Scotto, PhD, professor of pharmacology and senior associate dean for research. Over the summer, Dr. Scotto had settled into her new position at the medical school and looked forward to the annual red-letter day for RWJMS scientists, when the whole school can celebrate the key role of research in medical education.

With 180 diverse posters and presentations by basic and clinical researchers from both campuses, the event proved an excellent opportunity to appreciate the full spectrum of work under way in the medical school’s laboratories. “It was a pleasure — and a rare luxury — to spend a whole day absorbing this wealth of research,” said Dr. Scotto later, recalling the presentations.

With an environment that is both nurturing and competitive, Research Day provides valuable experience for the school’s research scientists — particularly for medical students and PhD candidates. “The success of Research Day is evidence of our faculty’s strong mentoring skills,” added Dr. Scotto. “It demonstrates the commitment required to prepare young scientists for their future role in national and international forums.”

Research Day presenters clearly appreciated one another’s work and looked for commonalities. The interaction and the search for potential collaborations reveal the school’s strong mentoring and laboratory leadership, noted Dr. Scotto. It also reflects an appreciation of the strong mandate for multidisciplinary collaboration set by the National Institutes of Health in its 2003 Roadmap.

— K.O’N.
Match Day: Class of 2005 Celebrates Residency Match

Balloons, champagne, and an electrified crowd that seems wired to one another as the clock hands creep toward 12... "It felt like New Year’s Eve," says Steven H. Krawet, MD ’89, president, Alumni Association, describing Match Day 2005 on the New Brunswick campus. Recalling his own Match Day, Dr. Krawet comments, “This was a big change from my day — a class event and a true celebration.” Dr. Krawet was on hand to propose a toast to the Class of 2005. On the Camden campus, Eduardo Fernandez, MD ’89, past president, Alumni Association, led the toast following a retrospective slide show by Lawrence Siew ’05.

The clinking of glasses was followed by a unified ripping sound as students tore open the envelopes that would reveal their residency match. In a split second they absorbed the news and broke into cheers and tears of joy and relief, hugs, and high fives. And out came the cell phones to notify friends and family far and wide of match results and learn where others had matched.

The Class of 2005 had good reason for joy: its members achieved a 99 percent match rate in the Residency Match, well above the national rate of less than 93 percent. Circulating through the jubilant crowd,
Harold L. Paz, MD, dean, said simply, “I am sincerely proud of our students and of the faculty and advisers who brought them to this wonderful day.”

A VTEL system, generally used for interactive video conferencing, united students on the two RWJMS campuses, by projecting real-time images of the Camden campus celebration to New Brunswick and vice versa. Television monitors and microphones at each location provided the opportunity for students to greet classmates on the other campus and spread the news.

Smiling widely, David Seiden, PhD, professor of neuroscience and cell biology and associate dean for student affairs, said, “I’m very happy. It’s a privilege to work with these students.”

Susan Rosenthal, MMS ’75, MD, clinical associate professor of pediatrics and assistant dean for student affairs, works with students throughout their four years. Using a program called Match Maker that makes information available on past RWJMS matches. Dr. Rosenthal counsels students to aim high and apply to programs that match their strengths and interests.

“There’s no reason to be unmatched if you do what you’re supposed to do,” she says.

— K.O’N.
Dr. Paz Hosts Reception at AAMC Annual Meeting

For a few hours last November, Boston was a home away from home for UMDNJ-Robert Wood Johnson Medical School. In town for the annual meeting of the Association of American Medical Colleges, Harold L. Paz, MD, dean, hosted a reception at the Marriott Copley Place Hotel. Dr. Paz’s guests included colleagues from other medical schools, Boston area alumni, and RWJMS faculty.

“I am always pleased to meet with our alumni and other friends of the medical school,” says Dr. Paz. “To be able to visit informally with those who can’t often visit us is an additional pleasure, which I look forward to every year. We have a lot of wonderful news to report, and this is a great way to do it.”

Dr. Paz set aside special time at the Boston reception to honor Harvey Holzberg, then president and CEO, Robert Wood Johnson University Hospital (RWJUH), as chair of the AAMC Council of Teaching Hospitals. Mr. Holzberg has since retired from his position at RWJUH and continues to serve as president and CEO, Robert Wood Johnson Health System.

For alumni, the dean’s yearly AAMC receptions are an ideal opportunity to catch up on news of the medical school. Dianna Taylor Deignan, MD ’03, a family practice resident living in Cambridge, was eager to see familiar faces and learn the latest news of RWJMS. Dr. Deignan was accompanied by her husband, Shaun, a fellow graduate of Rutgers, The State University of New Jersey, who says he considers himself “an honorary medical school graduate.” Both Deignans had a wonderful time at the reception.

Ronny I. Drapkin, MD, PhD ’98, does research at the Dana Farber Cancer Institute and is a recently appointed faculty member at Harvard Medical School. He occasionally gets back to RWJMS, but for Dr. Drapkin and his wife, Beth, the reception provided a chance to get a
1. Harold L. Paz, MD, dean (right), congratulates Harvey Holzberg, then president and CEO, Robert Wood Johnson University Hospital, newly elected chair of the AAMC Council of Teaching Hospitals.

2. Norman H. Edelman, MD, dean, SUNY Stony Brook School of Medicine; Nancy Simon; Frank A. Simon, MD, director of the Division of Undergraduate and Graduate Medical Education Policy and Standards, American Medical Association; and Ida Edelman (right), catch up with a friend.

3. Frances Dunston, MD ’78, MPH, chair, Department of Pediatrics, Morehouse School of Medicine, chats with Maria Soto-Green, MD, vice president and chief of staff, UMDNJ.

4. Dr. Paz addresses reception guests.

5. Paul R. Mehne, PhD, associate professor of family medicine and associate dean for academic and student affairs, catches up with Bruce D. Newman, senior vice president, development and executive director, RWJUH Foundation.

6. Beth and Ronny I. Drapkin, MD, PhD ’98, chat with Peter S. Amenta, MD, PhD, professor and chair, Department of Pathology and Laboratory Medicine, and senior vice president of medical affairs and chief of staff, RWJUH.

7. Thomas Hegyi, MD, professor of pediatrics and associate dean for faculty affairs (left), and Barbara M. Ostfeld, PhD, professor of pediatrics (right), welcome Judith E. Burris, senior vice president for corporate services, Robert Wood Johnson University Hospital.

8. David Seiden, PhD, professor of neuroscience and cell biology and associate dean for student affairs, and his wife, Norine.

— K.O’N.

Research

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OTHER GOVERNMENT AND FOUNDATION FUNDING:

her study titled “Molecular Interactions and Nucleotide Exchange Mechanism of Translation Factor EF1B Alpha.” • Howard M. Kipen, MD, MPH, professor of environmental and occupational medicine, received $1.5 million from the U.S. Environmental Protection Agency for a four-year grant titled “Responses to Fresh Aerosols in Susceptible Subjects.” • The New Jersey Department of Health and Senior Services awarded $40,000 to Ernest G. Leva, MD, associate professor of pediatrics, for a project titled “School Disaster Response Plan Evaluation and Development.” • The New Jersey Governor’s Council on Autism awarded $50,000 to Weizhen Ye, PhD, a post-doctoral fellow in the laboratory of James H. Millonig, PhD, assistant professor of neuroscience and cell biology and resident member, Center for Advanced Biotechnology and Medicine, for a grant titled “Functional Analysis of the Engrailed2 Pathway in Autistic Individuals.” • A. John Orzano, MD, associate professor of family medicine, received $532,752 from the Agency for Healthcare Research and Quality for a four-year grant titled “Capacity

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Yetta Motolinsky Receives Distinguished Service Award

In 1969, Yetta and Ab Motolinsky created a living memorial to their son, Melvyn, a gifted lawyer, who was only 26 when he succumbed to acute leukemia. Nan Motolinsky remembers her older brother as honorable, clear-thinking, and independent — someone who innately knew he did not have time to waste: “He had clerked for a New Jersey Supreme Court justice and was committed to social issues.”

A fund that began with friends at the Highland Park Conservative Temple grew into the Melvyn H. Motolinsky Research Foundation, dedicated to medical research into the causes, prevention, and treatment of leukemia and related blood diseases. Inspired by the energy and commitment of Yetta Motolinsky, the foundation has expanded awareness of leukemia and the need to support and fight the disease.

Today, the fund provides an endowment of more than $1 million for a growing number of programs. Most of these are at UMDNJ-Robert Wood Johnson Medical School: the Melvyn H. Motolinsky Laboratory for Hematology Research, the Motolinsky Fellowship Program, and the Melvyn H. and Ab Motolinsky Professorship in Hematology.

In addition, the Melvyn H. Motolinsky Distinguished Service Award annually recognizes a leader in the fight against leukemia. In 2004, it presented the award to Yetta Motolinsky as she neared her 90th birthday: “Yetta was and is the heart and soul of the organization,” says Jack Borrus, treasurer of the foundation, who also serves on the board of the Child Health Institute of New Jersey at RWJMS. “She

HARTS Celebrates Its 10th Anniversary

Fine arts and healing arts often work together.

Recognizing this synergy, two second-year students in the Class of 1997 founded HARTS (Healing Arts). Still flourishing, the club brings light, color, and life to the Kessler Teaching Wing on the Piscataway campus.

HARTS was the brainchild of two friends: Robert J. Laumbach, MD ‘97, MPH, assistant professor of environmental and occupational medicine, and Scott Woska, MD ’97. Both physicians are artists. Dr. Laumbach enjoys creating sculpture from found objects, and Dr. Woska is an oboist, pianist, and composer. HARTS presents three annual art shows, orchestrated by Judith Wray, president, East Brunswick Visual Arts League (VAL) — ever-changing exhibits that charge the atmosphere and stimulate debate.

This winter, large-format digital art brightened Woody’s, a popular gathering spot. Meanwhile, in the Student Lounge, construction conduits formed the basis of Pipedreams, memorable, large-scale works that involved visual wordplay. Epitomizing the artistic and collaborative goals of HARTS and VAL, Huma Rana ’07, coordinator, HARTS, inspired students to restore the Pipedream Rubber Hand Tree, damaged earlier in a show in Manhattan. In early spring,
shepherded the idea and brought us in contact with many others who became supporters of the foundation mission.” — K.O’N.

If art imitates life, then the fine arts are keeping life fun, lively, and unpredictable for those who practice the healing arts in Piscataway.

— K.O’N.
Workshop Responds to Interest in Small Animal Imaging

A day-long program exploring new capabilities of small animal imaging drew 250 RWJMS researchers, as well as representatives from pharmaceutical and biotechnology organizations energized by the potential inherent in this advanced technology.

Following her recognition of parallel interest among faculty members, Cory Abate-Shen, PhD, professor of medicine; chief, division of developmental medicine and research, Department of Medicine; resident member, Center for Advanced Biotechnology and Medicine (CABM); and co-director of the prostate cancer program, The Cancer Institute of New Jersey, developed the program. Debabrata Banerjee, PhD, associate professor of medicine, and Michael M. Shen, PhD, professor of pediatrics and resident member, CABM, shared in the coordination of the event.

“[This was] exceptionally valuable, across departmental lines, to those who attended,” Dr. Abate-Shen says. “We had an opportunity to determine the kind of equipment that merits our investment, and how rapidly the technology is expanding. For instance, the instrumentation now available provides high resolution so that we actually can see what is happening inside the animal.”

Faculty for the session included nationally recognized leaders in small animal imaging. They included Simon Cherry, University of California, Davis, micro-PET imaging; Chris Contag, Stanford University, bioluminescence imaging; Jason Koutcher, Sloan-Kettering Memorial Institute, nuclear magnetic resonance imaging; Dan Turnbull, Skirball Institute, ultrasound and MRI imaging; Pat Zanzonico, UMDNJ/Sloan-Kettering Memorial Institute, micro-CT imaging; and Dimitris Metaxas, Rutgers, The State University of New Jersey, computational imaging.

Workshop attendees gained from presentations showing applications for high-resolution PET imaging for use in cancer biology, visualization of tumor metastasis in animals, cardiac function, MRI monitoring of tumor growth and metastasis, and ultrasound for use in embryology, neurobiology, and cancer growth. They learned about computational methods as well, since they are necessary for analyzing the information available through new imaging techniques.

Dr. Abate-Shen says the availability of such technology is a logical and necessary complement to research developments in the past ten years that use mice to model human disease and that pose questions about mammalian development.

“The capabilities of this kind of equipment are completely new,” she says.
In the past, any imaging we could do was limited to a very low resolution, and didn’t begin to give us the information we now can obtain."

Generated by the enthusiasm for the new technology, Dr. Banerjee submitted a shared instrument grant to the National Institutes of Health for approximately $300,000, requesting the IVIS 200-series imaging system, which will provide scientists with the ability for bright field imaging, fluorescent imaging, and bioluminescence imaging on small animals. The new equipment would be used by researchers in medicine, surgery, gynecology, microbiology, immunology and genetics, and all disciplines within oncology for studies on molecular mechanism of cancer progression, in vivo studies of the fate of transplanted progenitor cells, signal transduction and cancer, bone metabolism, and much more.

Commenting on the significance of the technology to his own work, Dr. Banerjee reports, “This equipment would elevate our ability to track gene-marked progenitor cells in small animals, and we cannot do that without such equipment.”

Dr. Abate-Shen agrees that the benefits are limitless in furthering the science of those who work with small animal models. “In my own laboratory, we’ve isolated a set of genes we believe to be involved in the transition to androgen-independent prostate cancer,” she says. “We want to use a drug manipulation scheme to block those genes, and then question if we can eliminate the cancer. This would be blocking the progression of advanced prostate cancer — the kind people die from.”

She explains that the experiment she and her team designed is to deliver the drug, and then monitor how it affects tumor growth in the live animal. “There simply is no other way we could do this,” she says. “That is why the equipment is so important to preclinical applications. What it amounts to is the ability to get the drug to the patient faster, because we are able to reach basic research conclusions much faster.” — R.M.R.
Richard S. Nowakowski, PhD, associate professor of neuroscience and cell biology, recently received three major grants totaling more than $6.7 million, and aimed in three distinct directions: spinal cord research, studies on the developing retina, and the hippocampal area of the brain.

“Our laboratory is interested in a common thread in research, with different specifics,” Dr. Nowakowski says. “We study the proliferation of stem/progenitor cells, and that has resulted in three newly funded projects.”

The first is a $1.1 million named professorship from the New Jersey Commission on Spinal Cord Research. As New Jersey Professor of Spinal Cord Research, Dr. Nowakowski leads a movement to accelerate progress on spinal cord injuries and the number of scientists working in the area.

“These injuries, often the result of auto accidents or athletic activity, generally affect young people, whose disability constitutes a tremendous personal loss as well as a lifetime burden on society,” Dr. Nowakowski says. “Our goal is to build on current knowledge by trying to regrow axons as well as cells in the spinal cord.”

He adds that in recent years, there has been progress in limiting the damage incurred after injury, and in preventing the secondary spreading of injury with anti-inflammatory drugs. Treatment to restore some degree of function has been successful, but while he says even minimal increase in function has tremendous benefits, current research aims for much greater functional improvement.

His work, conducted in collaboration with Nancy L. Hayes, PhD, associate professor of neuroscience and cell biology, studies the specific response to injury that results in the proliferation of cells in the brain and spinal cord. He refers to this as trying to find a key piece of missing information.

“We already know a great deal about injury and its time course, but there is little specifically known about how much proliferation there is, what kind of cells are proliferating, and where,” Dr. Nowakowski says.

He explains there is a need to determine how many proliferating cells are from the nervous system and how many are those that invade from the blood supply. In a spinal cord injury or stroke, the blood supply to the spinal cord or brain is damaged. It is expertise in cell proliferation that he and Dr. Hayes bring to these studies.

Their is a new perspective that pursues an understanding of the kind and number of cells that divide, and questions how frequently and where they divide, so that, ultimately, stimuli can be developed to offset neurological damage.

“We’re finding widespread reaction, some of which is surprising and some of which is not,” Dr. Nowakowski says. “We’ve found significant cell proliferation in cells quite distant from the injury itself. These are areas that are supplied by the axons from the spinal cord, and that makes sense. What we still need to untangle is the issue of what is happening at the actual site of the injury. We know there is a lot of proliferation, but we are only beginning to understand whether it is indigenous to the brain.”

Axons are the processes of nerve cells that carry information. There are cells in the cortex of the brain that send an axon down to the spinal cord. When there is an injury,
Richard S. Nowakowski, PhD, associate professor of neuroscience and cell biology, and Nancy L. Hayes, PhD, associate professor of neuroscience and cell biology, study the specific response to injury that results in the proliferation of cells in the brain and spinal cord.

Dr. Nowakowski’s studies add an important new dimension to the potential for advances in treating spinal cord injuries and restoring lost function by repairing damaged axons, and by finding ways to replace lost cells.

In addition to his spinal cord work, Dr. Nowakowski has a five-year, $1.5 million grant from the National Institutes of Health (NIH) Eye Institute, to study cell proliferation in the developing retina of the embryo. The research is important in understanding albinism. He explains that while some people suffer a kind of albinism that results in a loss of pigment in the entire body, there is a second type of the disorder, called ocular albinism, that affects only eye pigmentation. His laboratory is looking at mouse models of the two conditions; in both, there are visual abnormalities.

“In both situations, there is an abnormal difference in the number of cells in different parts of the retina,” he reports. “So when we started looking at the regulation of cell number, we became interested in how cell proliferation in the retina affects the production of neurons in the retina, and eventually, we may reach some conclusions about albinism.”

The third grant in the laboratory is a four year, $1.5 million NIH award to study the genetic variation in the size and structure of the hippocampus, a part of the brain that is involved in human diseases including Alzheimer’s disease, schizophrenia, depression, and autism. The hippocampus plays a key role in memory and learning, and is at the root of permanent amnesia resulting from accidents and stroke.

Dr. Hayes is studying the genetic variation in adult neurogenesis, as well as the genetic variation in the structure of the hippocampus in inbred strains of mice. The inbred strains are screened for genetic variation, and then, using other mouse resources, the contributing genes are first mapped, and eventually identified.

“We expect to find genes that produce changes in the size of the structure, and that these genes also will be related to variations in the brain that determine differences in behavior, as well as in the susceptibility to disease processes among individuals,” Dr. Nowakowski says. “Since the size of a structure is determined by the number of cells it has, we really are looking for differences in cell proliferation embryos, even though we will be studying adults.”

In other words, the team is looking at the detailed anatomy of different parts of the hippocampus, and asking what makes one individual different from another. It is expected that these differences will lead to answers about each person’s susceptibility to Alzheimer’s disease, depression, autism, and other illnesses.

— R.M.R.
Dr. Francesco Ramirez, PhD, has been named the Laura Gallagher Endowed Professor and director, Child Health Institute of New Jersey (CHINJ) at UMDNJ-Robert Wood Johnson Medical School. Dr. Ramirez will have his primary academic appointment in the Department of Pediatrics and will hold a joint appointment in the Department of Pathology and Laboratory Medicine. He succeeds Robert L. Trelstad, MD, Harold L. Paz Professor of Developmental Biology and professor of pathology and laboratory medicine, who has served as acting director since 1999.

“Dr. Ramirez is an outstanding basic scientist and former faculty member who has made significant contributions to the understanding of human diseases,” says Harold L. Paz, MD, dean. “By his example and through his leadership, he will inspire researchers to new understandings about genetic disorders, with important clinical consequences. We are honored to welcome him back to our faculty.”

The mission of CHINJ is to improve child health and quality of life through the study of the mechanisms and factors that orchestrate vertebrate development and underlie the causes of birth defects and childhood diseases. “RWJMS has shown its commitment to biomedical research by making substantial investment in several initiatives, including CHINJ,” Dr Ramirez says. “CHINJ is both an integral part of the first pediatric academic campus in New Jersey and of the emerging biomedical research cluster in New Brunswick. As an important addition to the outstanding basic science program on the Piscataway campus, it will significantly expand both the breadth and depth of the school’s developmental biology program along with fostering the study of human diseases using genetically engineered mice.”

Increasingly, the National Institutes of Health (NIH) emphasize funding disease-oriented research projects, and Dr. Ramirez finds that the CHINJ goals are in line with that objective. The CHINJ mission also aligns with the long-term goal of the NIH: to ensure that the resources of medical research create tangible benefits that touch everyone’s lives. At CHINJ, he observes, “basic scientists will be..."
working within an academic medical center, and this environment will undoubtedly influence the direction of their work. This setting is equally important for clinicians, who will benefit from interacting with their basic science colleagues.” Dr. Ramirez adds, “Indeed, I believe CHINJ will serve as an intellectual bridge between clinical and bench scientists and a vehicle to integrate their efforts into new health-related research initiatives.”

An internationally recognized matrix biologist, Dr. Ramirez has focused on the multiple roles of the architectural matrix in morphogenesis and organ function. He earned a doctoral degree in genetics from the University of Palermo and did post-doctoral training at Columbia University, where he studied globin genes in human thalassemias, a group of inherited blood diseases. In 1979, Dr. Ramirez joined the faculty of RWJMS (then Rutgers Medical School). In the following ten years, his studies of the structure and regulation of human collagen genes in normal and diseased states led to the identification of genetic lesions in osteo-dysplasias and the chondrodysplasias.

Subsequently, at the Mount Sinai School of Medicine, Dr. Ramirez extended his study of diseases in connective tissues to characterizing the genetic defect in Marfan syndrome, the disorder to which he currently devotes part of his research program. “Our understanding of heritable disorders used to be limited to establishing a causal relationship between a mutant gene and a particular phenotype,” says Dr. Ramirez. “Thanks to our ability to develop mouse models of human diseases, we now have the opportunity to study the mechanism of disease progression and thus identify novel biological targets for therapy.” During the past ten years, his laboratory developed several mutant mouse lines that replicate the full spectrum of clinical severity in Marfan syndrome. These genetically engineered mice have provided important new insight into disease pathogenesis. With support from an NIH-backed program involving four medical centers, this new information is being translated into effective new therapies for dissecting aortic aneurysm.

In his last three years at Mount Sinai, Dr. Ramirez served as dean for research. He then accepted an appointment as chief scientific officer of the Hospital for Special Surgery at the Weill Medical College of Cornell University. He held the St. Giles Chair in Pediatric Genetic Research as well as joint appointments as professor of physiology and biophysics, cell and development biology, and pediatrics. “I am extremely excited at the idea of coming back where my career began,” says Dr. Ramirez. “With the help of my new colleagues, I look forward to building a center of excellence in developmental biology and biomedical research — a place where outstanding investigators, supported by state-of-the-art facilities, pursue clinically relevant questions by studying vertebrate development from individual molecules to the whole organ system. I would really like CHINJ to be my lasting legacy.”

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**Dr. Amenta Accepts RWJUH Position**

In February, Peter S. Amenta, MD, PhD, professor and chair, Department of Pathology and Laboratory Medicine, was appointed senior vice president of medical affairs and chief of staff, Robert Wood Johnson University Hospital (RWJUH). Dr. Amenta had served in this position on an interim basis for the past three years.

“Dr. Amenta’s expertise, experience, dedication to excellence, and commitment to Robert Wood Johnson University Hospital make him not only the ideal individual for this role, but also a central figure in this hospital’s future growth and development to world-class status,” says Clifton R. Lacy, MD ’79, president and CEO, RWJUH.

In addition to this new appointment, Dr. Amenta serves as chief, RWJUH Pathology Service, and director, Pathology Residency Program, RWJMS.

Among his many awards and honors, Dr. Amenta has been listed in Castle Connolly’s Best Doctors in America guide and in New Jersey Monthly’s “Top Doctors in New Jersey.” He has published numerous articles that contribute to an understanding of connective-tissue biology and gastrointestinal pathology. He serves on the editorial board of Human Pathology and is involved in studies funded by the National Institutes of Health and the National Cancer Institute.
NEW APPOINTMENT:

Dr. Bruce G. Haffty Named Chair of Radiation Oncology

Bruce G. Haffty, MD, has been appointed professor and chair, Department of Radiation Oncology. He believes that the young RWJMS department is poised to achieve national prominence, a goal he plans to help it achieve. He is considering several departmental expansions, including a radiation oncology residency program, which would be the first in New Jersey.

At RWJMS, Dr. Haffty also will serve as associate director, The Cancer Institute of New Jersey (CINJ), and director of radiation oncology there. He will treat patients using brachytherapy (high-dosage, focused radiotherapy) and image-guided radiation therapy. In addition, he will continue his translational research in therapeutic radiology and his investigation of molecular markers for cancer. Dr. Haffty’s research has been supported by several grants, including one from the Susan G. Komen Breast Cancer Foundation to study racial differences in the genetics of breast cancer.

“Dr. Haffty is an exceptional educator, clinician, and scientist,” says Harold L. Paz, MD, dean. “He is eager to contribute leadership, knowledge, and discovery in radiation oncology — including his specialty, radiobiology — while building the stature of our Department of Radiation Oncology.”

A graduate of the Yale University School of Medicine, Dr. Haffty completed an internship in internal medicine, followed by residency and chief residency in the Department of Therapeutic Radiology, Yale–New Haven Hospital, before joining the faculty at the Yale Medical School.

He most recently served at Yale as professor and vice chair, Department of Therapeutic Radiology, and director, Residency Training Program in Therapeutic Radiology. Dr. Haffty also served as president of the Association of Directors of Residency Programs and serves on the Radiation Oncology Residency Review Committee of the American College for Graduate Medical Education. Recognized worldwide as an expert in his field,
he is the author of more than 140 original publications. He serves as co-editor of The Cancer Journal and on the editorial board of several oncology-related medical journals. Dr. Haffty has been listed in Best Doctors in America, “America’s Top Doctors,” “Top Cancer Specialists for Women” (Good Housekeeping), “Top Doctors for Women” (Ladies Home Journal), and “Top Doctors in New York” (New York).

New Appointment:

Dr. Daniel J. Mehan Appointed To Student Affairs Post

Daniel J. Mehan, Jr., PhD, clinical assistant professor of medicine, was appointed assistant dean for student affairs. Serving in this post since November, he will counsel students on personal, academic, and career issues. He will also help develop and present programs that enhance students’ educational and personal experiences.

“Dr. Mehan adds a wonderful combination of experience and expertise to the Student Affairs Office,” says David Seiden, PhD, professor of neuroscience and cell biology and associate dean for student affairs. “His clinical psychology training, his familiarity with all four years of the curriculum, and his familiarity and credibility with students and faculty will allow him to be a major contributor to our services for students. In addition, his outstanding personal characteristics make him a pleasure to work with.”

Dr. Mehan holds a doctorate in clinical psychology and has been a member of the RWJMS community since 1999. He previously served as a liaison for the Student Wellness Program and administered undergraduate educational programs for the Department of Medicine. “In these positions, I gained a foundation of knowledge of student services and curriculum,” he says. “I also established relationships with many faculty members and members of the current student body. I look forward to strengthening existing relationships and to building new ones.”

In January, Harold L. Paz, MD, dean, announced several leadership changes among the medical school’s upper-level administrators.

Having completed a number of major initiatives, Marie C. Trontell, MD ’76, professor of medicine, expressed a desire to step down as senior associate dean for education, effective January 31. Dr. Trontell was appointed associate dean for graduate medical education, to oversee planned expansion of the school’s residency and fellowship programs, while managing the increasingly complex regulatory issues of graduate medical education. David E. Swee, MD, professor of family medicine, who had served 14 years as department chair, agreed to serve as acting senior associate dean for education during a national search to fill this vital position. The new senior associate dean for education will hold the Richard Harvey Endowed Professorship in Innovative Teaching. Alfred F. Tallia, MD ’78, MPH, associate professor of family medicine, is serving as acting chair of the Department of Family Medicine during a national search for Dr. Swee’s successor.

Carol A. Terregino, MD '86, clinical associate professor of medicine, who has served as assistant dean for admissions, was appointed associate dean for admissions. Dr. Terregino assumed additional responsibilities as director of the medical school’s new Clinical Skills Center. As associate dean for student affairs, David Seiden, PhD, professor of neuroscience and cell biology, will focus on student affairs as the school expands services for third- and fourth-year students on the New Brunswick campus.
Mark B. Anderson, MD, associate professor of surgery and surgical director, cardiopulmonary transplantation and circulatory support, and Ronald S. Freudenberger, MD, associate professor of medicine and director, Heart Failure and Transplant Cardiology, received the Harvey E. Nussbaum, MD, Distinguished Service Award. The awards were presented in April, at the American Heart Association's Affair of the Heart Gala, in Livingston.

Siobhan A. Corbett, MD '87, associate professor of surgery, is president-elect of the Association for Academic Surgery.

Deborah Cory-Slechta, PhD, professor and chair, Department of Environmental and Occupational Medicine, and director, Environmental and Occupational Health Sciences Institute, has been selected to chair the Perfluorooctanoic Acid Risk Assessment Review Panel for the Scientific Advisory Board of the U.S. Environmental Protection Agency.

In February, the Society of University Surgeons announced the induction of four members of the Department of Surgery. Three are from the division of surgical oncology: David H. Gorski, MD, PhD, assistant professor of surgery; James S. Goydos, MD, associate professor of surgery; and Roderich E. Schwarz, MD, PhD, assistant professor of surgery. The fourth, Randall S. Burd, MD, assistant professor of surgery, serves in the division of pediatric surgery.

Alice B. Gottlieb, MD, PhD, William H. Conzen Professor of Clinical Pharmacology, professor of medicine, and director, Clinical Research Center, received a presidential citation from the American Academy of Dermatology for Commitment to Unity in Dermatology.

The National Multiple Sclerosis Society, Mid-Jersey Chapter, presented its 2004 Volunteer Award of Excellence to Suhayl S. Dhib-Jalbuth, MD, professor and chair, Department of Neurology, in recognition of his exemplary services in the fight against MS.

Paul M. Lehrer, PhD, professor of psychiatry, received the Distinguished Scientist Award from the Association for Applied Psychophysiology and Biofeedback. This honor, prompted by Dr. Lehrer’s research on heart-rate variability biofeedback as a treatment for asthma, is a lifetime achievement award, presented this spring at the association’s annual meeting in Austin, Texas.

In November, at the 2004 annual meeting of the Association of American Medical Colleges, Harold L. Paz, MD, dean, was elected to the Administrative Board of the Council of Deans. Dr. Paz was also selected to serve through 2006 as a member of the AAMC Executive Council. On April 16, at the 18th Annual Breath of Spring Ball, the American Lung Association of New Jersey/New Jersey Thoracic Society presented the 2005 Sir William Osler Humanitarian Award to Dr. Paz.

On February 22, Denise V. Rodgers, MD, professor of family medicine and environmental and community medicine and senior associate dean for community health, was honored by the UMDNJ Board of Concerned Citizens. Dr. Rodgers also was honored on March 9 by theYWCA of Princeton at its annual Tribute to Women awards dinner.

Monica J. Roth, PhD, professor of biochemistry, has accepted

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**Catch a Rising Star**

Three members of the Class of 2005, Camden campus, shared first place in the category “Best Paper by a Student” at the New Jersey Psychiatric Association Annual Awards Dinner, in Manasquan last October. They are: Elizabeth Cerceo, Neha Korde, and Kusum Punjabi.

The Pisacano Scholars Leadership Program selected Molly Cohen ’05 as a 2004–2005 participant. Pisacano Scholars are selected in a competitive process that evaluates their commitment to family medicine, community service, strong academics, and record of leadership.

Ranjit Ramasamy ’07 won a top award in the New Jersey Chapter of American College of Surgeons manuscript contest. His adviser is Joseph G. Barone, MD ’87, associate professor of surgery and director, Pediatric Incontinence Center.  "

Health...
an invitation from the National Institutes of Health Center for Scientific Review to serve as a member of the Gene and Drug Deliver Study Section. Her term runs through June 30, 2008.

The Central and South Jersey Affiliate of the Susan G. Komen Breast Cancer Foundation honored Deborah L. Toppmeyer, MD, associate professor of medicine, director, LIFE Center for Breast Cancer Awareness, and director, New Jersey Comprehensive Breast Cancer Program at CINJ, at the Third Annual Spirit of Jane Rodney Award Reception in central and southern New Jersey.

In Memoriam

A founding faculty member, Bertram D. Cohen, PhD, professor emeritus of psychiatry, was his department’s senior member and remained active in his field until his death, in October. “Dr. Cohen was devoted to his patients and students,” says Raymond C. Rosen, PhD, professor of psychiatry, who worked closely with Dr. Cohen to establish the Graduate School of Applied and Professional Psychology at Rutgers.

Bertram D. Cohen, PhD, professor emeritus of psychiatry, was his department’s senior member and remained active in his field until his death, in October. “Dr. Cohen was devoted to his patients and students,” says Raymond C. Rosen, PhD, professor of psychiatry, who worked closely with Dr. Cohen to establish the Graduate School of Applied and Professional Psychology at Rutgers.

In November, the American Board of Physician Specialties, in Clearwater, Florida, viewed Daniel E. Wartenberg, PhD, professor of environmental and occupational medicine, presented a workshop on “Medical Ethics in the 21st Century: What Every Physician Should Know.”

Deborah M. Spitalnik, PhD, professor of pediatrics and executive director, Elizabeth M. Boggs Center on Developmental Disabilities, presented the keynote address at the National Association of State Directors of Developmental Disabilities Services, in November. Her topic was “What Is the Role of State Agencies in Assuring the Health of Individuals with Developmental Disabilities?”

Professionally Speaking

Judith K. Amorosa, MD, clinical professor of radiology, was a representative of the national organization of the Association of Women Radiologists at the European Congress of Radiology, held in Vienna in March.

Rido Cha, MD, associate professor of medicine, Camden campus, presented “Current Application of CAT/MRI in Cardiac Disease” at the Korean-American Medical Association’s 22nd Annual Scientific Convention, in Palm Desert, California.

Michael Gochfeld, MD, PhD, professor of environmental and occupational medicine, was chosen to report on the progress of the “Human Health Cluster” at the general assembly of the Scientific Committee on Problems of the Environment (SCOPE). The meeting took place in New Delhi in February.

At the Annual Scientific Session of the Society of Critical Care Medicine, in Phoenix, Steven M. Hollenberg, MD, professor of medicine, Camden campus, presented “Guidelines for Vasopressor Use in Sepsis.” The society honored Dr. Hollenberg for his service as chair of the committee to draft the 2004 update of the American College of Critical Care Medicine Practice Parameters for Hemodynamic Support of Sepsis in Adult Patients.

In January, Shengkan (Victor) Jin, PhD, assistant professor of pharmacology and member, The Cancer Institute of New Jersey (CINJ), was an invited speaker at a special meeting of the American Association for Cancer Research, on “Regulation of Cell Death in Oncogenesis,” in Waikoloa, Hawaii. Dr. Jin spoke on “Autophagy, a Novel Tumor Suppression Mechanism.”

Michael Lewis, PhD, Distinguished Professor of Pediatrics and Psychiatry and director, Institute for the Study of Child Development, presented “Infant Learning, Emotion, and Stress” at the National Institute of Child Health and Human Development, Laboratory of Comparative Ethology, in Bethesda, Maryland, on January 28.

In January, at the Annual Leadership Conference of the American Board of Physician Specialties, in Clearwater, Florida, Russell L. McIntyre, ThD, professor of environmental and occupational medicine, presented a workshop on “Medical Ethics in the 21st Century: What Every Physician Should Know.”

David A. Laskow, MD ’81, associate professor of surgery and chief, Kidney/Pancreas Service at RWJMS and Robert Wood Johnson University Hospital. On January 12, Daniel E. Wartenberg, PhD, professor of environmental and occupational medicine, was the featured epidemiologist on a three-hour nationwide webcast by North Carolina State University’s Center for Transportation and the Environment in cooperation with the U.S. Federal Highway Administration. The topic was “Transportation and Public Health: The State of Science.”

Robert Wood Johnson ■ MEDICINE 27
Systems Biology:
THE SIMULTANEOUS SOLUTION

There are moments, unheralded except in the laboratory, that define the future of science. These are the times when scientific promise peaks — before a body of work is name-tagged and catalogued, before it earns its place in the annals of research.

So it is with complex biomedical systems biology, an approach so new and so intellectually stimulating that it is quietly celebrated through the collaborative energies of scientists representing a variety of disciplines.

Systems biology is that in which a large amount of data is integrated to draw conclusions that couldn’t be reached by examining each individual piece by itself. Simply put, it is a directional compass that equips researchers, not so much with answers as with the knowledge to ask the right questions.

Arnold J. Levine, PhD, professor of pediatrics and biochemistry, and member of The Cancer Institute of New Jersey (CINJ), is a pioneer in systems biology, and an internationally recognized scientist whose research is leading to understanding the genetic changes that determine if and when an individual may get cancer.

Arnold J. Levine, PhD, professor of pediatrics and biochemistry, and member of The Cancer Institute of New Jersey (CINJ), has a joint appointment as professor at the Institute for Advanced Study, School of Natural Sciences, Princeton. He is a pioneer in systems biology, who is credited by colleagues as probably the first person to recognize and harness its relevance to disease. His dual positions have created a partnership between two institutions bent on furthering biological research.

“The body is made up of many systems that communicate and regulate each other through homeostatic

BY RITA M. ROONEY  PHOTOS BY JOHN EMERSON
The challenge has led to exciting collaborations wholly new to the world of scientific investigation. Theoretical and molecular biologists, physicists, clinicians, and both mathematical and computer scientists are joining forces to explore systems from DNA molecules to cells in the laboratory, and even clinical settings, in an attempt to solve problems that would have been considered insurmountable just a few years ago.

Dr. Levine’s enthusiasm for the future of systems biology is unyielding, and that’s understandable. He is one of its very first advocates. He has seen it at work in his own laboratories and beyond. As an internationally regarded scientist, whose groundbreaking work in cancer research has earned worldwide acclaim, he is among a selective few who first had the curiosity to probe those questions that had never been asked.

In 1979, Dr. Levine discovered p53, a tumor suppressor gene that is central to cancer research in that approximately 70 kinds of cancer have mutations in the p53 gene.

“We’re still unfolding information about p53,” he says. “Human insights are slow and methodical. Our minds seem to work in a linear fashion. We don’t automatically think as systems biologists yet. But we will.”

The function of p53 is to respond to stress, for example sunlight, which is energy that enters the DNA and results in mutations or damaged DNA. If the damaged DNA is duplicated, the mutations increase. The role of p53 is dormant until excess stress occurs, possibly from sun, air, or carcinogens in food. Then p53 kills the affected cell. If the cell were not destroyed, it would be duplicated with many mutations over a lifetime — and that, of course, is the origin of cancer.

People who don’t have a good p53 gene always develop cancer, often many cancers over years, because they constantly are exposed to cancer-causing stress without the subsequent apoptosis, or programmed cell death, that is accomplished by a normal p53 gene.

Unfortunately, p53 isn’t always the good guy in this drama. If the damaged DNA goes astray, cells may be killed inappropriately. If those cells are neurons, neurodegenerative disease may follow. If they are lymphocytes, the activity may cause an autoimmune disease. The bottom line is that p53 can be dangerous when excessively activated. That’s where the second force shaping the human genome comes to the rescue. When a faulty mutation occurs, it is selected by this force and eliminated. Dr. Levine points to such evidence in the p53 gene, which is equipped with a control mechanism
through a protein called MDM2. It keeps p53 in check so that cells are not killed unnecessarily.

“That’s the secret of systems biology,” he says. “Everything is in a homeostatic balance. When stress develops, p53 protects us. When the stress has been eliminated, MDM2 levels rise and p53 levels are lowered. We’re not talking about one gene but a circuit of genes that interact.”

Understanding this circuitry may well lead science to a new generation of defenses against disease. How, though, is this very basic research interpreted in the clinic? Dr. Levine heads a research contingent performing clinical studies at CINJ.

“We studied people with cancer and looked at the age they got it,” he says. “Those who were diagnosed in their 40s had high MDM2 levels and low levels of p53. Those who got cancer in their 60s had high p53. In other words, the efficiency of the stress response mechanism is different in each person. People with an efficient response mechanism because of high p53 levels were protected against cancer longer than those with a faulty mechanism.”

The study included 105 people who developed cancer. Those who developed cancer early in life tended to have high levels of MDM2, while those who had cancer later in life tended to have higher p53 levels, and this was genetically controlled.

“This is exciting,” Dr. Levine admits. “Suddenly, we have found one of the variables that determine the age of onset of cancer. But it’s just one of many variables, and we want to know all of them.”

Perhaps even more exciting is that while science still cannot regulate the genes in the body to reverse high and low levels of p53, there is a drug being tested in the petri dish that may change that. Dr. Levine says the work may lead to clinical trials. The implications of this research to the success of chemotherapy are significant.

“There are those who believe p53 helps patients respond to chemotherapy by killing cancer cells,” he says. “If this is true, people with high MDM2 will not
respond well to chemotherapy, while those with low MDM2 will be very responsive. We haven’t tested this theory yet, but the work clearly suggests that it will help in determining which patients may or may not do well with chemotherapy.”

Such predictions would help clinicians in recommending one form of treatment — surgery or chemotherapy — over the other. Dr. Levine contends that there is almost no other cancer diagnosis in which this is more important than breast cancer. Traditionally, women have surgery following a biopsy, then they get preventive chemotherapy. If doctors could predict who will do well with chemotherapy, and who should be seen more frequently because they aren’t likely to do well, the impact in preventing a recurrence of the malignancy would be critical.

“We currently are testing this premise with a cohort of 900 women with breast cancer at CINJ,” Dr. Levine says. “We begin with a determination of whether they have high, middle, or low levels of MDM2, and then we question how they respond to chemotherapy. This is a large database that yields enormous information. Think of it — the clinical records of 900 patients. It is systems biology at its best, in the clinic, not at the molecular level — and it has never been done before.”

In scientific terms, systems biology is an infant...While its influence is spreading throughout the science community, it had an early start at RWJMS.

In scientific terms, systems biology is an infant, perhaps five or six years old. While its influence is spreading throughout the science community, it had an early start at RWJMS, where researchers, working independently and in concert with Dr. Levine’s laboratory, were quick to embrace the new approach to understanding human disease.

Daniel A. Notterman, MD, University Professor and chair, Department of Pediatrics, and member, CINJ, whose research interests are leukemia and colon cancer, compares the methodology of systems biology to that of the airline industry.

“If you need to know the condition of an airplane, you can measure the temperature of the engine or wingtip,” he says. “However, the black box measures information from thousands of points to give a system-wide understanding of the airplane, so that those points can be integrated to predict what the plane will do in the next ten minutes.”

Dr. Notterman’s lab collects and analyzes data from hundreds of samples of normal and diseased human tissue, across thousands of genes, in an effort to describe the entire functional state of the tissue at the time it is collected. These results are correlated with others, including DNA, to build a model that explains how the systems are interacting.

“By contributing this kind of data, we can then work with other investigators who may be studying the same disease, or even the same piece of tissue, in a different way,” Dr. Notterman says. “All of these observations are used to build an explanation of how the diseased tissue got that way. It’s using systems biology to look at the pathology of disease, uniting different kinds of data into a framework that explains the biology of an organism.”

In one project, Dr. Notterman’s laboratory collaborates with Dr. Levine in an experiment measuring a specific genetic change called single nucleotide polymorphism (SNP). Ultimately, they hope to develop a complex mathematical statement on the interaction of SNP. They then will adopt a systems biology approach to understanding how the cells divide and reproduce. This is achieved by observing normal and abnormal function in the cell cycle from numerous approaches, and then combining their observations into an explanatory matrix. With this kind of information, the researchers will be able to make predictions on what will happen if the system is disturbed in any way.

“All of this understanding leads us to important knowledge about the normal and disease states,” Dr. Notterman says. “For instance, in my laboratory, we believe we have identified an abnormal protein being excreted in cancer. If we are right, we may be able to target it with drug therapy.”

Steven J. Choi, MD ’97, and John Chuo, MD, assistant professors of pediatrics, work with Dr. Notterman in a project applying the same kinds of modeling systems to clinical care.

“We’re currently collecting data from 100 intensive care patients who eventually went into shock, and 100 intensive care patients who did not, and we’re developing computer models that will assimilate this data and help us predict which future patients will or will
not go into shock,” Dr. Notterman reports.

Commenting on the future of systems biology, he points out that the whole human organism consists of system upon system, complex but becoming less difficult to interpret as a result of this new biological approach to research.

“Modern science has always accepted the link between emotions and cardiovascular disease, between diet and cancer,” he says. “Now, we are beginning to understand the thousands of networks of chemical interactions within cells, and how those interactions impact disease.”

Arnold B. Rabson, MD, professor of molecular genetics, microbiology, and immunology, resident member, Center for Advanced Biotechnology and Medicine, and deputy director, CINJ, is involved in the recruitment of computationally oriented biologists with an interest in cancer.

Arnold B. Rabson, MD, professor of molecular genetics, microbiology, and immunology, resident member, Center for Advanced Biotechnology and Medicine, and deputy director, CINJ, is involved in the recruitment of computationally oriented biologists with an interest in cancer.

Intrinsic to this mission is a recognition that the computational approaches of systems biology provide tremendous influence, especially as science learns more about the genome and the expression of genes.

“As I see it, part of my job is to identify and recruit computationally oriented biologists with an interest in cancer,” Dr. Rabson says. “Therefore, we are conducting an ongoing search for people whose experience spans both bench and computational science.”

Dr. Rabson refers to systems biology as a subset of computational biology and makes an analogy to engineering.

“Engineers develop mathematical models of interactions between structures and the environment that predict whether a bridge will stand or fall in the face of environmental disturbance,” he says. “In a sense, a cell is an extremely complicated wiring diagram. So it is logical to attempt to understand it in a quantitative way.”

Victor Jin, PhD, assistant professor of pharmacology and member, CINJ, worked as a post-doctoral
fellow in Dr. Levine’s laboratory before heading his own lab. His studies are similar in approach to Dr. Levine’s, with the exception that his focus is multiple genes within the same pathways, specifically the P13 kinase and mTOR pathways, which are over-expressed in breast, ovarian, and prostate cancers.

“These pathways regulate a process called autophagy,” Dr. Jin reports. “Genes can either increase or decrease the level of autophagy. When it is abnormally decreased, cancer occurs.”

Interestingly, these pathways are the same ones that regulate aging, and that has led to an offshoot interest for Dr. Jin and others at RWJMS. He says he and Leroy F. Liu, PhD, professor and chair, Department of Pharmacology, and program leader of the cancer pharmacology program at CINJ, are excited about the implications for aging.

“Understandably, autophagy is getting a great deal of excitement because of its relevance to understanding the aging process,” Dr. Jin says. “We’re very interested in exploring this avenue of research.”

Meanwhile, Dr. Jin’s laboratory continues to work on the application of the research to cancer therapy. He is in the process of testing a drug, rapamycin, to determine if it increases the autophagy level and affects human cancer cells in culture.

“We hope our studies of these pathways will help to discern which patients should be treated with rapamycin,” he says. “Our hypothesis is that there is a defect in the pathway that may be responsive to the drug.”

According to William J. Welsh, PhD, Norman Edelman Professor in Bioinformatics, professor of pharmacology, and director, UMDNJ Informatics Institute, systems biology is alive and well in the classroom as well as in the laboratory. The UMDNJ graduate program in bioinformatics offers classroom instruction as well as hands-on experience in several courses.

“Just one example is our course in computational genomics,” Dr. Welsh says. “It provides students with formal instruction and practical know-how in understanding the interdependencies that exist among biological molecules within the context of the whole organism.”

He adds that, while the recent mapping of the human genome has stimulated interest, it has long been recognized that the ties that bind molecules are equally as important as the molecules themselves.

“I believe a large body of existing knowledge about biological molecules and their interactions has been given new life under the name systems biology,” Dr. Welsh says. “In fact, it can be said with some confidence that this sub-discipline was born of bioinformatics, computational biology, and structural genomics, working as powerful tools for transforming raw biological data into meaningful information.”

Many comment that systems biology is ambiguous, that it has yet to be defined.

“I like it that way,” Dr. Levine says. “There is a distinct advantage in being undefined. This is a wonderful, open field, and to try to define it at this point would limit its possibilities.”

What makes it exciting to Dr. Levine and his colleagues is that they are exploring totally new dimensions in biology. Through the collaboration of RWJMS and the Institute for Advanced Study, School of Natural Sciences, teams of eight scientists at RWJMS and seven at the institute are engaged in looking at the genome and deciphering the biological differences between any two people. The unique aspect is the coming together of theory and research groups in joint meetings that underline the shared goals of the entire team.

“For the first time, theorists, researchers, and clinicians are working together in what is the ultimate example of translational science,” Dr. Levine says. “There is no place in the world where theory gets translated into clinical medicine. What we have done is bring together physicians, mathematicians, and computer scientists to mine the information of large biological storehouses. We have databases of 2,000 patients that help us figure out the combination of genetic change that will determine not only if a person will get cancer, but even the age that person will get it.”

Dr. Levine says that 20 years ago, he wouldn’t have known how to phrase the questions that today come so easily. They became apparent four years ago, in 2001, when he began the questioning. In 2004, he published his findings in Cell. That’s fast work for a methodically complex science, one that is just emerging as a presence in the current scientific community.
Congratulations to our nurses! We are proud to receive the prestigious Magnet designation for nursing excellence by the American Nurses Credentialing Center. Magnet status is the highest honor a hospital can attain in nursing. It recognizes our commitment to outstanding levels of excellence in patient care. From our superb nurses to our entire hospital family at Perth Amboy and Old Bridge, we are proud to be a Magnet hospital. To learn how you can join our nationally recognized hospital, contact us at (732) 836-9234.

Raritan Bay Medical Center

A Major Clinical Affiliate of UMDNJ – Robert Wood Johnson Medical School
An Affiliate of The Cancer Institute of New Jersey
A Member of the Robert Wood Johnson Health Network
As the world grows smaller, its communities expand. Their boundaries begin to merge, making community health a shared concern worldwide. No individual or group suffers alone from an illness. No health care breakthrough, whether it helps one person or many, can be celebrated by one community alone.

Improving community health is critical to achieving excellence in medical education and patient care, and it is a leading theme in scientific research. At UMDNJ-Robert Wood Johnson Medical School, community health is one of four core missions, valued on a par with education, clinical care, and research. Every day, the school’s faculty, residents, and students help fulfill that mission in the community. This strong engagement is evident throughout the school’s educational program, clinical services, and training.

“Our commitment to community health is inseparable from our determination to train humanistic, culturally competent physicians,” says Harold L. Paz, MD, dean. “Starting with Orientation, we make our mission clear to our students. For four years, they will absorb it from their classmates, peer mentors, and teachers; they will learn it and teach it themselves through our community-based programs. And they will live it, we hope, through a lifetime of service.”

Chandler Health Center offers a wide range of clinical services. They include:

- adult medicine
- pediatrics
- obstetrics and gynecology
- HIV/AIDS care
- neurology
- dentistry
- podiatry and nutrition
- laboratory services
The Eric B. Chandler Health Center: A Taut Safety Net

RWJMS is a vital, young medical school. Its campuses are in or near the heart of New Brunswick and Camden, two cities in which the academic and urban communities frequently intersect. In both cities, the medical school leads in collaborative efforts aimed at improving community health. The RWJMS campuses and satellite programs have become hubs where many medically underserved residents find health care and social services and learn health literacy.

In New Brunswick, the Eric B. Chandler Health Center plays a key role in meeting the health care needs of the community. Chandler, a federally qualified and funded community health center, is owned and operated by RWJMS with the active leadership of a community board. Located downtown, it is close to many of the clients it serves.

Preserving Quality Health Care for the Underserved

"Chandler is the base of the medical school’s community health mission," says the center’s medical director, Eric G. Jahn, MD ’88, associate professor of environmental and occupational medicine. "Not having resources doesn’t mean you shouldn’t get excellent care, follow-up care, or continuity of care."

As federal funding for Medicare and Medicaid tightens, communities increasingly depend on academic health centers and medical school faculty to care for the under- and uninsured. Still, Dr. Jahn finds he can attract physicians of the

In October 2003, the Chandler staff gave a surprise party for their 50,000th patient, two-week-old Jair Lopez. Arriving at the balloon-decorated center for his newborn visit with a nurse, Jair and his mother were greeted with cheers by the staff, who would later present him with a gift basket filled with baby care items. The staff also showered Jair’s mother, Eva Lopez, a participant in Chandler’s Family Education Program, with gifts and star-quality attention.
The New Brunswick Community Interpreter Project was launched in 1999 with three goals: to lower hurdles to health care access, to improve the quality of health care received by Spanish-speaking patients, and to increase cultural competency among health care providers. All the project’s interpreters are students at Rutgers, The State University of New Jersey. Fluent in Spanish and trained in medical interpretation, they work at Chandler, at the high-risk obstetric clinic at RWJUH, at St. Peter’s University Hospital, and in a pilot project at CINJ. In the program’s first year, community interpreters assisted in 300 patient encounters. In 2004, that number grew to 16,500, says Nicholas Napoli, project coordinator. Mr. Napoli, who majored in Spanish at Rutgers, began the program as an intern, as did assistant coordinator Hank Dallmann, a Rutgers master’s degree candidate in Spanish interpretation and translation. In the fall, Mr. Napoli will enter the RWJMS Class of 2009, and Mr. Dallmann will assume the role of project coordinator. Grants from Johnson & Johnson and NBT support the project, which is run by the RWJMS Office of Community Health.

highest caliber, because Chandler offers top-notch, broad-based care in an academic setting. “Those who want to teach, in general, are high-caliber doctors. Our staff wants to do more and increase services,” he says. “We are headed for greatness, limited only by available resources.”

At Chandler, RWJMS residents learn to deliver excellent medical care to people who have limited resources but profound needs, says Dr. Jahn. In addition to basic clinical skills, residents develop cultural sensitivity and familiarity with the personal challenges of their patients. The experience is invaluable, and it is an important resource for the community.

When patients see a Chandler internist, notes Dr. Jahn, they know they will see the same doctor for the next three years. In pediatrics and in obstetrics and gynecology, residents and attending physicians are scheduled on regular days as well. RWJMS faculty and residents provide acute and chronic care to patients of all ages.

The Cancer Institute of New Jersey (CINJ) earns special praise from Denise V. Rodgers, MD, professor of family medicine and environmental and occupational medicine and senior associate dean for community health. “CINJ keeps its doors open for us,” she says. Mary B. Todd, DO, professor of medicine and deputy director of CINJ, adds, “It’s the right thing to do. The secret of CINJ is: if you’re diagnosed with cancer, you’re here — no questions. Cancer is such a devastating and frightening disease — you can’t disenfranchise people who can’t pay by limiting their access to the best care.”

Caring for the Whole Patient

In addition to comprehensive ambulatory services, Chandler patients have access to a broad spectrum of social services as well as community-based health and wellness programs. The supplemental programs reflect the center’s mission of caring for the whole patient, says Grace Ouma, RN, BSN, director of social services at Chandler. “It means people are better served
here than they would be in a private practice.”

On a newborn’s first visit to the health center, a nurse checks the infant from head to toe and assesses mother-baby interaction, while a social worker watches for signs of postpartum depression in the mother. The social worker determines the family’s needs and recommends community resources and support services. The mother also meets with a nutritionist.

The Parenting Coach Project, funded by the Rutgers Community Health Foundation (RCHF), provides 70 new parents with added help in honing their parenting skills. Other Chandler programs include:

- Alliance for Teen Health, which provides access to medical, dental, and mental health services for students at New Brunswick High School;
- Community Outreach Unit, which provides home visits, tracks patients who have missed multiple appointments, and contacts patients for needed follow-up;
- Family Education Program, which focuses on a series of health education seminars on topics such as domestic violence, immigration, managed care, and health maintenance;
- Adolescence to Motherhood, which gives adolescent mothers, some still in high school, special counseling through Chandler, including guidance on how to continue their education.

Ms. Ouma represents the Chandler Health Center on the planning committee for two annual health fairs, hosted by public schools and presented by local health care providers in New Brunswick. About 400 people benefit from the wide range of services available at the fairs, including dental health screenings, HIV screenings, and child immunizations offered by Chandler and its community partners and funded by the RCHF.

**Growing Needs, Growing Expectations**

Chandler bustles six days a week, stretched to capacity. With evening hours twice a week and half days on Saturdays, it provided nearly non-stop clinical and social services to more than 10,000 patients last year. Since 2002, the patient load at Chandler increased by 5 percent annually—until this year, because of space limitations. In 2004, on an average day, the health center saw nearly 170 patients. It recorded 65,000 patient encounters, serving a diverse, multicultural, largely indigent patient population. About half the patients were uninsured, and just over 40 percent were covered by Medicaid.

A triage nurse helps manage the patient load. She sees all walk-in patients to determine whether they should be seen that day or the next day—or sent to the Emergency Department at Robert Wood Johnson University Hospital (RWJUH). Typically, 90 percent of those in the waiting room have appointments. Many are mothers-to-be, or parents bringing children in for physical examinations, check-ups, immunizations, or dental care. Others might be participants in the Family Education Program; or a domestic violence support group for women at risk; or Shots by Two, a childhood immunization program.

The growing patient load demonstrates Chandler’s critical role in caring for the community, but sheer numbers have overburdened the center’s
Through HIPHOP, nine medical students volunteer for CARE, a year-long non-credit elective offered through CINJ. After shadowing a social worker for one semester, students are matched with a patient who has volunteered to participate in the program. “These patients see the opportunity as something positive coming from their illness,” says Barbara Hale, social worker, CINJ. “Many refer to the HIPHOP volunteer as my student.” CARE volunteer Andrew Demidowich ‘07 says that “it’s an eye-opener” to share the experience of someone living with a serious illness. His patient coped with the side effects of both her illness and her therapy. She also faced the anxiety of the waiting room, along with the tedious discomfort of 90-minute chemotherapy sessions, and, lacking insurance, she felt non-stop concern about how and where she will get her prescriptions.

RWJMS students may volunteer in the MOMs program, a non-credit HIPHOP elective. After being matched with a mother-to-be in Chandler’s prenatal program, MOMs volunteers become waiting-room companions and patient advocates. Many patients speak little or no English. “I suggested my patient ask her boss to modify her job requirements — no more heavy lifting — and he gladly complied,” says Heather Grigo ’07. “When she asked me if she should be taking vitamins, I suspected she’d missed out on some instructions, so during the next appointment I reminded her to ask. And when we heard the baby’s heartbeat at ten weeks, we both cried.”

The steady increase of people who lack adequate health care coverage is driven by unemployment, immigration status, and the complexities of New Jersey Family Care (Medicaid), observes Ms. Ouma. “The state sends information for the patient to review and submit, but the forms are confusing,” she adds. “If people get discouraged and don’t fill out the form, they lose their insurance.”

Because of patient overload and growing delays, the center is considering limiting its catchment area to New Brunswick and contiguous towns. It already has had to limit patients seeking dental care, although oral health was the most frequently mentioned problem for school-age children in the survey.

“We have reached capacity,” says Dr. Rodgers, and, despite the growing need for Chandler’s services, “we don’t have one more inch of space to meet that increased demand for services. We can’t begin to train the number of students and residents here that we’d like to. We must find the means and the way to expand.”

Training Culturally Competent Physicians: Students Expand the Safety Net

The RWJMS curriculum provides numerous contexts in which students are trained in the school’s humanistic philosophy, which gives all patients equal merit. “Introduction to the Patient” requires first-year students to spend a semester volunteering for a community-based organization. The requirement provides wide opportunities to work with culturally diverse groups and to share their assorted experiences within the context of the curriculum.

Before space was at such a premium, Chandler was an outstanding training site, especially for third- and fourth-year students on clinical rotations. “Given the emphasis on the continuity experience in the revised [RWJMS] third- and fourth-year curriculum, we could have a substantial amount of training at Chandler,” says Dr. Rodgers. “If only
we had room for students, it would be an ideal spot to teach community-oriented primary care, continuity of care, and cultural competence.”

**Student Initiatives Respond to Community Needs**

Under the umbrella of two student-run community service programs — one based on the Piscataway campus and the other in Camden — future physicians are gaining familiarity with community health care issues. While the students manage the programs, they enjoy extraordinary support from the faculty and administration, whose counsel and hands-on help make their efforts possible.

On the RWJMS Camden campus, the student-created and -governed Urban Health Initiative (UHI) is the umbrella organization for programs and projects that help the city’s large medically underserved population. “Since 2000, 100 percent of the third-year students on the Camden campus have volunteered annually in UHI programs,” reports Paul R. Mehne, PhD, associate professor of family medicine and associate dean for academic and student affairs. Twenty faculty members also serve in the programs, says Dr. Mehne, adding, “It is an extraordinary service-learning experience that is part of the culture of RWJMS at Camden.”

Established by students in 1992 and based on the school’s Piscataway campus, the Homeless and Indigent Population Health Outreach Project (HIPHOP) is the umbrella organization for service projects in and around New Brunswick. HIPHOP provides a wide range of opportunities, from electives, regular programs, and clinical sites to special events such as health fairs, where students learn to mentor, teach, raise funds, and take a first step into providing patient care. This year, more than 25 percent of the first-year students are fulfilling their “Introduction to the Patient” community service requirement at HIPHOP sites, including the St. John’s clinic (see box, page 43) and The Promise Clinic.

**Healthier New Brunswick 2010: Survey Finds Access Is #1 Health Care Problem**

THE MEDICAL SCHOOL HAS BEEN A KEY RESOURCE FOR NEW Brunswick Tomorrow (NBT), a private non-profit organization that fosters the city’s social revitalization through public and private networks of agencies, institutions, and volunteer organizations.

Dr. Rodgers represents the medical school on the board of NBT and serves as one of its vice chairs. She also serves as project director of Healthier New Brunswick 2010, a two-year-old initiative that is a four-way collaboration involving NBT, RWJMS, the city, and Rutgers, The State University of New Jersey. Healthier New Brunswick 2010 aims to develop long-term strategies to meet the city’s health needs, says Camilla Comer-Carruthers, program coordinator. The initiative currently targets a group of four key health issues, she adds: prevention of lead poisoning in children, childhood obesity, domestic violence, and mental health and substance abuse.

Among the initiative’s first planning tools was the New Brunswick Community Health Assess-
On the RWJMS Camden campus, the student-run Health Outreach Project (HOP) Clinic provides weekly primary care, specialty referrals, and prescription assistance for 110 Camden residents. Building on the ten-year-old program for adults, HOP recently added a bimonthly pediatrics clinic, and planning for a HOP women’s health clinic is well under way. Faculty volunteers work as preceptors for the clinic, which is supported by an Association of American Medical Colleges (AAMC)—Pfizer Caring for Community Grant.

Lead-contaminated soil puts children of minority families at the greatest risk for lead poisoning, but special housecleaning techniques may reduce this risk. HIPHOP volunteers are in the second year of a five-year pilot project designed to teach families these techniques. Armed with an introductory video, a special vacuum, and cleaning products, the students visit families of New Brunswick children identified as having high levels of lead in the blood. Often the team is accompanied by a translator from SALUD, a medical student organization that promotes health in the Latino community. To demonstrate the equipment and cleaning methods, the students clean the homes. Afterward, they present the vacuum and the products to the families. The teams follow up with three visits to answer questions or help with problems. The cleaning education program was designed by the Environmental and Occupational Health Sciences Institute, a joint institute of Rutgers and RWJMS.

On the RWJMS Camden campus, the student-run Health Outreach Project (HOP) Clinic provides weekly primary care, specialty referrals, and prescription assistance for 110 Camden residents. Building on the ten-year-old program for adults, HOP recently added a bimonthly pediatrics clinic, and planning for a HOP women’s health clinic is well under way. Faculty volunteers work as preceptors for the clinic, which is supported by an Association of American Medical Colleges (AAMC)—Pfizer Caring for Community Grant.

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ment, a comprehensive survey of the city’s health care needs. Respondents were drawn from groups representing the broad spectrum of New Brunswick’s socioeconomic, ethnic, and cultural groups, from its most vulnerable to its most influential.

Across that spectrum, respondents found that health is the city’s number one problem. The city’s “stakeholders” described “two New Brunswicks,” one occupied by those who have benefited from its revitalization and have realized the promise in the city’s nickname, “the Health Care City.” “The second New Brunswick,” the survey found, “encompasses the city’s large population of low-income residents, who face low wages, unemployment, inadequate education and transportation, and barriers to accessing services.”

The assessment identified lack of access as the main barrier to obtaining health care. The “second New Brunswick” must cope with obstacles including lack of health literacy, lack of documentation among the city’s growing immigrant population, lack of bilingual/bicultural personnel in the health care system, and labyrinthine reimbursement systems. Better public transportation would improve access to health care services, respondents said, and reductions in public support for health coverage are a deepening problem.

Reaching to the Future

Despite the difficult climate for the medically underserved, RWJMS continues to develop new solutions. Last fall, building on the Health Outreach Project (HOP) model established by their Camden peers (see “HOP” sidebar at left), students on the New Brunswick campus established a new student-run organization. They worked through the winter to lay the groundwork for The Promise Clinic, which will provide primary care and specialty referrals for the clients of Elijah’s Promise, a faith-based soup kitchen and social service agency that serves the homeless. As patients begin to find and use the clinic, it is meeting its goals: to provide affordable health care without prejudice, to create healthier families, and to relieve individual suffering. With their ambition to rally the community and respond with new solutions, the student founders of The Promise Clinic have again raised the bar.
ACHIEVING SOCIAL JUSTICE IS THE PASSION OF Denise V. Rodgers, MD, professor of family medicine and environmental and occupational medicine and senior associate dean for community health. Dr. Rodgers says she inherited from her parents the drive to “look out for those who have less.”

She is unwavering in her quest to advance this mission through family medicine and community health. “I’m an ardent supporter of family medicine,” she says, adding, “It always made sense to me to provide care in the context of the whole family.” That mission has expanded to include not just families, but also the communities in which her patients live and work — a systems view of health care.

After graduating from Oberlin College, where she majored in psychobiology, Dr. Rodgers earned her medical degree at Michigan State University College of Human Medicine. She then completed a residency in family medicine at Montefiore Medical Center in New York and a faculty fellowship in geriatrics at the University of California, San Francisco. “Originally, I thought I’d help make a revolution working in clinics in the black communities of the south,” she says. “But I realized that I’m an urban person. I need to work in an urban setting.”

Community health enlarged her mission, and academic medicine extended her reach. “I never thought I’d end up in academic medicine,” says Dr. Rodgers. “But by only practicing clinical care, the number of people I can help is limited. I’m teaching because if I touch the students and guide them with my values, they will, hopefully, expand my reach to many more patients.”

Dr. Rodgers’s reach is long indeed. Her civic engagement extends to community, state, and national organizations that she says “look out for those who have less.” She has been widely recognized for her teaching skills, her commitment to community-building, her dedication to addressing health care disparities, and her humanitarian vision in clinical care. Unaffected by the fuss, she takes every award as an opportunity to teach her audience about the urgent needs of the communities she serves.

RWJMS students nominated Dr. Rodgers in 2002 and in 2004 for the Association of American Medical Colleges Humanism in Medicine Award. Pfizer Medical Humanities Initiative, which co-sponsors this award, contributed $500 toward a congratulatory reception. Dr. Rodgers requested, however, that the check instead be presented to The Promise Clinic. The clinic, a new student-run initiative, opened this winter to provide weekly clinic services to clients of the Elijah’s Promise soup kitchen who otherwise have limited access to primary care.

Before last fall’s promotion to the newly created position of senior associate dean, Dr. Rodgers served as associate dean for community health. “It was a significant move,” observes Harold L. Paz, MD, dean. “It not only emphasized the importance we assign to our mission in community health. It also recognized Dr. Rodgers’s extraordinary leadership, which keeps us focused on addressing the community’s health care needs, now and for generations to come.”

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St. John’s Family Health Center was cited by respondents to the New Brunswick Community Health Assessment for providing essential primary care to New Brunswick’s under- and uninsured residents. The clinic, which receives major funding from Catholic Charities and St. Peter’s University Hospital, is run by its sole attending physician, Steven J. Levin, MD, associate professor of family medicine. St. John’s, which had 7,000 patient visits last year, has become an important training site for the RWJMS Family Medicine Residency Program. In addition, first-year students completing their requirements for “Introduction to the Patient” and third-year students in their family medicine rotation provide much-needed volunteer assistance at the clinic.
Whenever a newborn breaks the deafening silence that precedes his or her first cry, parents are greeted by a chorus of congratulations and best wishes — and rightly so. Historically, the nine-month odyssey that mother and child travel often is a perilous one, safer by far today than ever before, but still not without risk. The difference is that both babies and their moms now benefit from the relatively new science of maternal-fetal medicine, a specialization that extends throughout the perinatal experience. Research, technology, clinical care, and the intellect that drives all three are responsible for minimizing the trauma of pregnancy loss, the danger inherent to preterm labor, the outcomes associated with specific ethnic populations, and much more.

UMDNJ-Robert Wood Johnson Medical School has become a pivotal player in this still-evolving science. Anthony M. Vintzileos, MD, professor and chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, reports that the division of maternal-fetal medicine is responsible for significantly expanding the number of favorable pregnancy outcomes that take place annually throughout New Jersey.

“The division encompasses a multi-disciplinary approach to maternal-fetal health,” Dr. Vintzileos says. “Ours is a collaborative endeavor that interacts with specialists in other departments, notably pediatrics and neonatology.”

As professor and chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, Anthony M. Vintzileos, MD, heads the largest academic division of maternal-fetal health in the country.
nder Dr. Vintzileos’s leadership, the division — the largest academic service of its kind in the country — has become organized as the New Jersey Center for Fetal Diagnosis and Therapy, and has a fully accredited three-year fellowship program that encompasses training in clinical practice and research. RWJMS is one of only a few centers nationally that perform an intricate fetal surgical procedure called fetoscopy. New Jersey’s first comprehensive evaluation program for women with histories of pregnancy loss and preterm labor is a critical component of care, as is one of the strongest groups addressing obstetric issues of women who are seriously ill during pregnancy.

John C. Smulian, MD, MPH, associate professor of obstetrics, gynecology, and reproductive sciences and director of the division of maternal-fetal medicine, believes research in several areas has contributed to significant strides in understanding the dynamics of fetal development.

and babies respond to the challenges that lead to many common pregnancy complications, such as preterm birth, poor fetal growth, and birth defects.”

Laser laparoscopy — a surgical development that employs lighted instruments to operate without large incisions — is being applied to fetal surgery in a complex procedure at RWJMS. One of only a few surgeons in the tri-state area to perform the surgery, Gregg Giannina, MD, assistant professor of obstetrics, gynecology, and reproductive sciences, explains fetoscopy, a surgical procedure that may be required in up to 15 percent of all pregnancies involving identical twins.

“The condition is referred to as twin-twin transfusion syndrome,” Dr. Giannina says. “One twin pumps blood to the other through abnormal blood vessels in the placenta, and consequently does not develop normally. One baby gets smaller with little or no amniotic fluid, and the other becomes large and has a tremendous amount of fluid. The twin who is pumping blood can go into heart failure, but both twins are at risk.

“To correct this, we stop the abnormal blood flow between the twins by laser ing the placenta. If untreated, this condition may result in up to 80 to 100 percent mortality of one or both twins,” Dr. Giannina says. “With surgery, we can reverse that to up to 80 percent survival of one or both babies.”

The surgery is performed by inserting a large needle in the mother’s abdomen, and then placing a very thin scope through the needle to identify the vessels the surgeon believes to be involved. He clots the vessels with a laser, and actually removes some of the fluid from the sac of the larger twin.

Additional fetal surgery procedures undertaken by surgeons in the maternal-fetal division include the treating of fetal tumors, and one to repair congenital cystic adenomatoid malformations, for which a shunt is placed in the fetal chest. Still another treats women who suffer ruptured membranes by using amniopatches, similar to the blood patches used to treat spinal headaches, to seal the separation. In situations in which there is an abnormal collec-
tion of fluid in the abdomen, bladder, or chest area, one side of a curlicue “pigtail” shunt is placed inside the fetus, the other outside to drain the accumulation. This procedure is generally done under ultrasound, where the excellent visualization provided by advanced technology enhances the procedure.

Fetoscopy, still done in relatively few centers worldwide, has been performed for about 15 years, but Dr. Giannina cautions it is a procedure that is still evolving. “Our approach to this surgery is constantly improving,” he says. “In the beginning, it was the accepted practice to close every vessel in the placenta, but we’ve learned that isn’t the best approach. Today, we are much more selective in determining which vessels are involved and closing only those that are necessary. In fact, much of the progress in our field has been in the discretion used by the surgeon. Open fetal surgery once was more prevalent. Now we do more minimally invasive procedures, with better results for both mother and fetus. An important key is making the right diagnosis, because many of these conditions overlap and one can’t make generalizations. Improved patient selection has been a big advance.”

Dr. Smulian says the expansion of maternal-fetal capabilities is due, in large part, to advances in ultrasound technology. “We now use ultrasound as our stethoscope,” he says. “And it is Dr. Vintzileos who is one of the recognized authorities in obstetric ultrasound. He has pioneered changes in clinical thinking in terms of how the technology can be used to evaluate babies in utero.”

Widely published in the field of maternal-fetal ultrasound, Dr. Vintzileos is the first U.S. physician to develop a method for independent evaluation of fetal behavior with ultrasound monitoring of fetal movement. Known as the biophysical profile, his technique for identifying babies at risk due to a lack of fetal oxygen is a real-time examination that has become a standard test in practice today, and is used to identify fetal infections as well.

Dr. Vintzileos is also credited with being one of the first to use ultrasound to evaluate the fetus for congenital anomalies, from initial diagnosis to obstetric management and delivery. He is responsible for one of the first recognized controlled research trials in the early 1990s comparing electronic fetal heart monitoring with listening to the fetal heart rate with a stethoscope during labor.

“The study overwhelmingly found that electronic heart monitoring is preferable,” Dr. Vintzileos says. “In fact, we discovered it has saved the lives of many infants.”

Genetic sonography, in which ultrasound is used to detect a fetus with Down syndrome, can be used as an initial evaluation instead of the traditional amniocentesis in the 15th to 17th week of pregnancy. While the risk of amniocentesis is minimal, it still can cause miscarriage. Today, thanks to research by Dr. Vintzileos and others, ultrasound can be used to help rule out this birth defect.

“By measuring subtle physical features associated with Down syndrome, including a small nose and thickening of the skin at the back of the neck, we can put together ten markers that pinpoint the disorder,” Dr. Vintzileos explains. “If the baby has none of these markers, the possible presence of the syndrome is reduced by 87 percent. Women with an increased risk for Down syndrome are eager for early reassurance that they are likely to have a healthy infant. Genetic sonography helps these women safely avoid the potential complications attendant to amniocentesis.”

Lami Yeo, MD, associate professor of obstetrics, gynecology, and reproductive sciences, is the director of one of the first dedicated maternal-fetal perinatal ultra-
sound units, and fetal cardiovascular units in New Jersey. She reports that the unit provides first-trimester aneuploidy screening, which includes nuchal translucency on ultrasound, along with a serum blood test.

“With this procedure, we evaluate all the factors and can report to a patient her risk of having a fetus with either Down syndrome or trisomy 18, which is a serious chromosomal disorder that generally is fatal,” Dr. Yeo reports.

She adds that 4-D ultrasound technology has dramatically improved the ability for fetal diagnosis, and she uses facial anomalies as an example of what is considered its best use, assistance with identification of fetal malformations.

“Looking at a traditional two-dimensional prenatal image of a baby with a cleft palate may not give a parent an easily comprehensible understanding of what the abnormality really is, or looks like,” she says. “But a 3-D or 4-D image is very clear. Even more critical, a cranial facial team or pediatric surgeon can examine this fetal image and have a more precise understanding of what the malformation is going to look like. This improved perception is enormously helpful to both parents and the team who will later treat the baby.”

Dr. Yeo says prenatal ultrasound has greatly enhanced diagnosis of fetal heart anomalies as well. As director of the fetal cardiovascular unit, she performs fetal echocardiography exams for women referred from all parts of New Jersey and the surrounding tri-state area. Women who have had a child with a heart problem and those with a family history of cardiac abnormalities, as well as diabetics and others who are at increased risk of delivering an infant with a cardiac disorder, are among those who benefit from this targeted ultrasound.

Although extremely difficult to accomplish, large epidemiology studies on trends in pregnancy complications are the backbone of clinical research, and at the core of being able to improve delivery outcomes. Leading the field with several major studies, particularly those related to twin births, is Cande V. Ananth, PhD, MPH, associate professor of obstetrics, gynecology, and reproductive sciences and director of the division of epidemiology and biostatistics, the only such division in an obstetrics and gynecology department in the country.

“One of every two twin pregnancies will be delivered preterm,” Dr. Ananth reports. “This is a huge public health issue today,
because more twins are conceived as a result of fertility programs. There is a high rate of infant mortality among these babies, many of whom won’t see their first birthdays. Problems attendant to preterm birth in all infants include neurodevelopmental and respiratory complications.”

Driven by the scarcity of programs to identify and ultimately reduce the number of preterm births nationally, Dr. Ananth set out to determine trends, using the U.S. Natality and Infant Mortality Data Sets from 1989 to 2000, and focusing on 1.1 million twin births. He segregated his studies between African-American and Caucasian births, and defined preterm as less than 37 weeks. Preterm births include those that are a result of a ruptured membrane, those that are labeled spontaneous, and those involving medical intervention. The latter accounts for the highest number of preterm births and, in the past, led to speculation that unnecessary C-sections or induction of labor procedures were being performed. Dr. Ananth’s study confirmed that medically indicated preterm births were those responsible for the overall increase. However, he then compared his results with the rate of mortality during the first year of life, and learned that the mortality rate declined — and that the largest decline was among the medically induced group. His work conclusively makes the case that medical procedures have been responsible for a decline, not a rise, in infant mortality.

“We looked at all causes of death, and we replicated our analysis by redefining preterm labor,” Dr. Ananth says. “We asked questions no one else had asked. We now need to ask what are the exact reasons for these interventions. Are they being done because of hypertension, bleeding complications, fetal compromise through respiratory distress syndrome, or some other cause? When we understand that, we can start designing interventions to avoid preterm labor.”

Wendy Kinzler, MD, assistant professor of obstetrics, gynecology, and reproductive sciences, is director of the division’s Pregnancy Loss and Evaluation Service, and

Preterm Birth Evaluation and Prevention Clinic — programs that ideally serve women prior to pregnancy.

“Our is a multi-disciplinary team approach to the evaluation of women with a history of pregnancy loss,” Dr. Kinzler says. “We have maternal-fetal medicine physicians, genetic specialists, perinatal pathologists, reproductive endocrinology/infertility specialists, maternal-fetal medical fellows, and a perinatal nurse coordinator.”

She says that, to be eligible, patients must have a history of two or more first-trimester losses, or at least one loss in the second trimester or later.

“These are women who have been told not to worry,” Dr. Kinzler says. “They are advised by family and physicians that, eventually, they will get pregnant again and have a healthy baby. And maybe they will. But there are many issues that can be addressed. We know more now than we ever did — and many problems are fixable.”

The process starts with an exhaustive review of the patient’s history and includes...
meetings with a genetic counselor, blood work, hormonal testing, and a review of all records related to any previous pregnancies. A special ultrasound of the uterus is performed that takes advantage of an infusion of saline fluid to check for abnormalities — a procedure that cannot be done during pregnancy. The perinatal pathologist examines slides from previous pregnancies. The team looks for a variety of immune conditions and genetic factors that may predispose a woman to causes of pregnancy loss, such as infection or abnormal clotting. The goal is to plan toward future pregnancies.

“There are many instances in which we can identify a problem that can be adjusted to enhance a woman’s opportunity to deliver a healthy, full-term infant,” Dr. Kinzler says. “For instance, a woman or her partner may unknowingly have a chromosomal rearrangement called a translocation. When she gets pregnant, her fetus may not get the right amount of genetic material. But there are clear ways we can test the embryos with an in vitro fertilization cycle, and avoid implantation of unbalanced embryos.”

A subset of the program is a preterm delivery clinic for women who have had any history of a premature birth and are therefore at risk of another. For these women, getting answers and definitive explanations of the possible causes behind their preterm birth is the reassurance they seek.

Genetic medicine has been an active and important component of pregnancy evaluation for many years, but it is now possibly more powerful in its ability to determine and avert risk than ever before, thanks again to technology, increased knowledge of gene expression, and the general expansion of maternal-fetal medicine as a clinical specialty.

Susan S. Brooks, MMS ’73, MD, associate professor of pediatrics and obstetrics, gynecology, and reproductive sciences, and chief of both perinatal and pediatric genetics, says advances in genetics have led to the development of expanded prenatal testing in recent years.

“We have available testing for specific populations,” Dr. Brooks says. “They include screening for carriers of sickle cell, cystic fibrosis, and other diseases, along with first-trimester screening for chromosomal abnormalities. This last is fast becoming the most reliable method for prenatal risk assessment of Down syndrome and a whole range of other birth defects.”

She adds there are tests that identify
problems in women who don’t even realize they carry a mutation for a recessive condition such as cystic fibrosis. While there may be no history of the disease in the family, if each parent carries a mutation, the couple has a 25 percent chance of having a baby with the disorder.

“The human genome project has made genetic testing more available in that more genes have been identified, and people are beginning to study those genes in a way that allows for improved diagnosis,” Dr. Brooks says. “Once a risk is identified and a prenatal diagnosis made, a family and physicians can prepare for what lies ahead.”

Whereas prenatal genetic medicine once was restricted to diagnosis, it has become therapeutic through recent developments for some storage disorders, notably Gaucher’s disease, in which a person has a deficient enzyme. Medications are being developed to replace deficient enzymes, making diagnosis for this and other diseases more critical.

Dr. Vintzileos says research is a priority of maternal-fetal medicine, and that aim is underlined by the division’s perinatal biology laboratory, headed by Morgan R. Peltier, PhD, assistant professor of obstetrics, gynecology, and reproductive sciences. Dr. Peltier is studying the molecular pathogenesis of genital mycoplasmas, and is investigating how these organisms stimulate immune reactions that ultimately could cause preterm labor.

“If we can find out how these organisms interact in the genital tract, we may be able to develop vaccines or drugs to prevent the occurrence,” Dr. Peltier says.

The studies, which are in the early stages, show considerable promise, as does an additional project in Dr. Peltier’s lab that seeks to determine how progesterone, which is a new therapy to prevent preterm birth, may control the immune response to the pathogens associated with premature labor.

Dr. Smulian’s research interest lies in the early origins of adult disease and the premise that events that happen to babies inside the womb actually affect their health later in life.

“For instance, we know that the smaller infants are at birth, the more likely they are as adults to develop high blood pressure, and cardiovascular complications such as stroke and heart attack,” Dr. Smulian says. “Something happens to the fetus in utero that reprograms how it will function in later years. It’s exciting to explore some of the links in this early development that contribute to adult diseases. The hope is that we can design early fetal or childhood interventions to improve adult health.”

Summarizing the impact of maternal-fetal medicine, Dr. Smulian says, “Possibly the most significant advance of the past few years is that we no longer view each complication of pregnancy as a single disease process. We now understand there are many pathways that interact to lead us to specific clinical problems, and this has enabled us to zero in on better research, and has helped us develop better clinical tools in finding solutions to improve pregnancy outcomes for mothers and babies.”

Susan S. Brooks, MMS ’73, MD, associate professor of pediatrics and obstetrics, gynecology, and reproductive sciences, and chief of both perinatal and pediatric genetics, reports that the human genome project has made genetic testing considerably more extensive and that advances in research have led to improved diagnosis.
Medical residents have a mythological ancestor, it must be Proteus, a minor god of the seas, who could shift shapes at will. As learners, teachers, care givers, and scientists, residents often take several forms simultaneously, and are indeed protean figures in the world of academic medicine.

Learning and teaching define the lives of medical residents as they respond to questions from medical students, peers, attending physicians, patients, and families and make inquiries of their own. Depending on their specialty or sub-specialty, many residents work 80 hours a week for three to eight years, whether it is in their form as learner, teacher, or newly molded physician.

Long hours and a stressful environment may be the most notorious characteristics of residency programs, but the time-tested system successfully mints competent physicians from new medical school graduates. In 2003, to protect the safety of patients, residents, and medical education without compromising the goals of training programs, the Accreditation Council on Graduate Medical Education (ACGME) changed the rules governing trainees’ duty hours. The ACGME restricted that to 80 hours per week averaged over four weeks, a significant reduction from the previous 110-hour limit.

UMDNJ-Robert Wood Johnson Medical School is the sponsoring institution for 36 graduate medical...
education programs, with more than 400 participating residents and fellows. The largest RWJMS residencies, including internal medicine and pediatrics, go back several decades, to the school’s earliest years. Others, including the Urology and Thoracic Surgery Residency Programs, focus on fields that are newer to the medical school. Overall, the RWJMS Residency Program had a banner year in 2005, with a 94 percent match rate with top students in the National Residency Match.

The RWJMS residencies span the medical field and vary in size from one to 30 newly accepted trainees each year. Yet they share a common mission: to prepare competent physicians in an environment that is both demanding and supportive.

“Residents are the linchpin between education and patient care,” says Harold L. Paz, MD, dean. “Because of their key role in teaching students and bringing compassionate, leading-edge care to patients, they are among the medical school’s leading, most visible ambassadors for our missions in education and clinical care.”

Marie C. Trontell, MD ’76, professor of medicine and associate dean for graduate medical education (standing), a former chief resident in internal medicine, joins some of her successors: Payal P. Dave, MD, instructor of medicine (front left); Joshua M. Bershad, MD, instructor of medicine; and Ranita Sharma, MD, clinical assistant professor of medicine and director, Internal Medicine Residency Program.
The mystique of the residency is that it’s the worst time of your life, but in reality, residents will never have an opportunity like this again,” says Barbara A. Palmeri, MD, clinical associate professor of psychiatry and director, Psychiatry Residency Program. “They have no responsibility except to take excellent care of their patients and learn.”

Learning and Teaching: Yin and Yang

“Graduate medical education is an important transition in the education of physicians,” says Marie C. Trontell, MD ’76, professor of medicine and associate dean for graduate medical education. “The philosophy we model is critical, because while residents are mastering their specialty and gaining independence, they are also being shaped by the outlook, even the mannerisms, of the faculty and more senior residents who teach and mentor them.”

Learning and teaching are the inseparable, leading priorities of the RWJMS Residency Program. Each week, residents spend a small fraction of their duty hours in a classroom, but their attention is always focused on on-the-job training, mostly at the patient’s bedside.

Residents learn from the faculty by observing and performing increasingly difficult procedures, and they develop mastery by teaching others. In turn, they promote good health care by challenging conventional wisdom, stimulating the faculty to stay current in clinical care and translational research. “Working with residents may slow me down, but I love teaching and seeing the ‘a-ha’ moment on their faces,” says Sarah A. Stahmer, MD, associate professor of emergency medicine and director, Emergency Medicine Residency Program. Each year, eight new residents are accepted into the Emergency Medicine Residency Program, based at Cooper Hospital/University Medical Center. Located in Camden, Cooper is a Level 1 regional trauma center and a principal hospital affiliate of RWJMS.

Faculty members cannot be with residents 80 hours a week, so teamwork is the residencies’ principal teaching mechanism. One attending physician and two or three residents of varying levels of experience are assigned to each team. “Questions go up the ladder,” explains Angelina Culin, MD, chief resident, Obstetrics and Gynecology (OB/GYN) Residency Program. “Interns ask second years, second years ask thirds, and so on, up to the attendings. That way everyone knows what’s going on.”

Similarly, interns teach medical students, junior residents teach interns, and senior residents teach junior residents. Those who stay in academic medicine will join the teams as attendings; even those who enter private practice may continue as teachers of residents in either ambulatory or inpatient settings.

“At first, as an intern, you’re overwhelmed,” recalls Jennifer Madan, MD ’02. “But you quickly realize that you do have something to teach, because there’s always someone at a more basic level.” Dr. Madan completed two years of the RWJMS Pediatric Residency Program and then began a three-year fellowship in pediatric neurology at Albert Einstein College of Medicine, a specialty not yet offered at RWJMS. From interns to junior and senior residents and attending physicians, the RWJMS Pediatric Residency Program is a partnership, says Dr. Madan.

“When you teach something you learn it best,” she adds. “I could just do a procedure, but the challenge is to break it down into steps that make sense to the people I’m teaching, then explain each part, including what would happen if they didn’t follow those steps.” Dr. Madan uses the example of drawing blood from a child to explain how she might teach the steps of a procedure while developing a student or junior resident’s sensitivity to the patient. To lower a child’s anxiety, Dr. Madan might ask if he or she wants to help her to teach. “Kids tend to be very cooperative when they know they are doing something important for the doctor,” she says.

Payal P. Dave, MD, chief resident, Internal Medicine Residency Program, plans to make a career of academic medicine.

“In medical school, my passion for learning became a passion for teaching,” she says. After three years, most internal med-
icne residents enter sub-specialty fellowships or begin to practice. At RWJMS, internal medicine chief residents are pre-selected during their second year to serve in their fourth year. As mentors to less experienced residents, chiefs set the tone for the programs. In addition to teaching and advocating for their charges, they manage day-to-day operations for the 92 internal medicine residents, fulfill supervisory responsibilities, advocate for their charges, and do three months of ward service.

“This year, as chief, I’ve learned more than I did in my previous three years as a resident,” Dr. Dave says.

Recalling her early days as an intern, Euna Chung, MD, a senior resident in the Psychiatry Residency Program, says, “From day one, all residents have someone to teach, but it takes time, effort, and confidence.” Initially, Dr. Chung did not feel she was ready to teach, and the faculty encouraged her to develop new skills by working with her strengths. Dr. Chung started with the basics such as orienting medical students to the unit. Later she nurtured students’ patient interview skills by standing by, stepping in as necessary, then following up over subsequent days. She also assigned topics that would build basic skills or delve into a subject that particularly interested a student.

Last year, Dr. Madan, Dr. Chung, and Brian Gable, MD ’02 (see “Journal,” page 56), were among six residents chosen by the third-year class to receive the Gold Foundation Award for Humanism and Excellence in Teaching. A Multi-Set Production

Residents become independent, resourceful physicians by developing familiarity with diverse patient populations in a broad range of settings. “As pediatricians, our first goal is to be the child’s primary provider,” says Dalya L. Chefitz, MD ’90, associate professor of pediatrics and director, Pediatric Residency Program. “We provide our residents with a balance of service and education. They see the usual and the unusual, everything that prepares them as independent-thinking, generalized pediatricians.”

Robert Wood Johnson University Hospital (RWJUH), a principal hospital affiliate of RWJMS, is the main training site for the residency programs. A regional medical center in an urban setting, RWJUH provides state-of-the-art clinical care in central New Jersey and beyond. It also gives RWJMS residents a wide spectrum of experience and education. They gain additional experience in rotations and electives at RWJMS sites, including The Cancer Institute of New Jersey and the Eric B. Chandler Health Center. Pediatric residents do most of their training in the new Bristol-Myers Squibb Children’s Hospital at RWJUH, while psychiatry residents, who are based at UMDNJ-University Behavioral Healthcare, also see patients at RWJUH and may do rotations at smaller hospitals in urban and suburban settings, or at Health Care Services at Rutgers, The State University of New Jersey.

The Internal Medicine and Psychiatry Residency Programs at RWJUH provide state-of-the-art clinical care in central New Jersey and beyond. The program also gives RWJMS residents a wide spectrum of experience and education. They gain additional experience in rotations and electives at RWJMS sites, including The Cancer Institute of New Jersey and the Eric B. Chandler Health Center. Pediatric residents do most of their training in the new Bristol-Myers Squibb Children’s Hospital at RWJUH, while psychiatry residents, who are based at UMDNJ-University Behavioral Healthcare, also see patients at RWJUH and may do rotations at smaller hospitals in urban and suburban settings, or at Health Care Services at Rutgers, The State University of New Jersey.

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General Surgery Residency Programs assign regular rotations at the University Medical Center at Princeton (UMCP), where residents acquire a sense of working in a community-centered hospital. “Aside from those who go into critical care, most of our residents will practice in an environment that is closer to the community hospital setting,” says Kathryn Robison, MD, clinical assistant professor of medicine and site director of the RWJMS Internal Medicine Residency Program at UMCP.

Residents in the Thoracic Surgery Residency Program spend three months at the Medical Center of the University of South Carolina (MCUSC), training under Fred A. Crawford, MD, Horace G. Smithy Professor of Surgery and chair, cardiothoracic surgery, MCUSC. To train in thoracic surgery on children with congenital cardiac defects, the residents observe and learn exceedingly complex and uncommon procedures, such as arterial switches of the great vessels and Norwood procedures on single-ventricle babies, says Juan F. Plate, MD ‘96, instructor of surgery. Dr. Plate completed the cardiothoracic residency last year and accepted an RWJMS faculty appointment.

Residents:
The Hospital’s Eyes and Ears

Residents do most of their learning at the patient’s bedside, where they teach and learn but also listen and explain, as well as reassure patients and their families. Their presence at the bedside and on teaching teams frees up time for the faculty. “Residency programs benefit both the institution and the patient,” says Clifton R. Lacy, MD ’79, president and chief executive officer, RWJUH. Patients are drawn to academic health centers by the higher quality of care they offer, and much of that quality comes from the post-graduate trainees. “Residents are an extra set of eyes and ears on the floors,” observes Dr. Lacy, “and they deliver comfort and compassion from the health care system to the patient.”

Patients appreciate the additional attention they receive from their residency teams, says Dr. Robison. “They know two heads are better than one, and they like seeing how physicians are educated. When they hear residents questioning attendings, they realize that medical education is an ongoing process.”

“A Day in the Life of an Internal Medicine Resident”

By Brian Gable, MD ’03

6:45–7:30 A.M. ■ Board Review:
Dr. Kothari, our residency director, leads the discussion of our “sub-specialty of the month”: pulmonary medicine and critical care. Using questions from the ACP Medical Knowledge and Self-Assessment Program, he keeps our review focused, highlighting the fundamentals. What a dedicated, knowledgeable teacher!

7:30–8:30 A.M. ■ Morning Report:
We join the other residents to go over two recently admitted cases: miliary tuberculosis and congestive heart failure. With each case presentation, interns gain self-confidence and become more comfortable talking in front of a captive audience. Faculty, chief residents, and house staff discuss the history, physical exam, differential diagnosis, and case management, an exercise that hones residents’ deductive reasoning and sharpens our clinical skills.

8:30–10:15 A.M. ■ Work Rounds:
Frantic, but with some downtime to talk to patients — always a pleasure! It’s a privilege that teaches me a lot and helps me provide better overall care.

This morning, in less than two hours we see 12 patients dispersed throughout the hospital. We gather data, evaluate each patient, and write notes.
Dr. Chung was attracted to psychiatry by the luxury it offered of time spent with patients. She ranked the RWJMS Psychiatry Program first in her residency match choices, because it emphasizes empathy, balances psychotherapy with pharmacotherapy, and makes the patient-physician relationship the key to treatment. “Time spent with patients has a sacred atmosphere that comes from their trust, and the things they are willing to tell you,” she says.

The combination of education and time spent with patients can make residents important patient advocates. They learn the patient’s background and may pick up details that will make short- and long-term treatment more effective. “Residents explain the tests that have been ordered and help their patients understand their illness,” says Ranita Sharma, MD, clinical assistant professor of medicine and director, Internal Medicine Residency Program. “That way, patients are more likely to follow up on their care: they know why their prescriptions are important and how to care for themselves.”

When they are not with their patients, residents may be calling consultants, contacting a patient’s family, reviewing patient records with a team from another shift, making rounds with other teams on their service, or doing paperwork. They are also growing more familiar with the more mundane tasks associated with practicing medicine, whether they work in a hospital or in a private practice setting. Part of that lesson is mastering the International Code of Disease, a standardized system for identifying a patient’s condition that can make or break insurance reimbursements.

“Our curriculum covers the art, science, and business of medicine,” says Dr. Sharma. “Physicians have traditionally turned away from business decisions, giving them away to legislators and payers. So, one way in which we prepare our residents to face the world is by teaching them good business practices.”

Residents must also learn to navigate the hospitals that serve as the training sites. “At first, residents spend a good number of hours learning their way through the system,” adds Dr. Sharma. “Once they know how to do this, they can spend more time with the patient.”

Today’s Residencies Adapt to Meet New Needs

Like the residents themselves, today’s residencies adapt to meet patients’ needs. The volume of medical research and novel treatments grows and changes daily. This means residents must learn to read and evaluate scientific information. They must prepare to use tomorrow’s therapeutic tools that may still be today’s hypothesis on the laboratory bench.

To train residents to understand, appreciate, and evaluate medical research findings, the ACGME requires that each residency program provide a research infrastructure, and that residents actively participate in research or other scholarly activities.

“The research requirement is the hallmark of upper-echelon residency programs,” says Thomas V. Whalen, MD, professor of surgery and director, General Surgery Residency Program. The university setting not only makes it easier to meet this criterion, says Dr. Whalen, it also encourages residents to explore cutting-edge research. Several RWJMS residencies, including OB/GYN, surgery, and internal medicine, host Research Days, where they recognize and reward outstanding science.

High standards for research during the residency are exemplified by a requirement introduced by John B. Kostis, MD, John G. Detwiler Professor of Cardiology, professor of medicine and pharmacology, and chair, Department of Medicine. Dr. Kostis has mandated that all residents and fellows must participate in a research project before graduating. They must also have been first or senior author of a scientific manuscript presented at a meeting of an organization of national stature.

David J. Riley, MD, professor of medicine, directs the research effort in the Internal Medicine Residency Program. This year, says Dr. Riley, RWJMS will begin offering its residents the opportunity to graduate with Distinction in Research. “The honor raises the bar on research performance in the residencies,” he says. “In addition, it enhances career opportunities and establishes an interface between clinical care and research.”
The General Surgery Residency Program requires the equivalent of one year of independent research during its five years. Daphne Ly, MD, completed two years of the surgery residency, then spent two years studying wound healing, mentored by Siobhan A. Corbett, MD ’87, associate professor of surgery. In March 2003, Dr. Ly was a co-author with Dr. Corbett of an article published in the Journal of Biological Chemistry on the role of integrin in cell migration and wound healing. Although she did not expect to enjoy it so much, Dr. Ly now plans a career in surgical research. In July, she will start a fellowship at Stanford University School of Medicine, which she hopes will be the stepping-stone to combining laboratory bench research with a general surgery practice.

Charles J. Gatt, Jr., MD ’89, associate professor and acting chair, Department of Orthopaedic Surgery, adds a dimension to his department’s already strong residency program. Dr. Gatt’s focus on bioengineering and tissue engineering research was a magnet to Jeffrey Leary ’05, who learned in March that he had been matched with this, his top-ranked program.

“The next generation of pediatricians must be trained in the management of chronic disease as well as psychosocial disease,” says Daniel A. Notterman, MD, University Professor and chair, Department of Pediatrics. In the past year, Dr. Notterman has recruited exceptional new faculty in nephrology, endocrinology, and cardiology, increasing opportunities for the program’s nearly 50 residents to learn and practice sub-specialties. Like Dr. Madan, who is in the Einstein Pediatric Neurology Fellowship, many pediatric residents seek out, and are accepted into, some of the nation’s top fellowship programs.

The Urology Residency Program was established in 1989 by Kenneth B. Cummings, MD, professor of surgery. The well-recognized program has trained outstanding residents including Joseph G. Barone, MD ’87, associate professor of surgery and surgeon-in-chief, Bristol-Myers Squibb Children’s Hospital at RWJUH.

The Anesthesia Residency Program is growing fast to incorporate advances in the field and to accommodate the expansion of related specialties, says Vincent N. Cirella, MD, assistant professor of anesthesiology and director of the program. The opening of the Bristol-Myers Squibb Children’s Hospital brought opportunities to train in pediatric and neonatal anesthesia, and RWJUH, with a wide range of surgical services, attracts diverse cases in which to teach and learn. During their three-year residency, the 27 residents train in the specialized anesthesiology of neurosurgery, open heart surgery, and organ transplantation.

Medical advances have affected cardiothoracic surgery, too, says Peter M. Scholz, MD, James W. MacKenzie Professor of Surgery, chief, division of cardiothoracic surgery, director, Thoracic Surgery Res-
patients with chest pain — a frequent occurrence on the Cardiology Teaching Service. As always, the ER is in perpetual motion, with people looking frazzled and hurried. New patients seem to appear out of thin air. It can be overwhelming.

4:30 P.M.: Time to sign out to the covering team and go home to my lovely wife. Tomorrow is another day.

Dr. Gable is a second-year resident in the UMDNJ-Robert Wood Johnson Medical School Internal Medicine Residency Program. The residency recently selected him to serve as one of two internal medicine chief residents in 2006–2007.
Groundbreaking research to lower the risk of environmental pollutants is conducted by Panos Georgopoulos, PhD, professor of environmental and occupational medicine (left), and Paul Lioy, PhD, professor of environmental and occupational medicine and deputy director of government relations for the Environmental and Occupational Health Sciences Institute. The team’s work includes post-9/11 health protection strategies accepted by the government for further study.
While ecologists work to protect the environment, exposure scientists battle against ozone, carcinogenic organics, and other environmental contaminants believed to lead to health hazards. Those charged with public and private health concerns want to know how, why, and in what combinations specific pollutants endanger health. Until recently, few had probed an understanding of just how toxicants reach humans, and the impact of the dosage over short and long periods of time.

The Environmental and Occupational Health Sciences Institute (EOHSI) is a joint operation of UMDNJ-Robert Wood Johnson Medical School and Rutgers, The State University of New Jersey. Paul Lioy, PhD, professor of environmental and occupational medicine and deputy director of government relations for EOHSI, and Panos Georgopoulos, PhD, professor of environmental and occupational medicine, have applied a unique approach to their investigations with commanding results that include critical data on the Toms River cancer cluster, first-hand involvement in post-9/11 health protection strategies, and government acceptance of their conclusions for further study. The researchers are recipients of a five-year, $2.5 million competitive renewal from the federal Environmental Protection Agency (EPA), a competitive cooperative agreement that includes continued collaboration with scientists at Princeton University.

BY RITA M. ROONEY
PORTRAIT BY NAT CLYMER
Dr. Lioy, who with Dr. Georgopoulos heads EOHSI’s Center for Exposure and Risk Modeling, reports, “We were the first to look at the transfer of pollutants between the environment and humans in a new way. As a result, the EPA today lists implementations of our studies as its regulatory-based models in efforts to zero in on specifics of exposure to contaminants.”

What the researchers have done is develop a mechanism that finally puts risk in perspective with various consequences, depending on physiology, genetics, behavior, home environment, and other issues. They did it by creating computational models. Dr. Georgopoulos formalized a systematic mathematical description of the different components that interact.

“It’s a systems approach that is traditional to engineering sciences, and which is becoming more and more accepted in life sciences,” he says. “What we wind up with is analyzing humans and the environment in two ways: We study how human activities lead to the release of pollutants that disrupt environmental quality. Then we track the contaminants back from their source to their intake by humans.”

Their approach led to the first “University Partnership Agreement,” in 1998, between the center and the EPA’s National Exposure Research Laboratory. Called Modeling Environment for Total Risk Studies (MENTOR), it is a complex computational method for attacking environmental pollution by simultaneously studying its pathways, from inhalation to ingestion and skin absorption.

“MENTOR is like a toolbox, from which you can build different models,” Dr. Georgopoulos explains. “For instance, one of our models, which we built in collaboration with the EPA, and which now is on its regulatory list of models, is one in which we studied the exposure of the entire city of Philadelphia to air pollutants and air toxics. Prior to our work, each pollutant was studied separately, but they should be examined simultaneously.”

The scientists created 250,000 synthetic individuals who statistically represented the entire population in the city of Philadelphia. Their computer sampling matched the population in terms of demographics, including age, occupation, and socioeconomic status. The statistical sampling was followed continuously, computing what these “people” did in their daily lives — from their methods of bathing to modes of transportation, school environment, indoor and outdoor activities, and intake of food and drinking water. Allowances were made for different patterns of activity during each season and on weekdays as contrasted to weekends.

“We were able to draw a long series of conclusions about sources of exposure,” Dr. Georgopoulos says. “Some of the sources we suspected for emission of contaminants — such as an individual’s lifestyle, socioeconomic conditions, age of one’s home, whether a family cooked with gas or electric — turned out to combine with outdoor pollution to increase potential risk.”

While he concedes that policy implementation is a slow process that takes many years, Dr. Georgopoulos asserts that the ability to look at the effects of a mix of pollutants simultaneously, rather than one at a time, not only provides useful insights in developing future studies, but propels the process of implementation along a speedier course. To be sure, the EOHSI program’s work is multi-faceted. The computational techniques developed improve the ability of making sound estimates of dose from exposure to contaminants — a project that helps researchers design better systems. In other words, EOHSI is providing those in the field with improved methods of performing their science, through model simulations that outline the best approach to specific problems.

Awareness of the importance of the work undertaken by the center is underlined by Dr. Lioy’s appointment as vice chair of a panel designated by Congress to examine the extent and quality of the cleanup of residential indoor spaces affected by the initial dust and smoke plume from 9/11, and to predict any potential for residential health risks.

“The panel is trying to come up with better approaches in meeting long-term, unmet health needs,” Dr. Lioy says. “We are evaluating whether or not there are downtown New York areas with residual dust and smoke that may be of concern to human health. In addition, some of the work we’re doing at our center has been used in understanding how to design an indoor residential sampling program to determine if there are additional homes that need to be cleaned up.”

He adds that RWJMS is one of eight institutions receiving a total of $81 million in grants, over five years, from the U.S. Department of Health and Human Services to respond to the aftermath of the attack on the World Trade Center. The goal of the multiple grants is to assess the health of workers and volunteers providing rescue, recovery, and restoration services at the World Trade Center site.

“Currently, we are providing the methods by which scientists and engineers can begin to understand the consequences from air, water, and soil contamination during any future security event,” Dr. Lioy says. “We approach it by studying the impact to those in harm’s way, the ways in which risk might be minimized, and ultimately by seeking guidelines for reducing casualties among those who are emergency responders.”

Meanwhile, just one successful implementation of the MENTOR program involved conclusions drawn from looking at exposure of a specific population to arsenic in drinking water.

“Some years ago, there was a great deal of concern over this issue when the government lowered the limit of arsenic in drinking water, and a few months later, raised it,” Dr. Georgopoulos says.

Creating the same kind of synthetic population base used in the Philadelphia air quality study, Dr. Georgopoulos and his team simulated three U.S. counties — in Arizona, New Jersey, and Ohio — because they represented different populations and different levels
“I believe it is the most forward-reaching work we are doing,” Dr. Georgopoulos contends. “We are beginning to develop collaborations that are extremely promising for the future.”

The project dealt with understanding how much damage is contributed by various pathways of exposure. The team looked not only at drinking water, but at diet, skin contact, and inhalation of fine particles containing metal materials.

“The conclusion was that contamination from arsenic is related generally more to food than to drinking water,” Dr. Georgopoulos says. “This kind of information is critical in evaluating public health policies. You can raise the standards for drinking water, but if the levels in food remain uncontrolled, there is still danger to the affected population.”

This study is one that the EPA has accepted as a regulatory environmental approach. The EOHSI team has been working with the government agency in analyzing the conclusions. How and when it will translate into new rules and regulations remains to be seen. Dr. Georgopoulos points out, however, that the wheels have been set in motion, and this represents important progress.

The EOHSI program benefits from a highly collaborative endeavor, in which Drs. Lioy and Dr. Georgopoulos interact with colleagues at two EPA laboratories — the National Exposure Research Laboratory and the National Health Effects Research Laboratory.

“Everything was focused on West Coast issues,” he says. “In New Jersey, one of our biggest problems is the ozone contamination. The project dealt with understanding how much damage is contributed by various pathways of exposure. The team looked not only at drinking water, but at diet, skin contact, and inhalation of fine particles containing metal materials.

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Drs. Lioy and Georgopoulos have been working together for 15 years, ever since Dr. Lioy became frustrated by shortcomings on the East Coast in understanding the environment as it relates to health problems.

“Everything was focused on West Coast issues,” he says. “In New Jersey, one of our biggest problems is the ozone health-related risk for asthmatics. Yet no one had ever focused on New Jersey ozone.”

He started looking for a colleague who shared his concerns and learned of Dr. Georgopoulos, then a researcher at the California Institute of Technology. The pairing was a natural fit. While at New York University Medical Center, Dr. Lioy had initiated the earliest studies of how people are exposed to environmental toxicants. After he joined RWJMS and EOHSI was founded, he led with the world’s first academic program in exposure assessment. Dr. Georgopoulos was intrigued by both the record of success and the prospects for collaborative progress at the medical school, so the two researchers formed a partnership that launched laboratory studies, then modeling work, and later successful efforts to address major environmental issues.

“Panos and I have complementary skills that have served us well,” Dr. Lioy says. “Add to that the fact that the science we do is so exciting, and one can understand why our partnership continues to thrive after 15 years.”

When he talks of exciting science, he speaks in part of the Toms River cancer cluster, which caused considerable concern in that area of New Jersey several years ago. The EOHSI team designed a study using computational modeling that provided some closure as to whether any of the environmental hazards that existed in Toms River caused leukemia in children.

Commenting on the modeling system created for this study, Dr. Lioy says, “We found there were emissions from a former chemical operation that contributed to a significant association between childhood cancer and air pollution. This kind of discovery is extremely gratifying when we realize that, until our center opened in the early 1990s, no one had ever approached environmental pollution studies in this way. We were the first to analyze source-to-dose contamination, and the first to implement computational studies that looked at all sources and all pathways simultaneously.”

In still another project, the team is collaborating with the EPA in a computational toxicology program aimed at understanding the impact of environmental hazards on the aging process. They are designing a modeling approach to study how the response of organisms to toxic chemicals changes with age, in much the same way that physiology and biochemistry change with age.

Asked to pinpoint the most significant outcome of the EOHSI team’s work, Dr. Lioy reflects that it is the cumulative impact of being able to push science forward.

“It’s rewarding to see one’s concepts come to fruition, to see theories develop into reliable conclusions,” he says. “We’ve been fortunate in being able to quantify and determine which routes of exposure are significant for major environmental health problems. Our work is being used to affect decisions about what can be controlled and what can’t be controlled. That’s of major importance to environmental health, and leads as well to better understanding about development of health advisories to the population regarding specific risk environments and situations.”
Alumni Reunion Weekend

September 30
October 1 & 2, 2005

Friday, September 30
Child Health Institute of New Jersey

Morning: Building Dedication • Evening: Reception

Saturday, October 1

Morning: CME Conference • Afternoon: Lunch and Campus Tours
Evening: Gala Dinner Dance • Hilton East Brunswick
Honoring the following anniversary classes:

Sunday, October 2

Morning: Alumni Brunch • Hilton East Brunswick

For More Information Contact: Roberta Ribner, Coordinator Alumni Affairs,
Phone: 732.235.6310 • Email: ribnerrs@umdnj.edu
Dear Alumni and Friends:

I am very pleased to have the opportunity to serve as president of the Alumni Association, and I am delighted to work with Harold L. Paz, MD, dean, and our new alumni officers: Geza Kiss, MD ‘95, vice president/president-elect; Nancy Sierra, MD ‘89, secretary-treasurer; and Tamara LaCouture, MD ‘94, chair, Membership Committee, to continue building our legacy at RWJMS.

We look forward to seeing you at the next Alumni Reunion Weekend, September 30 and October 1 and 2, 2005. We are delighted that the weekend events will celebrate the dedication of the new Child Health Institute of New Jersey. Reunion activities include a Friday evening reception, Saturday morning CME conference, luncheon, and tours of our New Brunswick campus. The gala dinner dance will be held at the Hilton in East Brunswick, and a Sunday brunch will conclude the festivities. Alumni Reunion 2005 will celebrate the anniversaries of the following classes: 1969, 1970, 1974, 1975, 1979, 1980, 1984, 1985, 1989, 1990, 1994, 1995, 1999, and 2000.

Where are your classmates now? If you are interested in contacting them to encourage a great reunion turnout, please request a class list from Roberta Ribner, coordinator, alumni affairs, 732-235-6310 or email: ribnerrs@umdnj.edu.

The Alumni Association is very proud of our tradition of supporting medical students. Over the past two decades, RWJMS alumni have contributed more than $1.6 million to support scholarships and loans. The students deserve and need our assistance. We thank you for your generous contributions in the past, and we hope you will donate again this year to help support our students. Annual Fund contributions can be made online. Please visit our Web site at http://rwjms.umdnj.edu/alumni.

The Alumni Association sponsors many programs and events during the year. Please join us at Career Night, alumni/student Happy Hours, and alumni receptions. If you are interested in hosting or planning a reception in your area, please let us know.

I look forward to hearing from you and greeting you in person at the Alumni Reunion Weekend.

Sincerely,

Steven H. Krawet, MD ‘89
President, RWJMS Alumni Association
Dr. Steven H. Krawet Leads Alumni Association

“We are building a legacy,” says Steven H. Krawet, MD ’89, who took office as president of the Alumni Association on January 1.

Describing himself as an energetic, active person, Dr. Krawet says he plans to put those characteristics to work for students at UMDNJ-Robert Wood Johnson Medical School. Several years back, Dr. Krawet and student representative Daniel Caruso, MBA/MD ’03, collaborated to establish Happy Hour. Hosted by the Alumni Association at New Brunswick’s hip Latin-themed restaurant Nova Terra, Happy Hour was an instant success. It has grown into a “new tradition” where students meet, greet, and learn from their future colleagues: the school’s alumni.

Happy Hour is for fun, but Dr. Krawet has set the scholarship endowment as the board’s most serious goal. (See article on scholarships and loans, page 68.) He plans to encourage delegates from anniversary classes to promote special reunion gifts from their classmates. This will increase available funding and create broader-based financial support for the medical school. “We may be a young medical school,” he says. “But now that we’re well into our fourth decade, many alumni are in a position to give more generously than they could in the past.”

Dr. Krawet has a private gastroenterology practice in East Brunswick.

Alumni scholarships will begin building allegiance to the association among future alumni, says Dr. Krawet. “The students deserve and need our help, and we need theirs to take care of the next generation of students.” In addition to scholarship support, Dr. Krawet hopes to expand participation in programs such as Career Night and A Day in the Life. The association recently voted to support The Promise Clinic, a new student initiative, and it will continue its record of contributing to the 5K Fun Run sponsored by HIPHOP, the student-run community health program. Dr. Krawet would like to increase the association’s visibility on the Piscataway campus, possibly with an Alumni Association “Wall of Fame” in the Great Hall.

An enthusiastic Alumni Association board backs Dr. Krawet’s determination to increase financial and moral support to the students. “We’re a young school and a young alumni association,” says Nancy Sierra, MD ’89, secretary-treasurer. “But that leaves us free to make history and create our own traditions.” Dr. Sierra mentions the recent addition of new endowed scholarships established by individual alumni, as well as the Alumni Association’s $100,000 Scholarship Fund. After a meeting this winter with representatives of the Foundation of UMDNJ, Dr. Sierra was optimistic that the association’s fund raising would become more structured, more effective, and, ultimately, more useful to students. Dr. Sierra is the director of the Emergency Department at St. Michael’s Medical Center in Newark.

The Alumni Association’s new vice president/president-elect is Geza Kiss, MD ’95, assistant professor of anesthesiology. Chosen for the Alumni Award in 1995, Dr. Kiss was invited to be a class delegate during his residency at RWJMS. Along with Francine E. Sinofsky, MD ’81, clinical associate...
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professor of obstetrics, gynecology, and reproductive sciences, Dr. Kiss will co-chair this year’s Alumni Reunion Weekend (September 30–October 2). “We’re planning a great weekend,” he says. “It’s packed with the alumni’s favorite events: the opening reception, CME, lunch, and tours of the New Brunswick campus. Of course, the Saturday night gala dinner dance and Sunday brunch are always Reunion highlights.” (See Reunion Weekend information, page 64.)

The fall semester will lead off with the September 30 dedication of the Child Health Institute of New Jersey.

The association’s new membership chair is Tamara LaCouture, MD ’94, who previously served as a class delegate. “I see the Alumni Association as a way to keep the school healthy,” says Dr. LaCouture, adding, “If you had a good experience at the school, you want to give something back.” In addition to her service to the board, Dr. LaCouture perennially represents her field, radiation oncology, at Career Night and hopes to have students shadow her in A Day in the Life. She looks forward to rallying her class to return for Reunion Weekend: “The larger the group, the more memories and the more fun we’ll have.”

Continuing as chair of the Development Committee is Ernest Biczak, MD ’77. In word and deed, Dr. Biczak has led the way in alumni giving. The medical school’s unofficial “fund raiser extraordinaire,” Dr. Biczak is the master of the “ask,” whether he is volunteering at a Phonathon or deftly redirecting a conversation into an examination of how to maximize one’s support of the medical school.

Each officer brings a different strength to the ever-evolving Alumni Association. Building on four decades of medical school history, they seem bent on making the future even better by helping today’s students prepare for their careers as physicians and as alumni. — K.O’N.

Continuing Medical Education

September 9, 2005
16th Annual GI Symposium:
Update on Gastrointestinal and Liver Diseases

September 24, 2005
Alzheimer’s Disease Update: A Case-Based Approach

October 1, 2005
(Alumni Reunion Weekend) Breakthroughs in Science and Medicine: New Discoveries and Applications

October 28-29, 2005
4th Annual Conference: Update in Internal Medicine

November 10-12, 2004
20th Annual Issues and Controversies in OB/GYN

For additional information on these or future conferences, contact the Center for Continuing Education at 732-233-7430.

For additional information, contact Roberta Ribner, coordinator, alumni affairs, 732-235-6310 or email: ribnerrs@umdnj.edu.
Students Thank Alumni for Scholarship and Loan Support

"I n the third and fourth years of medical school, it becomes more difficult to balance school work with efforts to finance your education," writes Sarah Graboski ’06 in a letter thanking the Alumni Association for her scholarship. “The study of clinical medicine leaves little time for other activities. I am grateful that you, as alumni, understand this situation.”

No one better appreciates a medical school’s costs and benefits than its alumni. Looking back, many physicians clearly recall their own balancing act between studying and paying bills — and that was before tuition topped $20,000 per year and students graduated with an average debt of $100,000.

In recognition of its members’ own fine education and in support of today’s students, the Alumni Association puts its greatest effort into raising funds for scholarships and loans. In the past two decades, RWJMS alumni have contributed more than $1.6 million to support student scholarships and low-interest loans.

Alumni who contribute $1,000 or more to the Alumni Association Annual Fund may create a named scholarship. As a $1,000 donor, Mary I. Holowinsky, MD ’84, took the opportunity to name a scholarship in memory of her close friend Justine Bonsignore Zompa, MD ’84. Michael Miller, MD ’83, also gave $1,000 in memory of Dr. Zompa, which created a $2,000 scholarship. “Being a physician is still the most wonderful career. It gives so many opportunities to help others, including helping your med-
ical school when you can,” says Dr. Holowinsky. “Of all the things we can spend money on, helping fund medical students is the best investment, because it will benefit many down the road.”

In 2004, longtime donor Donald J. Rose, MD ’80, named a scholarship in memory of his mother, Audrey. “She was very supportive of me emotionally and financially during medical school,” says Dr. Rose. “I wanted to do something in her name to decrease the emotional and financial burden on students today.”

Daniel Y. Kim, MD ’80, chose to name a $1,000 scholarship in honor of his father, Young M. Kim, MD, a New Jersey pathologist who inspired him to become a doctor. “He represented the idea that being a doctor is not a career or a profession but a way you live your life,” says Dr. Kim. “In remembering him, I want to give back to those who helped me.”

For the 2004–2005 academic year, the association allocated $180,000 in scholarships and loans. This included three $20,000 Hippocrates Scholarships: four-year scholarships, initiated in 2002, that are awarded annually for academic excellence to a member of the incoming class. In addition, the association made its second $25,000 payment to the $100,000 endowed RWJMS Alumni Association Scholarship Fund.

A sudden illness in the family obliged Arvind Trindade ’06 to finance his entire medical education. “On the wards I am hearing from so many doctors how the interest adds up and can be overwhelming,” he says. As a recipient of a $3,000 Alumni Association low-interest loan, he adds, “It is good to know that as students we have a strong alumni association that looks out for its students.”

Ernest S. Biczak, MD ’77, chair, Development Committee, underscores the importance of the association’s low-interest loans: “They support the students when they most need the help, without burdening them with vast interest on top of their tuition debt. Later, their repayments will replenish available funds and allow the program to continue supporting students year after year.” The loans carry a 3 percent annual interest rate, with payment deferred until the recipients complete their residencies or fellowships. For graduates who practice in New Jersey, the rate drops to 2 percent.

Carol A. Terregino, MD ’86, associate professor of medicine and associate dean for admissions, fervently hopes that alumni will support scholarships, an important tool in competing for and recruiting top students. Last year, Dr. Terregino’s classmates contributed $22,000 toward a Class of ’86 Scholarship, which she will distribute as two $11,275 scholarships. “I wish class gifts would become a tradition,” says Dr. Terregino. “It would be wonderful to have more scholarships that support students beyond the first year.”

“Medical school is a long and expensive road,” says Mr. Trindade. “Thank you again.”

— K.O’N.
Alumni Present Career Night 2005

The Alumni Association annually sponsors Career Night, a forum where students learn about medical specialties from the school’s alumni. The 17th Career Night took place on January 11 in the Great Hall, Piscataway campus, and offered the attraction of a buffet supper, compliments of the Alumni Association.

Welcoming the crowd, Harold L. Paz, MD, dean, reminisced about a similar event during his early years in medical school. Dr. Paz remarked how helpful that forum had been in increasing the students’ understanding of the variety of career pathways available to them. He especially thanked RWJMS alumni, many of whom have become perennial Career Night volunteers.

Most students at Career Night are in the middle of their first or second year of medical school. “Many of them are so swamped by studying that they’ve forgotten that they’re training to become a doctor,” says Steven H. Krawet, MD ‘89, president, Alumni Association. “Career Night helps restore their sense of direction.”

Forty-five alumni volunteered for this year’s event, including physicians from 22 different specialties. Students like Kate Beckwith ‘08 stayed busy exploring the possibilities of one specialty after another. Ms. Beckwith, who plans a career in pediatric oncology, could look into both sides of her future specialty by shuttling between the oncology table — hosted by Eduardo Fernandez, MD ‘89, past president, Alumni Association — and Ursula M. Pogany, MD ‘81, representing pediatrics.

Dr. Pogany enjoys keeping in touch with the medical school and its students through Career Night. Throughout the evening, she answered questions, including an inquiry by Littal Mittnik ‘08 about where to prepare for a sub-specialty in adolescent medicine. Dr. Pogany described the flexible lifestyle of the solo practitioner and told one questioner that reimbursement was the worst thing she had had to deal with in her career. In addition, she displayed a handwritten letter from one young patient, illustrating where the true bottom line lies in pediatrics.

At the next table, Dr. Krawet was joined by Eric Shen, MD ’99, a graduate of the RWJMS Internal Medicine Residency Program, who is now doing a fellowship in gastroenterology. While emphasizing the variety of patients and procedures in that specialty, Dr. Krawet also stressed the excellent prospects for women entering the field, and Dr. Shen took questions on the opportunities for research.

Nearby, psychiatrists Lois DeRitter, MD ‘82, and James J. Hutchins, MD ‘81, clinical assistant professor of psychiatry, responded to inquiries ranging from practice settings and business concerns to the prevalence of multiple-personality disorders among their patients. “What’s really fascinating about psychiatry is hearing a person’s whole story,” said Dr. DeRitter.

Catherine M. Bodnar, MD ’82, former president, Alumni Association, spent a long time speaking one-on-one with Brian Barlow ’08, who envisions a career in occupational health. Dr. Bodnar, medical director, Dow Chemical Company, explained the extensive opportunities to practice preventive medicine and wellness within a corporate setting.

A perennial crowd magnet, the slide show by Alan Zaccaria, MD ’86, again held students rapt with “before and after” photographs of the patients he had helped through plastic and reconstructive surgery.

Fortunately for the large number of students interested in his field, Thomas A. Rebbecchi, MD ‘92, associate professor of emergency medicine, brings a team of his residents to Career Night: Sundip Patel, MD ’04, Tara Cassidy-Smith, MD ’00, and Anthony Mazzarelli, MD ’03, JD, MBE. • 2. Scott Woska, MD ’97 (seated), talks about physical medicine and rehabilitation. • 3. Eduardo Fernandez, MD ’89, speaks with students interested in oncology. • At the cardiology table, Steven Binenbaum, MD, PhD, and Clifton R. Lacy, MD ’79, president and CEO, RWJUH, discuss a wide range of clinical issues.
Students spellbound with stories drawn from his career in cardiology, hospital administration, and, most recently, state government as commissioner, New Jersey Department of Health and Senior Services. Dr. Lacy’s advice ranged from his thoughts on evidence-based versus anecdotal medicine, to a mini-lecture on the cardiovascular system, to comments on the growing trend and value of clinicians entering careers in hospital and health care administration, to his forecasts for changes in the medical profession in the 21st century. — K.O’N.

5. Students move from one table to another, learning about 22 specialties. • 6. Marie C. Trontell, MD ‘76, professor of medicine and associate dean for graduate medical education. • 7. Ernest S. Biczak, MD ‘77, discusses career options in the pharmaceutical industry. • 8. Mordechai Bermann, MD ‘87, associate professor of anesthesiology, discusses new opportunities in his field. • 9. Orthopaedic resident Michael Shin, MD ‘03 (seated), one of 45 Career Night volunteers. • 10. Harold L. Paz, MD, dean (center), is joined by family practitioner Euton M. Laing, MD ‘90 (left), past president, Alumni Association, and gastroenterologist Steven H. Krawet, MD ‘89, president, Alumni Association. • 11. Psychiatrist James J. Hutchins, MD ‘81, responds to a student’s question. • 12. Anesthesiology resident Minh Chau Tran, MD ‘01, is on hand to talk about his Residency Program. • 13. Stephen S. Cook, MD ‘76, associate professor of orthopaedic surgery, discusses career options in his specialty. • 14. Plastic and reconstructive surgeon Alan Zaccaria, MD ‘86, always hosts a full table of students.
Peter M. Howley, MMS '70, MD, Shattuck Professor of Pathological Anatomy and chair, Department of Pathology, Harvard Medical School, in his office overlooking Boston.
Peter M. Howley, MMS ’70, MD:
How Idealism, Curiosity, and a Critical Mind
Led to a Major Scientific Discovery

Dr. Howley has remained dedicated to finding clinical applications for his science, starting with his early training in the rudiments of medical research, under Joel Kirkpatrick, MD, assistant professor of pharmacology and pathology, and continuing up to a landmark discovery last year made possible by proteomics.

In 1968, the medical school in Piscataway was an “exciting new experiment,” recalls Dr. Howley. Its founding dean, DeWitt Stetten, MD, PhD, was a renowned physician-scientist who recruited an extraordinary faculty, which in turn would attract first-rate students. “We were aware of the exceptional opportunities the school would offer,” Dr. Howley says.

Victor Stollar, MD, professor of molecular genetics, microbiology, and immunology, was one of the medical school’s first faculty members. “We were young and idealistic,” says Dr. Stollar, “and we seemed to appeal to a certain type of student — of which Peter was certainly one. They could have been admitted anywhere, but they had an adventurous spirit that led them to take a risk on a young school. Peter was one of the best,” he adds, “and, throughout a remarkable career, he has remained as warm and approachable as he was at the time.”
FOR DR. HOWLEY, AN organic chemistry major at Princeton University, the world-class teaching at RMS and the school’s intense two-year master of medical science (MMS) program offered an ideal training ground in basic science research. He recalls the excellent courses and research opportunities, along with an early fascination with both the problem-solving aspects of pathology and the research opportunities in virology.

Along with one-quarter of his 16 RMS classmates, Dr. Howley went on to earn a medical degree at Harvard Medical School. He then completed an internship in pathology at Massachusetts General Hospital. In 1973, he received a highly competitive two-year commission in the U.S. Public Health Service (USPHS), where he fulfilled his draft obligations as a member of the elite “yellow beret” corps of physician-scientists. As a research associate, he was assigned to the National Institutes of Health (NIH) Laboratory of the Biology of Virology, opening the door to a career focused on viruses, both as tools to probe cellular processes and as causes of disease.

Dr. Howley’s two-year research associateship at the NIH would stretch to two decades. By the late 1970s, he had homed in on papillomaviruses, which not only cause diseases ranging from benign warts to potentially deadly cervical cancer, but also have idiosyncratic replication processes that are useful in the study of transcription and DNA replication. At the National Cancer Institute (NCI), he completed his training in anatomic pathology and became a principal investigator in its Laboratory of Pathology in 1977. In 1984, Dr. Howley was made chief of the Laboratory of Tumor Virus Biology at the NCI, a position he held until 1993, when he accepted an appointment at Harvard Medical School as George Fabyan Professor and chair, Department of Pathology.

Dr. Howley’s laboratory focuses on the molecular biology of the papillomaviruses and their role in human cancer. Like peeling away the layers of an onion, Dr. Howley and his team have disclosed the molecular details of human papillomavirus (HPV) replication and discovered how it causes disease. Evolving knowledge about molecular biology and the development of the technology to manipulate and observe cell processes have provided the means to dissect the pathogenic mechanisms encoded by the HPVs. They also have helped to pinpoint the genes targeted by HPVs in the first step of carcinogenesis. “First the electron micrograph was there,” says Dr. Howley. “Later, with the sequencing of the human genome, we had an increasing ability to ask and answer questions about viruses and cancer. Today, we use chemical screening and proteomics to dissect pathways genetically and biochemically.”

Last year, studying the bovine papillomavirus (BPV), Jianxin You, PhD, a research fellow in Dr. Howley’s laboratory, made a landmark discovery about HPVs. “It definitely was an ‘a-ha’ moment for us,” recalls Dr. Howley. Using proteomic techniques, Dr. You identified BRD4, a cell protein that is targeted by the viral E2 protein. When BRD4 binds to E2, they found, it becomes the first domino in a sequence that leads to disease. By blocking the tethering of BRD4 and E2, the research team observed, they prevented the papillomavirus-infected cell from becoming cancerous. The discovery was published in the journal *Cell* in April 2004. “This finding suggests that if one could come up with a small molecule or chemical that could inhibit the binding of E2 to BRD4, that could be a drug lead,” says Dr. Howley, who is now working with members of the Harvard University Department of Chemistry to identify such molecules.

Beyond the world of cells and viruses and departmental and professional responsibilities, Dr. Howley enjoys concerts by the Boston Symphony Orchestra as well as downhill skiing, fishing, and exploring the lakes and coast of Maine. He is particularly proud of his family, which, in addition to his wife, Ann, includes three daughters, one of whom recently completed graduate...
studies in molecular biology at Princeton University, and two black standard poodles.

Dr. Howley is widely recognized for his research achievements and holds nine patents for his work. A past editor and current editorial board member of the Journal of Virology, he also sits on the editorial boards of the Proceedings of the National Academy of Sciences, Molecular and Cellular Biology, and Laboratory Investigation. Dr. Howley's awards include the Warner-Lambert/Parker Davis Award (1983), Wallace P. Rowe Award (1986), UMDNJ Distinguished Alumnus Award (1986), USPHS Meritorious Service Award (1989), Paul Ehrlich Prize (1994), and the Rous-Whipple Award (2004). He is a member of the National Academy of Sciences, the Institute of Medicine, and the American Academy of Arts and Sciences, and is past president of the American Society for Virology. As a member of the scientific advisory board of The Cancer Institute of New Jersey (CINJ), Dr. Howley contributes to the UMDNJ-Robert Wood Johnson Medical School missions in research, education, and clinical care.

In addition to appreciating his ongoing connection to RWJMS through CINJ, Dr. Howley notes career-spanning personal links to the medical school. Arnold B. Rabson, MD, professor of molecular genetics, microbiology, and immunology and deputy director, CINJ, was a colleague and fellow researcher at the NIH. Dr. Howley has also co-authored papers on the p53 protein with Arnold J. Levine, PhD, professor of pediatrics and member, CINJ.

Summarizing his career, Dr. Howley says, “Once you learn to ask questions and think critically, you’re always learning new things.” In its simplicity, Dr. Howley's statement encapsulates the intelligence that focuses his passion for science and impels him to create medical solutions from his discoveries.

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**NINETEEN SIXTY-NINE**

Paul Hellman writes: “After Rutgers Medical School ’69, completed MD at Tufts in ’71. Trained in internal medicine at Boston City Hospital for three years and Boston VA Hospital for two years. Living in Boston. Best wishes to all.”

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**NINETEEN SEVENTY-FOUR**

Kathi Aultman writes: “Transferred to University of Florida College of Medicine after first year at RWJMS. In private practice in gynecology in Orange Park, Fla. Married with two daughters.”

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**NINETEEN SEVENTY-FIVE**

Robert Burke retired from the U.S. Public Health Service in 1996. He is presently an associate professor of pediatrics at Brown Medical School and director of the Primary Care Center for Children with Special Needs at Memorial Hospital of Rhode Island.

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**NINETEEN SEVENTY-SIX**

Robert Ambler was named dean of the School of Public Health at New York Medical College in January 2005. He received the UMDNJ Distinguished Alumnus Award at Commencement in May 2005.

Eldridge Anderson is in private practice in general orthopaedics in Ithaca, N.Y. His oldest child is now in medical school in Chicago.

Donald Derse writes: “After 25 years as a family physician in North Conway, N.H., I retired as of June 30, 2004, having passed my 65th birthday. I was then called to be the pastor and teacher at First Church of Christ, Congregational in North Conway, and in August 2004 began serving the United Church of Christ. I am truly enjoying this return to the pastoral ministry after a 28-year hiatus.”

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**NINETEEN SEVENTY-EIGHT**

Paula Krauser reports: “Son, Jonathan, graduated Georgetown Law, admitted to N.Y. Bar, employed by international law firm in China. Daughter, Rachel, graduated from Wellesley College.”

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Nineteen Seventy-Nine

Charles Kaplove writes: “Currently in my 25th year of full-time emergency medicine. My son, Jake, had his bar mitzvah this year. My daughter, Rachel (16), just got her driver’s license. Happily married to Judy. Keeping very active with competing in triathlons and flying my airplane. Still enjoying the ER and life in Calif.”

Winston Scott is chief of ophthalmology at East Orange General Hospital and clinical assistant professor of ophthalmology at NJMS.

Nineteen Eighty

Steve Bloomfield resides in Morgantown, W.Va. He and his wife have four children.

Nineteen Eighty-Two

David Grossman reports: “My twins will be starting college in the fall. Joshua will be at Columbia and Emily will attend Emory.”

Henry Kranzler was recently appointed assistant dean for clinical research at the University of Connecticut School of Medicine.

Nineteen Eighty-Three

Nancy Ferguson writes: “New position as coordinating doctor with International SOS, a medical assistance company with offices around the world, and also employed as an emergency physician at St. Francis Medical Center in Trenton. On the personal side, I am Mama to a two-year-old boy, Deven Saurav Kunwar, adopted in 2003, and a three-year-old girl, Chloe Dieu Thanh Tiet, adopted in 2001.”

Michael Miller reports: “I am president of the American Society of Preventive Cardiology and associate professor of medicine, epidemiology, and preventive medicine at the University of Maryland Medical System in Baltimore. My third child, little Max, keeps me very busy!”

Nineteen Eighty-Four

Robert Glicini was recognized by the Northeastern Pennsylvania Council Boy Scouts of America by receiving the Silver Beaver Award, the highest award given to an adult volunteer.

Robert Huang is practicing general otolaryngology in central New Jersey.

Karyn Israel writes: “I’m working at Pocono Medical Center–Frances Hughes Cancer Center in the private practice of medical oncology/hematology with Dr. William Ryan. I am living in East Stroudsburg, Pa.”

Mindy Rosenbloom left her position as medical director at East Bay Mental Health Center and began her own private practice in adult and adolescent psychiatry in Barrington, R.I.

Stuart Schwartz is the director of rheumatology at the Brown Medical School.

Nineteen Eighty-Five

Joseph Krueger is director of radiation oncology at the Falck Cancer Center in Elmira, N.Y. He and his wife, Jennifer, have two sons, Steven (16) and Michael (14).

David Price was elected to the board of directors of the American Board of Family Practice in 2003.

Nineteen Eighty-Six

Peter Chirico writes: My wife, Clare, and I have five children, ages 7–20. I am in private practice with close association with Joan C. Edwards School of Medicine, Marshall University, and the University of Maryland Diagnostic Radiology Residency Program. Our practice has two graduates of UMDNJ, and we are always looking to hire more to join our very successful practice. If interested, please contact me at bopchirico@aol.com.

Joseph Costabile writes: “I’ve been activated by the U.S. Navy for deployment to the Middle East.”

Martin Dauber has been recognized by the legal community for important defense-of-physicians complications related to perioperative visual loss.

Eli Hammer writes: “Enjoying my fourth year of an anti-aging medicine practice. Have five daughters and counting. . . .”

Richard Segal reports: “I ran the LaSalle Bank’s Chicago Marathon on September 20, 2004, in 3:57:33!”
NINETEEN EIGHTY-SEVEN

Peter Cohn is an invasive cardiologist practicing in Fall River, Mass. He is also CCU director at Charlton Memorial Hospital.

Fitzclaud Grant has a solo internal medicine practice in Elmont, N.Y.

NINETEEN EIGHTY-NINE

Michael Hennigan practices physical medicine and rehabilitation in Panama City, Fla. In 1994 he received the national award for the highest physician satisfaction of all 91 inpatient rehabilitation hospitals in the country.

Kelly McMasters has been named chair of the Department of Surgery at the University of Louisville School of Medicine.

Susanne Zimmermann passed the 2004 board re-certification in family practice.

NINETEEN NINETY


NINETEEN NINETY-ONE

Joseph Canterino is an associate professor at the RWJMS Department of Obstetrics, Gynecology, and Reproductive Sciences, division of maternal-fetal medicine.

Don Gamin was recently named chief of anesthesia at Northeast Hospital Corporation in Beverly, Mass.

Alan Glass writes: “Just opened a brand-new office in Long Beach, N.Y. My wife, Shira, and three children, Gideon (preparing for his upcoming bar mitzvah), Ruthie, and Abigail, live in Woodmere, N.Y.”

Pranav Shab is an interventional radiologist. He and his wife have three children and reside in Colts Neck.

Brian Halstater is the program director for Duke Family Medicine.

Ginia Pierre writes: My husband, Andrew Baddoo ’98, and I are happily raising our sons, Andrew and Richard. Andrew is in private practice as a nephrologist in central New Jersey.”

Dahlia Blake writes: “I relocated to North Carolina and am a faculty member at Duke University. My daughter, Breanna, is now four years old.”

Sandra Dayaratna writes: “Still working at Harvard Medical School, Beth Israel Deaconess Medical Center. It’s my fifth year on the faculty, so it looks like I will be here for good.”

Daniel Rocco writes: “I trained in pediatrics at the DuPont Hospital for Children. After practicing three years in Brick, I relocated with my wife, Amy, and son, Jack, and was employed at the Shriners Hospital for Children in St. Louis, as one of the staff physicians. My second son, Nicholas, was born while we were there. In September 2004, I became a pediatrician at St. Joseph’s Hospital in Breese, Ill., and incorporated my new practice, Right from the Start Pediatrics. . . . I recently saw my 100th patient and cannot even begin to tell you how exciting it is to have my own practice. I would love to hear from people in the 1996, 1995, 1997, etc., class.”

NINETEEN NINETY-SEVEN

Garrett Hyman reports: “Our son, Jonah, turned two on October 17. I started in private practice in the Seattle area, practicing conservative spine and sports medicine, and electrodiagnostic medicine.”

Parag Patel writes: “I returned to central New Jersey last summer after finishing training at Yale for seven years and have joined Somerset County’s largest cardiology group. I’m actively practicing as an interventional cardiologist performing both coronary and peripheral endovascular interventions.”

Charles Getz joined Penn Orthopaedics and the Department of Orthopaedic Surgery at Presbyterian Medical Center. He specializes in shoulder and elbow surgery. He is an instructor in orthopaedic surgery at the University of Pennsylvania.

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body of knowledge including his landmark textbook, _The Principles and Practices of Medicine_. A day does not go by without discussing Osler’s sign, Osler’s nodes, Rendu-Osler-Weber disease, and Osler-Vaquez disease.

But I personally think his most meaningful contribution was his focus on understanding the patient: getting your hands dirty, taking the time to listen, and dedicating the time to researching and understanding the pathophysiology of disease. Sir William once said, “The lines of experimental research have sought to determine the functions of organs in health, the conditions under which perversion of these functions occur in disease, and the possibility of exercising protective and curative influences on the process of disease.”

I was extraordinarily fortunate during my training to have experiences that emphasized and reinforced Osler’s teachings and, quite frankly, set me on a course that brings me here tonight. At Hopkins we had great teachers like Drs. Sol Permut in lung physiology, Carol Johns in sarcoidosis, Harold Menkes in environmental exposure, and Will Ball in respiratory disease. These individuals spent virtually their entire careers at the institution and were truly disciples that carried forward Sir William Osler’s vision and message.

One afternoon I was in the pulmonary clinic with Dr. Ball, and a young 18-year-old woman walked in with a stack of medical records, chest X-rays, and pathology studies. She had been from doctor to doctor with an unusual and
devastating inflammatory process that was slowly destroying her lungs, despite surgical procedures to remove areas of diseased tissue. A physician in rural Maryland referred her with the hope that the process could be reversed before she died. There was the expectation that a fellow had the time to spend on one patient, to show the slides to many pathologists, to go to Welsh Library and look through old pathology atlases, to ask research labs to run esoteric tests that were not yet routinely used in clinical practice. Sir William would be proud that we found a name for her disease — botryomycosis — and identified the cause, a rare form of chronic granulomatosis disease. Fortunately, we even found treatment, an experimental protocol being used at the NIH, and yes, we published our results. But that is not the end of the story. Years went by and now I was in Philadelphia running a medical ICU, doing research in critical care medicine, and seeing my sarcoidosis patients. One day a thick envelope arrived at my home from the parents of my former patient. It was a wedding invitation. Of course my wife and I went, and not only shared great joy, but also received too much attention, and most importantly learned the true meaning of being a physician. As Thayer has reflected, “He [Osler] taught us that the treatment of the patient was the most important element in treatment of disease, that the patient, not the disease, was the entity.” I was extraordinarily fortunate to have this Oslerian experience early in my career because it has guided me professionally ever since then, not only as a person and physician, but also as a dean.

The past ten years have been a once-in-a-lifetime opportunity to build an academic health center where patients can come to find not only hope and healing, but health and happiness. I am tremendously proud of our world-class faculty and outstanding students and staff, our commitment to diversity, and in particular our care for the indigent and underserved. Six new buildings have been added, along with many new departments and institutes at the Robert Wood Johnson Medical School, including orthopaedics, radiation oncology, ophthalmology, and emergency medicine. The Medical School’s Cancer Institute of New Jersey has gone from an idea to become one of the top 25 comprehensive NCI-designated cancer centers in the nation, with over 70,000 patient’s visits per year and over $80 million in combined research funding.

New institutes have been added, including the Cardiovascular Institute of New Jersey and the Child Health Institute of New Jersey, which will open next month adjacent to Robert Wood Johnson University Hospital’s Bristol-Myers Squibb Children’s Hospital. With our partner Robert Wood Johnson University Hospital and the other 33 hospital affiliates, including Cooper University Hospital in Camden, we are integrating outstanding education and biomedical research with world-class patient care. But what is most important is that New Jerseyans no longer have to leave the state for cutting-edge care. Why should parents and children ever have to be separated in order to receive care in New York, Philadelphia, Boston, or Baltimore?

Fortunately, the commitment to excellence does not stop there. With our partners at Rutgers University and visionary support of Acting Governor [Richard] Codey, UMDNJ-Robert Wood Johnson Medical School will break ground on the $150 million Stem Cell Institute of New Jersey — the only institute of its kind in the nation, and with that, the hope that patients with Parkinson’s disease, Alzheimer’s disease, juvenile-onset diabetes, and spinal cord trauma will finally have a cure. I suspect that Sir William Osler had this in mind when he said, “The process of disease are so complex that it is excessively difficult to search out the laws which control them, and although we have seen a complete revolution in our ideas, what has been accomplished by the new school of medicine is only an earnest of what the future has in store.”

In closing, I want to thank my wife, Sharon; my children, Samantha and Allison; and my parents, for all they have given me. I want to thank all of you for being here this evening and leave you with one final thought from Dr. Osler: “Live neither in the past nor the future, but let each day’s work absorb your entire energies and satisfy your wildest ambition.” Thank you, and good night.

— Harold L. Paz, MD, Dean

Dr. Paz received the 2005 Sir William Osler Humanitarian Award at the 18th Annual American Lung Association of New Jersey “Breath of Spring Ball” on April 16, 2005, at the Hanover Marriott in Whippany.
It is with great honor that I accept the Sir William Osler Humanitarian Award from the American Lung Association of New Jersey and the New Jersey Thoracic Society. I offer my heartfelt thanks to the governing boards of both organizations for allowing me to stand before you tonight. And of course I thank all of you for being here this evening and for your support of their efforts on behalf of Camp Super Kids and pulmonary research. The Lung Association’s work does not end there; it continues with advocacy on tobacco control, air pollution, and secondhand smoke. Lung disease is not only one of the leading causes of death, but it is expected to rise in the future, and the work of these two organizations is important to every New Jerseyan.

This evening is especially meaningful to me as it has been ten years to the month that Dr. Norm Edelman, so well known to all of you, literally gave me the golden key to UMDNJ-Robert Wood Johnson Medical School as he stepped down as dean of our institution. I owe Norman a debt of gratitude as he recruited me to New Jersey in 1994. At the time, little did I imagine that Dr. Stanley Bergen would give me the opportunity of a lifetime shortly thereafter.

The second reason this evening has special meaning is because of the extraordinary long shadow that Sir William Osler cast on the place where I trained in pulmonary and critical care medicine and environmental health sciences, Johns Hopkins Medical School and the School of Public Health. Dr. Osler is quoted as once saying, “Look wise, say nothing, and grunt. Speech was given to conceal thought.” If you don’t mind, I will suspend his usually sage advice and say a few things about him and the institution I love, UMDNJ-Robert Wood Johnson Medical School. Born in Canada in 1849, Sir William Osler was educated at Toronto Medical College and moved to the University of Pennsylvania from McGill. At Penn he made many meaningful contributions and in 1888 was recruited to Baltimore with Welch, Kelly, and Halstead, as one of the four founding faculty of the planned Johns Hopkins Medical School and physician-in-chief of the new Johns Hopkins Hospital. By the time Dr. Osler left the U.S. in 1908, for Oxford University, he had revolutionized the teaching and practice of medicine. Dr. Osler left behind a huge

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