A PUBLICATION FOR ALUMNI & FRIENDS OF RUTGERS ROBERT WOOD JOHNSON MEDICAL SCHOOL

SUMMER ▪ 2014

Robert Wood Johnson MEDICINE

State OF THE Arts

LETTER FROM THE DEAN

Dear Colleague,

In our second year as part of Rutgers, The State University of New Jersey, Robert Wood Johnson Medical School will continue to build on existing collaborations in education, research, clinical care, and community health. We look forward to expanding these partnerships while developing important new ones.

As one of 14 health-care-related schools and programs in Rutgers Biomedical and Health Sciences (RBHS), the medical school is working to create a more effective model of health care delivery. Brian L. Strom, MD, MPH, the inaugural chancellor of RBHS, provides outstanding leadership and inspires us to strive for the level of achievement that will rank our medical school among the nation's best academic health centers.

"State of the Arts," the cover story in this issue of *Robert Wood Johnson Medicine*, offers a self-guided tour of public art at the medical school. Indoors and out, we enjoy these works of art every day. Now, thanks to this comprehensive account of their history, their donors, and their creators, we will appreciate them all the more.

JOHN EMERSON

New approaches to anesthesia are transforming the patient experience, as described in "Expanding Options for Pain Management." Among the highly successful techniques offered by the Department of Anesthesiology is regional anesthesia, which numbs only the area involved in surgery.

Gaurav Gupta, MD, assistant professor of surgery and neurosurgery, is featured in "Advanced Treatment of Brain Aneurysms." Dr. Gupta joined the multidisciplinary neurosurgery team last year, adding new expertise in advanced techniques, including brain bypass and arterial reconstruction.

"Medicine That Brings the World Closer" introduces readers to faculty and students who work in clinical and research sites worldwide. From one-on-one patient care in underserved areas to broad epidemiological studies, we are helping to close the gap in global health.

"Jeffrey Brenner, MD '95, Receives MacArthur 'Genius Award'" reviews Dr. Brenner's extraordinary achievements in primary care and community health. The article describes the pioneering work of the Camden Coalition of Healthcare Providers, founded by Dr. Brenner in 2005.

"Exploring the Far Reaches of the Brain" features the research focus of M. Maral Mouradian, MD, William Dow Lovett Professor of Neurology. Her molecular-level research targets regulation of the Parkinson's disease–linked protein alpha-synuclein. In addition, she is investigating the repurposing of an approved drug to control the symptoms of the disease.

These are exciting times for Robert Wood Johnson Medical School. We hope you will enjoy this issue of *Robert Wood Johnson Medicine*.

Sincerely,

Vicente H. Gracias, MD
Dean (Interim)

BE A PART OF THIS MOMENT

MAJOR EXPANSION IN THE HEALTH SCIENCES

Two medical schools, a dental school, a comprehensive cancer center: these are among the nine new academic and research units that became a part of Rutgers in 2013. The creation of the Rutgers Biomedical and Health Sciences division is one of several milestones that make this moment one of the most exciting in the university's nearly 250-year history.

Help give the newly expanded Rutgers what it needs to succeed.

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A Publication for Alumni and Friends of Rutgers Robert Wood Johnson Medical School

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FEATURES

Profiles

Vicente H. Gracias, MD, Serves as Interim Dean

Brian L. Strom, MD, MPH, chancellor of Rutgers Biomedical and Health Sciences, announced the appointment of **Vicente H. Gracias, MD**, professor of surgery and chief, division of acute care surgery, as interim dean of Robert Wood Johnson Medical School, effective February 1.

JOHN EMERSON

"Dr. Gracias's clinical leadership and professional experience will be particularly valuable during this time of transition, as we strengthen our commitment to excellence in efficient clinical care and the advancement of the biomedical and health sciences," said Dr. Strom. "Working toward optimal alignment between Rutgers Biomedical and Health Sciences, Robert Wood Johnson Medical School, and Robert Wood Johnson University Hospital (RWJUH) is a strategic goal as we move forward."

Dr. Gracias is fellowship trained and board certified in general surgery, trauma surgery, and surgical critical care. He serves as director of both the Adult and Pediatric Trauma Centers at the medical school and RWJUH. He also serves as director of the hospital's Level 1 Trauma Center.

"We look forward to continuing this relationship as Dr. Gracias serves in his new role, leading our medical school partner," said **Stephen K. Jones**, president and CEO, Robert Wood Johnson University Hospital and the Robert Wood Johnson Health System. "We also look forward to further strengthening the relationship with Rutgers Biomedical and Health Sciences and growing our close partnerships with Rutgers President Robert Barchi and Dr. Strom for the benefit of our patients, physicians, and community."

Dr. Gracias received his medical degree from the University of Utah School of Medicine. He completed residency training in general surgery at the University of Illinois at Chicago Metro Group Hospitals, and a fellowship in trauma/surgical critical care at the University of Pennsylvania (Penn) Medical Center. Dr. Gracias continued his career at Penn, rising quickly to associate professor of surgery and chief and medical director of surgical critical care services.

Dr. Gracias was recruited to the Robert Wood Johnson Medical School faculty in 2009 to lead the creation of a new surgical specialty: acute care surgery. Five years later, critical care service lines have grown from one to three, and multidisciplinary teams have created a successful, coordinated approach for enhanced, quality-driven patient care. Outpatient service lines have also been conceived, designed, and deployed for wound care, hyperbaric medicine, and traumatic brain injury. Two fellowships in surgical specialties were formed and verified, and the first Pediatric Trauma Center in the history of New Jersey was established.

Rutgers Biomedical and Health Sciences Progress Report: Brian L. Strom, MD, MPH, Inaugural Chancellor

Brian L. Strom, MD, MPH, began as the inaugural chancellor of Rutgers Biomedical and Health Sciences (RBHS) on December 1, 2013. This followed the integration of the former University of Medicine and Dentistry of New Jersey (UMDNJ) with Rutgers, The State University of New Jersey, and, thus, the creation of RBHS on July 1, 2013. RBHS includes former UMDNJ schools and units and some units from Rutgers.

JOHN EMERSON

Dr. Strom announced in December 2013 the launch of the RBHS strategic planning process, designed to enable RBHS to achieve excellence and integration across all health professions, schools, and units. The five-year plan will translate universitywide priorities into the unique context for RBHS, define its aspirations and goals, specify initiatives that the division will pursue, lay out a funding strategy for these initiatives, and identify metrics to measure the success of the initiatives.

Searches have been initiated to fill multiple leadership positions within RBHS schools and institutes. Finalists are being interviewed for the director of the Institute of Health, Healthcare Policy, and Aging. In addition, national searches were launched recently to fill three dean positions, for Robert Wood Johnson Medical School, the School of Health Related Professions, and the School of Public Health. Each school is in the process of selecting faculty members for the search committees. Further, searches are under way to fill multiple department chair positions within Robert Wood Johnson Medical School.

Finally, Dr. Strom has established a chancellor scholarship fund to support the RBHS-wide recruitment of outstanding medical students and faculty. Two incoming Robert Wood Johnson Medical School students have received scholarships as Chancellor Scholars. Two faculty members also will be Chancellor Scholars; one is to receive a Robert Wood Johnson Medical School appointment. **Manuel Jimenez, MD '06, MSHP**, will be a tenure-track assistant professor of pediatrics with a secondary appointment as assistant professor in the Department of Family Medicine and Community Health. Dr. Jimenez will focus on developmental behavioral pediatrics.


RUTGERS
Robert Wood Johnson
Medical School
GEZA KISS,
ANESTHESIO

By Beth-Ann Kerber
Portraits by **John Emerson**

Choices:

Expanding **Options** for **Pain Management** in the **Operating** Room and **Beyond**

East Brunswick resident Ethel DeBari *(left)* credits her positive experience with total knee replacement surgery to the pain management that she received during and after the procedure from Geza Kiss, MD '95 *(right)* associate professor of anesthesiology and clinical director of acute pain and regional anesthesia.

Before undergoing total knee replacement surgery three years ago, East Brunswick resident Ethel DeBari had heard all the horror stories about intense pain and difficult recovery— even from physicians. But, with a loss of cartilage in her right knee that caused bone-on-bone impact and resulting severe pain, DeBari had already tried other solutions, including cortisone shots, all to no avail.

Looking for relief from the pain and a return to full activity, she prepared herself for what the surgery might bring. "I put it in my head that if you expect to have surgery and not have pain, you're crazy. So I thought, 'OK, you're going to have pain; hopefully they'll be able to control it to a degree. I'll just fight through it, and each day it will get a little better,'" DeBari recalls.

She wasn't prepared, however, for her actual experience.

"Without a doubt, it was so much better than I expected. It can't *get* any better than what I experienced," she says. "I had zero pain after my surgery. I breezed through rehab. I did physical therapy without any problems, and I didn't even rely on taking Percocet or anything like that!"

DeBari credits her positive experience in part to the type of implant used: a custom-fit knee replacement designed based on X-rays sent to the manufacturer and made to the specifications of her existing knee, so there was less trauma in adjusting to the hardware. But the major reason, she says, was the pain management during and after the procedure.

She had entrusted her orthopedic surgeon, David A. Harwood, MD '84, clinical associate professor of surgery at Robert Wood Johnson Medical School, with determining the best course for her particular procedure. He consulted with Geza Kiss, MD '95, associate professor of anesthesiology and clinical director of acute pain and regional anesthesia for the medical school, and they decided to use regional anesthesia for the procedure.

While local anesthetics numb only a small area of the body, and general anesthesia involves a total loss of consciousness and pain sensation, regional anesthesia is used to make a large area of the body insensate to painful stimuli, Dr. Kiss explains. It is achieved by injecting medication near a cluster of nerves to numb only the area that needs surgery, he adds.

DeBari received a femoral and sciatic nerve block, as well as a sedative to allow her to "sleep" comfortably during the surgery; the anesthesia was delivered through a catheter that was kept in for two more days to provide optimal pain relief. The day after the catheter was removed, she was discharged from the hospital and entered a Lawrenceville-based rehabilitation facility, from which she was able to go home far sooner than anticipated because she was doing so well. She experienced similar positive results in her outpatient physical therapy, she says.

"I did so well the therapists couldn't believe it, and I honestly think it was because there was no pain involved," DeBari says. "You are very hesitant in physical therapy when it hurts. I had no pain, so I was able to do all the exercises right from the beginning."

A widow who takes care of all the responsibilities around her home, she is now very active and walks approximately three to five miles per day, including a tremendous amount of walking at work.

"Before the surgery, I said I want to get back to doing everything I could do before: I want to wear heels, I don't want to walk with a limp, I don't want to have to use a cane or a walker. I'm 70 years old, and I'm fine," says DeBari, noting that her only issue is a little difficulty when she kneels on a hard surface to scrub the kitchen floor.

"I pray that anyone else who has to have this surgery has the kind of experience I did. I have told everyone that if you ever have to have a knee replacement, you must go to Robert Wood Johnson, you must see Dr. Harwood, and you must have Dr. Kiss as your anesthesiologist," she says.

Controlling Pain

DeBari's experience epitomizes the impact of effective pain control in recovery, as well as the increasing role of regional anesthesia techniques in pain management and patient satisfaction.

Pain—now considered one of the vital signs—can adversely impact patients' cardiovascular stress response, among other negative physical effects, if not properly controlled, says Scott J. Mellender, MD, assistant professor of anesthesiology at Robert Wood Johnson Medical School and clinical director of the New Jersey Pain Institute at Robert Wood Johnson University Hospital.

"You have a moral and ethical responsibility to control your patients' pain, but you also want them to have a good level of satisfaction with their care," he adds.

The medical school's Department of Anesthesiology has been working to dramatically improve pain management and the patient's experience, in and out of the operating room, says Christine H. Fratzola, MD, associate professor and chair, Department of Anesthesiology. Many of those advances are taking place in the area of regional anesthesia, in which the department has specialists with a high level of skill and expertise, including the use of newer methods of ultrasound guidance and advanced, minimally invasive procedures for chronic pain, Dr. Fratzola says.

Today, regional anesthesia encompasses spinal and epidural anesthesia, as well as peripheral nerve blocks. It is frequently used for certain orthopedic, gynecologic, obstetric, and ophthalmologic surgeries. And it typically results in reduced side effects, including less post-operative pain, less nausea, lower incidence of blood clots, less blood loss, less of a stress response by the body, and earlier mobility.

For same-day surgeries, regional anesthesia can provide 18 to 24 hours of significant pain relief without narcotics, Dr. Kiss says. For some procedures, a single injection of long-acting anesthetic is all that is needed. With others—such as DeBari's knee replacement—a catheter is inserted to allow the anesthetic to be delivered over a period of two to three days, he adds.

Evolving Techniques

Despite the benefits, patients sometimes are concerned about the concept of being awake during surgery, afraid of hearing or otherwise being aware of what is going on, Dr. Kiss says. Different levels of seda-

The medical school's Department of Anesthesiology has been working to dramatically improve pain management and the patient's experience, in and out of the operating room, says Christine H. Fratzola, MD, associate professor and chair, Department of Anesthesiology.

The regional anesthesia program currently takes a multi-modal approach, whether using nerve stimulation, ultrasound guidance, or both, depending on the circumstances of the surgery and what is best for the patient, says Scott J. Mellender, MD, assistant professor of anesthesiology, and clinical director of the New Jersey Pain Institute at Robert Wood Johnson University Hospital.

tion are available to help patients avoid that issue and doze through the surgery, he adds, without having the potential drawbacks of general anesthesia.

Advances in the field also have brought additional benefits. "Drugs, technology, and techniques have evolved," Dr. Kiss says.

Much of the evolution in the area of regional anesthesia can be attributed in part to the shifting emphasis on reducing hospital lengths of stay, says Dr. Mellender, a fellowship-trained interventional pain medicine specialist who completed residency training in anesthesiology, as well as general surgery, at Robert Wood Johnson Medical School. The use of regional anesthesia techniques has helped turn what in some cases used to be a five-day hospital stay into a two-hour outpatient surgery, he says.

As medication and technologies continue to improve, more surgical procedures are involving the use of regional anesthesia, says Dr. Kiss. As a result, there is a much greater need and request for anesthesiologists who are skilled in these techniques. At Robert Wood Johnson Medical School, a dedicated regional anesthesia rotation has been in place since 2008.

The medical school's anesthesiologists and residents have been encouraged to learn new techniques and even push the envelope, Dr. Kiss says. For example, Shaul Cohen, MD, professor of anesthesia and a specialist in regional anesthesia, has been a pioneer in developing some of the techniques of obstetric anesthesia.

For the past year, members of the acute pain and regional anesthesia team also have been working more with placement of specific blocks and the use of balanced anesthesia (employing a combination of smaller doses of different medications, to minimize side effects and still yield the desired effect) for surgeries such as total knee replacement, to allow for pain relief to the area while enabling some muscle control.

The department also has been working extensively with ultrasound-guided regional anesthesia to help determine the best location for the injection, according to Dr. Fratzola. Certain blocks, such as the supraclavicular block, are done using ultrasound guidance because of the proximity of the lungs and the precision needed for safe, effective delivery of anesthesia. Use of ultrasound guidance can help improve the speed of the block, as well as provide enhanced opportunities for teaching purposes, says Dr. Kiss.

The regional anesthesia program currently takes a multi-modal approach, whether using nerve stimulation, ultrasound guidance, or both, depending on the circumstances of the surgery and what is best for the patient, Dr. Mellender says.

Expanding Options

"We give patients choices a lot of places can't," says Dr. Kiss. These options not only enhance care, but also help patients feel more empowered, he says.

"As surgeons are realizing that patients are having good expe-

riences using these techniques, it reinforces the benefits of regional anesthesia, so now it's actually being requested. In some cases, they are even insisting on it," says Dr. Fratzola.

Requests for regional anesthesia also are coming from patients, she says: "There are a lot of educated patients who have been going online, becoming more informed about regional anesthesia, and now know more about the different options than they did in the past."

Tackling Chronic Pain

Regional anesthesia techniques have expanded beyond the operating room, into outpatient uses at facilities such as the New Jersey Pain Institute, Dr. Mellender says—for example, using epidural spinal injections for back pain, easing pain experienced after hernia operations or with metastatic cancer, and helping people get back to work or sports after an injury. And advances continue to be made overall in management of chronic pain.

"It all goes back to quality of life," Dr. Mellender says. "We try to improve quality of life in the operating room, but beyond as well. People think they may have to live with their chronic pain for the rest of their life. We can decrease it, in some cases by 80 percent, and they are able to become fully functioning."

For Jeff Gorsak, these methods helped make everyday life bearable.

A traumatic accident on January 11, 2011, left Gorsak with severe neck and back injuries and marked the beginning of his daily battle, living every moment with excruciating pain. He was unable to walk, his movements were severely limited, and he went more than two years without a full night's sleep.

"It was an extreme challenge just to get through every day," says Gorsak. "I was on opiates for the pain, but I don't like pills and didn't want to be on that medication."

That's when his neurosurgeon, Michael G. Nosko, MD, PhD, associate professor of surgery and chief, division of neurosurgery, suggested spinal cord stimulation (SCS). SCS uses a small pulse generator, similar to a pacemaker, that is implanted under the skin to send the spinal cord low-voltage electrical pulses that interfere with pain signals from the nerves. A handheld programmer allows individuals to adjust the level of stimulation based on their pain level and activity.

Gorsak's initial procedure, which allowed for a trial of the device before permanent implantation, was done in June 2013 by Dr. Mellender.

The results were immediate, Gorsak says.

"When Dr. Mellender did the trial—you're awake, because you have to give feedback—at one point, I said, 'That's it; you're done! You got the spot,'" he recalls. "I could feel the difference right away."

During the initial procedure, electrical leads are placed in the epidural space with the intention of finding the proper coverage for all areas of pain, Dr. Mellender explains. An external device that functions the same as the permanent stimulator is provided, and patients are able to make adjustments based on a number of different settings, he adds. After a trial period of several days to determine whether the device would provide adequate relief, Gorsak returned to Dr. Nosko for the surgery to implant the permanent device.

With SCS, Gorsak has seen dramatic changes in his quality of life. He's able to walk short distances with a cane or even, on smooth surfaces, unassisted. Three toes that he was unable to move prior to the procedure now have restored motion. And the catnap-only nights are a thing of the past, he says: "If I get woken up at night, I just adjust the setting and go back to sleep."

The device is "always running for me, because I'm never without pain, but this helps keep it in check," he adds. "I honestly don't know what I would have done without it."

While SCS is not technically a regional anesthesia technique, pain management and regional anesthesia go hand in hand, says Dr. Kiss, who first became interested in regional anesthesia during fellowship training in pain management. "The skill set is essentially the same for both," he says. "It's a continuum—acute pain intraoperatively in one, while the other deals with chronic pain—and we are able to provide that full continuum for our patients." M

Robert Wood Johnson Medical School's Regional Anesthesia Team:

Geza K. Kiss, MD '95
Clinical director of acute pain and regional anesthesia
Associate professor of anesthesiology

Scott J. Mellender, MD
Clinical director of New Jersey Pain Institute
Assistant professor of anesthesiology

William R. Grubb, MD, DDS
Division head of pain management
Program director, Pain Management Fellowship
Associate professor of anesthesiology

Rose S. Alloteh, MD
Director of pain management education
Assistant professor of anesthesiology

Antonio Chiricolo, MD
Assistant professor of anesthesiology

Vincent J. DeAngelis, MD
Associate professor of anesthesiology

Gina George, DO
Instructor of anesthesiology

Tejal H. Mehta, MD '07
Director of regional anesthesia education
Instructor of anesthesiology

Shruti Shah, MD
Assistant director, Pain Management Fellowship
Clinical assistant professor of anesthesiology

Melissa Wu, MD '09
Instructor of anesthesiology

State of the Arts:

A Self-Guided Tour of Public Art *at Robert Wood Johnson Medical School*

Works of art can be found on display in various locations on the campuses of Robert Wood Johnson Medical School. In New Brunswick: One in the "Suite of Six Lithographs (after Untitled 1975)" series by Jasper Johns (far left). In Piscataway: "Scientists in Converstation," artist unknown (center), and "Barcelona," by Toshiko Takaezu.

INSET PHOTOS ABOVE, LEFT TO RIGHT, BY JOHN EMERSON

Robert Wood Johnson Medical School displays a wide variety of public art, some of it conspicuous and familiar, some tucked away, waiting to catch the eye and imagination of passersby. Each piece has a story to tell. This article guides the reader across both campuses on a tour that begins at the school's first buildings, in Piscataway, and concludes at the Medical Education Building, in New Brunswick.

BY KATE O'NEILL

The *Piscataway* Campus

JOHN EMERSON

David Malamed, MD (left), Lyanne Malamed (center), and Toshiko Takaezu, sculptor of the bronze bell named Barcelona, *dedicated in memory of Sasha Malamed, PhD, professor or neuroscience and cell biology.*

JOHN EMERSON

1. Hippocrates

Costos N. Georgakas

Perhaps the most familiar piece of art at the medical school is the statue of Hippocrates. Donated to the school in 1973, the statue has been moved at least twice to accommodate an evolving campus and now stands near the main entrance to the Research Tower/Teaching Laboratories.

This is one of five similar statues of Hippocrates sculpted by Costos N. Georgakas between 1967 and 1979 and donated to universities throughout the United States. Hippocrates's name, in Greek, is carved on the plinth beneath the statue. On the face of the two-tiered granite base are two bronze plaques. The upper one identifies the donors as "Mr. and Mrs. Peter Sideris, New Jersey Americans of Hellenic Descent," while the lower one bears the full wording of the Hippocratic Oath.

At six feet in height, Hippocrates is an imposing, bearded figure, carved in marble, now quite weathered. Described on a plaque on the left side of the base as "the father of rational medicine," Hippocrates gazes into the far distance. His right hand rests on a hip-high stump, entwined by a single snake that evokes the Rod of Asclepius, an ancient Greek symbol of healing and medicine.

2. Barcelona

Toshiko Takaezu

To the left of the main entrance is the bronze bell named *Barcelona*. The bell was commissioned and donated by Lyanne Malamed in memory of her husband, Sasha Malamed, PhD, professor of neuroscience and cell biology.

Dr. Malamed joined the medical school faculty in 1967. He established the course in human gross and developmental anatomy and taught every first-year class for 34 years, until his death in September 2001. At a ceremony the following year, the medical school dedicated the bell and the plaque, which reads, in part: "This bell symbolizes his approach to teaching, which was both painstaking and innovative and was permeated with artistic fervor and love."

Cast in bronze at the Johnson Atelier Foundry, in Hamilton, *Barcelona* is one of a series of 30 bells created by the world-renowned Japanese-American artist Toshiko Takaezu, a long-time friend of Dr. and Mrs. Malamed. It is suspended from a simple wooden framework modeled on a traditional Japanese temple gateway and is rung by striking a wooden mallet at different points on its surface, producing a variety of rich tones.

"On a trip to Barcelona, Toshiko could hear a church bell from her window," says Mrs. Malamed. "It reminded her of the mellow sounds of the bell she had created, and when she returned home, she named the bell *Barcelona*."

3. The Muscle Men

Andreas Vesalius

The facing side walls of the Great Hall are hung with two sequences of figures in successive stages of dissection. The 12 intricately detailed prints, six on each wall, are enlargements—approximately two and a half by five feet—of woodcut illustrations in Book 2 of *De Humani Corporis Fabrica*, by Andreas Vesalius. The *Fabrica*, which revolutionized the study and understanding of human anatomy, was completed in 1543, when the 28-year-old Vesalius was teaching at the University of Padua.

At the time, the 1,300-year-old works of the Greek physician Galen were the principal reference for the study of human anatomy. However, Vesalius challenged Galen's teachings, which were based on the dissections of animals. An exacting empiricist, Vesalius required human cadavers for his teaching and obtained them, in part, through the Church's sanctioning of dissections of executed criminals.

Known as *The Muscle Men*, these figures strike balletic poses against a Renaissance panorama of hills and houses. On the west wall, anterior views of the figure progress from right to left. First is the anterior view of an athletic male. Aside from the face, the skin is removed to show the outer layer of muscles. In subsequent panels, Vesalius strips muscles, layer by layer, leaving some attached. The final anterior view depicts a mostly skeletal corpse.

The sequence on the east wall—a profile and five posterior views—advances from left to right. In the last panel, Vesalius illustrates the muscles of the sole of the foot, or a detached lower leg on the ground.

When the medical school opened in 1966, *The Muscle Men* were displayed in the original teaching laboratories, at

PHOTOS BY JOHN EMERSON

the suggestion of DeWitt Stetten, MD, founding dean. In 1970, when the Great Hall was complete, Dr. Stetten donated these enlargements, a graphic statement of his vision that this new medical school was built on the best traditions of empirical medicine.

4. Bust: A Medeo

Ralph S. Greco, MD

The Great Hall features a concrete cantilevered double stairway that is itself a work of art. Facing the head of the stairway is an 18-inch-high alabaster bust, donated by the artist, Ralph S. Greco, MD, who joined the medical school faculty in 1986. Dr. Greco served as a professor of surgery and chief of the division of general surgery, prior to moving to Stanford Medical School in 2000, where he is the Johnson & Johnson Distinguished Professor of Surgery.

Dr. Greco acquired a sculpture in 1986 and decided to experiment with that art form. "I signed on for classes with Lilly Gettinger, a highly eccentric Cubist, abstract sculptor," he said. She told me, 'Make a head in clay. If I like it, I will teach you how to work in stone.' And she did."

In 1975, as a surgery resident at Yale School of Medicine, Dr. Greco went on a working visit to the Hôpital Albert Schweitzer, in Deschapelles, Haiti. In the following decades, he led groups of trainees to the hospital and developed a love for Haitian art. The influence is clear in this early bust, with its strong, elongated neck and exaggerated jaw, mouth, and forehead. The figure has an "otherworldly quality" as well, says Dr. Greco. A small plaque below the sculpture is engraved "A Medeo," Dr. Greco's homage to Amedeo Modigliani, one of his muses.

5. Scientists in Conversation

Unknown Artist

Nearby, outside the entrance to the Teaching Laboratories, is a sculpture donated to the medical school in 1999 by Schering Laboratories, then a division of the Schering-Plough Corporation. Constructed from a plastic-based composite material, the lifelike statues were finished with a sprayed-on, bright white plastic coating.

The subjects, in ordinary office attire, are Emanuel Hershberg, PhD, at left, and Derek Barton, PhD, leading 20th century scientists and major contributors to the development of Schering-Plough products.

The *New Brunswick* Campus

STEVE HOCKSTEIN

6. Inside Hippocrates

George Greenamyer

George Greenamyer's prominent steel sculpture, *Inside Hippocrates*, bisects and animates the triangular space in front of the Clinical Academic Building (CAB). The sculpture is visible to thousands of passersby daily—on foot, by car, and even by train—who can enjoy the distinctive landmark, rich with narrative elements, waiting to be discovered.

In accordance with the New Jersey Arts Inclusion Act, *Inside Hippocrates* was commissioned as part of the construction of the CAB and installed in 1994. The act, passed in 1978, requires that up to 15 percent of the construction budget for state-financed or state-licensed structures be set aside for the commissioning and installation of art. Selection committees work in collaboration with the New Jersey State Council on the Arts; at the medical school, Thomas Moran, then director of arts inclusion/artist services at the arts council, worked closely with the committee throughout the commissioning process.

Mr. Greenamyer was one of four finalists. His proposed

PHOTOS BY JOHN EMERSON

design included figures representing clinical academic medicine, engaged in an interactive narrative. Once selected for the commission, he requested photographs of actual people and activities at the medical school. He refined the sketches, characterized by his distinctive humor and whimsy, then returned to the committee, put the drawings on the table, and said, "Let's lay it out." Together, they built the story.

From that time, through the forging, welding, fabrication, painting, and final installation, Mr. Greenamyer finished the sculpture in 12 months.

Serving as the stage for his two-foot-tall characters is a foot-wide, 35-foot-long I beam, supported by three massive, steel supports, one at the south end and two at the north, reflecting the triangular outline of the space they occupy. At each end is the figure of Hippocrates, a smaller replica of the familiar statue on the Piscataway campus. At the south end, Hippocrates works at a computer; at the north, he listens with a stethoscope to a human heart as large as he is.

Three pairs of figures in lab coats portray research: two watch an oversized, bubbling beaker; two peer into opposite ends of a large, multiarmed machine; and at the center, two others—one of them is Mr. Greenamyer himself—hold the ends of a DNA double helix. Representing education, a female figure models the endocrine system while, separately, a physician sits talking with a mother and child. Patient care is depicted by two figures, tiny and tall, performing an eye exam on an outsize head and visible brain; by a physician holding a full chest X-ray in front of his patient; and by a nurse weighing an expectant woman.

7. Prayer Feather

Edward M. Adams

In 2001, the Hemophilia Association of New Jersey (HANJ) commissioned the New Jersey artist Edward Adams to create a work of public art, dedicated to people from the community who had been infected by HIV, including those who subsequently died from AIDS. The association selected the entrance to the Clinical Academic Building in New Brunswick as the ideal site for Mr. Adams's eight-foot-high bronze statue *Prayer Feather*, in which the artist enclosed the ashes of various writings and photos—mementos of those who had died from AIDS.

"We wanted it placed where it would be seen by medical students and patients, coming and going from the building," says the association's executive director, Elena Bostwick. They would have included the patients of the late Parvin Saidi, MD, Ab Motolinsky Professor of Hematology, professor of medicine, and chief, division of hematology, who had worked closely with HANJ.

"I hoped to create a piece that would convey both pain and hope," says Mr. Adams, who holds a doctorate in psychology from Rutgers, The State University of New Jersey. The sculpture was inspired by two chapters in his life. As a child, he would stare at the statues in the Catholic church in Trenton where his family worshipped. "They often had very graphic wounds," he says. As an adult, residing in New Mexico, he says, "I was moved by the Native American belief that feathers hold living energy and connect us with forces greater then ourselves."

The street-facing side is highly polished so that passers-by, seeing their image, may reflect that AIDS can attack anyone, says Mr. Adams. The other side, deeply textured, bears a wound symbolic of the pain caused by the disease.

Mr. Adams's paintings and sculptures are in private, public, and corporate collections throughout the world.

8. Suite of Six Lithographs (after Untitled 1975)

Jasper Johns

The State of the Arts tour ends in the Medical Education Building, where six brightly colored lithographs are displayed in a corridor leading to the reception area. The series of signature "crosshatch" works by Jasper Johns is numbered 55/60 at the lower left of each, and at the lower right is dated and signed by the artist, "J. Johns." Below the signature is the logo of the Gemini GEL workshop, of which Mr. Johns was a longtime affiliate and where these prints were made.

A major, innovative force in 20th-century art, Mr. Johns accepted a Presidential Medal of Freedom from President Obama in 2011. His work is exhibited in major museums, including the Metropolitan Museum of Art, in New York; the National Gallery of Art, in Washington, D.C.; and the Centre Pompidou, in Paris.

PHOTOS BY JOHN EMERSON

COURTESY OF NANCY EASTON WADE, PHD

Like many faculty, students, and staff, Cathryn B. Heath, MD, associate professor of family medicine and community health, passes by the Johns prints every day. "I love the fact that we have these beautiful, museum-quality prints hanging here at eye level for everyone to enjoy," she says.

Mr. Johns emphasizes technique over subject matter. Abstract designs and everyday objects—flags, maps, numerals, targets—most appeal to him. Originally a painter and sometime sculptor, he discovered printmaking in 1960, and it became his preferred art form. Printmaking has allowed him to rearrange pattern, color, and negative space in almost limitless ways and satisfied his passion for exploring logic in the artistic process.

The six lithographs demonstrate this passion and are emblematic of Mr. Johns's work in the 1970s. He made many variations of the crosshatch design, but this series is distinguished by its pulsating primary colors and complex patterns arranged in six variations. Only in the fourth print does the pattern fill the entire sheet of paper. In the other prints, varied arrangements of color and space reveal how blocks of white can serve as negative space to accentuate the vibrancy of the cross-hatchings.

These lithographs, created in 1976, were donated by Nancy Easton Wade, PhD, in honor of her mother, Elsie Easton, who died from breast cancer, and her brother-in-law, Reuven Snyderman, MD, who helped develop the Comprehensive Breast Cancer Center at the medical school.

An avid collector of mid-20th-century graphics, Dr. Wade was closely affiliated with the master printer Ken Tyler, part owner of Gemini GEL. She helped develop the trend toward exhibiting contemporary works of art in health care settings, where they would brighten and enhance an often stark environment. And patients would appreciate them. "Art shouldn't be in isolation," she says. "It should be something you enjoy. You might not necessarily like it, but it grabs your interest." M

Nancy E. Wade, PhD, with her brother-in-law, Reuven Snyderman, MD, at the dedication of the series of six Jasper Johns lithographs that she donated to the medical school in honor of Dr. Snyderman, and her mother, Elsie Easton.

"We practice patient-centric medicine. Treatment strategies are patient-specific, tailored to each individual. . . . It's the best strategy for the patient. It's like getting seven to eight 'second opinions,' all without going to seven or eight places. They are all at Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital," says Gaurav Gupta, MD, assistant professor of surgery and neurosurgery; director, cerebrovascular and endovascular neurosurgery; and director, New Jersey Brain Aneurysm & AVM Program at Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital.

World-Class Neurosurgery and Neurointerventional Surgery Team Offers

Advanced Treatment of

Brain Aneurysms

It can begin with a headache different from the usual headache, numbness or weakness on one side of the face, pain above and behind an eye, or perhaps even a dilated pupil and blurry vision. For others, the first sign that something may be wrong could be a sudden, excruciating headache that many have described as the worst of their lives.

In most cases, however, brain aneurysms—also known as intracranial or intracerebral aneurysms—go unnoticed until they rupture or are detected by brain imaging (such as CTA or MRA) scheduled for unrelenting headaches, after the usual causes like sinus headaches and migraines have been ruled out.

An estimated one in 50 people in the United States have an unruptured brain aneurysm, according to the Brain Aneurysm Foundation.

As many as eight out of 10 brain aneurysms never rupture, but when they do, the results can be devastating. Approximately 40 percent of ruptured aneurysms result in fatalities within the first 24 hours, while up to an additional 25 percent of these patients die from complications within six months, according to the National Institute of Neurological Disorders and Stroke. Two-thirds of individuals who survive have some type of permanent neurological deficit.

The potentially life-threatening consequences of a rupture make it critical to identify and treat brain aneurysms. Since the treatment can be quite complicated, a world-class, multidisciplinary team is required to manage this complex neurological condition, according to Gaurav Gupta, MD, assistant professor of surgery and neurosurgery; director, cerebrovascular and endovascular neurosurgery; and director, New Jersey Brain Aneurysm & AVM Program at Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital (RWJUH).

By Beth-Ann Kerber • Photos by John Emerson

An aneurysm is the result of a weakness in the wall of a blood vessel. As the blood flow continues to exert pressure on the weakened portion of the wall, a bubble forms and can continue to grow in size.

"Picture a bicycle tire where the rubber weakens, and a bulge begins to form; with too much pressure, that bubble bursts. Similar risks are posed for brain aneurysms," Dr. Gupta explains.

In the past, he says, there were two options for treating brain aneurysms: surgical clipping, in which a titanium clip is used to close off the base of the aneurysm and prevent further blood flow into it; and endovascular embolization, a minimally invasive approach that allows the neurosurgeon to access the aneurysm through a small incision in the groin. Small metal coils are then placed in the aneurysm, filling it completely to prevent further blood flow into it, with or without the assistance of a balloon or metal stent.

"With both of those methods, you're only repairing the aneurysm, not the actual blood vessel on which the aneurysm developed," Dr. Gupta says.

New Treatment Methods

Now the advent of two new techniques is expanding options and dramatically changing the way neurosurgeons look at aneurysm treatment—and they're both available at Robert Wood Johnson Medical School and RWJUH.

One of these methods involves the use of flow diverters for unruptured cerebral aneurysms. EV3 Covidien's Pipeline Embolization Device is designed to divert the flow of blood from the aneurysm and back to the natural path of the artery. Pipeline—a braided cylindrical mesh device—is inserted into the area of the blood vessel where the aneurysm is located. Immediately, blood flow to the aneurysm is slowed, and, in conjunction with the body's natural healing process, the aneurysm shrinks over time, since blood no longer enters it.

Pipeline represents a conceptual change in the approach to treating cerebral aneurysms, says Dr. Gupta. He and interventional neuroradiologist Sudipta Roychowdhury, MD, clinical assistant professor of radiology, lead what is considered the most experienced team in the state for this procedure, having performed the highest number of cases in New Jersey, according to the manufacturers of the Pipeline device.

"This technology is state-of-the-art and has revolutionized the way we treat brain aneurysms," says Dr. Gupta.

New techniques that are dramatically changing the way neurosurgeons look at and treat aneurysms are being implemented by Gaurav Gupta, MD (left), and interventional neuroradiologist Sudipta Roychowdhury, MD (right), clinical assistant professor of radiology, who is leading what is considered the most experienced team in the state for this procedure, having performed the highest number of cases in New Jersey, according to the manufacturers of the Pipeline device.


SID ROYCHOWDHURY, MD
RADIOLOGY

"It reconstructs the entire damaged artery on which the aneurysm develops and restores the natural course of blood flow through it. You're basically giving the patient a new blood vessel."

Another relatively uncommon procedure adapts the theories used in cardiac bypass to the treatment of brain aneurysms. Called brain bypass or extracranial-intracranial bypass, this method involves rerouting the blood flow around the area of the abnormal blood vessel, thereby preventing any further flow to the aneurysm and trapping it. A blood vessel from another part of the body—for example, a branch of the external carotid artery called the superficial temporal artery, or the radial artery, or the saphenous vein—is grafted across a section of the damaged artery, bringing blood to the area of the brain that had been "fed" by that damaged artery, while at the same time bypassing the weakened area and preventing further damage.

Dr. Gupta explains, "If a bridge is breaking down, you don't only stop traffic right at the bridge, but two miles down—blocking off everything past that last exit. The traffic—or in this case, the blood flow—is directed around the problem area to where there is no longer any damage. By using a vascular graft or a donor artery from another area of the body, you are able to create a brand-new 'bridge.'"

Brain bypass procedures are used in cases where the portion of the artery in which the aneurysm is located needs to be sacrificed in order to treat the aneurysm effectively. Because it is such a complicated and extremely intricate procedure, a limited number of centers nationally are performing it, he says.

Brain Aneurysm by the Numbers

- An estimated 6 million people in the United States have an unruptured aneurysm.
- Each year, approximately 30,000 people in the United States suffer a brain aneurysm rupture—about one rupture every 18 minutes.
- Brain aneurysms occur most often in individuals 35 to 60 years old.
- Worldwide, nearly a half-million deaths each year are caused by brain aneurysms; half of the victims are younger than age 50.

Sources: Brain Aneurysm Foundation; National Institute of Neurological Disorders and Stroke

Multidisciplinary Team Approach

Robert Wood Johnson Medical School's and RWJUH's Brain Aneurysm & AVM Program is highly specialized, including the expertise of cerebrovascular and endovascular neurosurgeons such as Dr. Gupta; interventional neuroradiologists like Dr. Roychowdhury; neurologists specializing in stroke like James S. McKinney III, MD, assistant professor of neurology and director, the Stroke Center at RWJUH; neuroanesthesiologists; and pediatric neurointerventional anesthesiologists, as well as specialists in neurosurgery intensive care and surgical critical care.

With expertise in traditional treatment methods for brain aneurysm, as well as the Pipeline and brain bypass procedures, the program's specialists are focused on offering a range of services to provide treatment that best meets the needs of each particular individual, Dr. Gupta says.

"We practice patient-centric medicine," he says. "Treatment strategies are patient-specific, tailored to each individual. A multidisciplinary team is created for each patient, and experts in each area conglomerate to form a team around the patient. All cases are then discussed in a multidisciplinary conference comprising the cerebrovascular and endovascular surgeons, interventional neuroradiologist, and stroke neurologists. It's the best strategy for the patient. It's like getting seven to eight 'second opinions,' all without going to seven or eight places. They are all at Robert Wood Johnson Medical School and Robert Wood Johnson University Hospital."

In conjunction with RWJUH, the medical school also has developed a signature program that provides expert neurological care to pregnant women with brain aneurysms or other neurological disorders. This joint multidisciplinary program, featuring specialists in neurosurgery, neurology, neuroradiology, maternal-fetal medicine, and neonatology, also includes prenatal and neonatal diagnosis of brain aneurysms and other pediatric cerebrovascular conditions.

In addition, the Brain Aneurysm & AVM Program has developed a support group for brain aneurysm patients and their family members, Dr. Gupta notes. The bimonthly meetings, held at RWJ Fitness and Wellness Center in New Brunswick, enable patients and their family to meet with their peers and participate in open discussions on managing daily activities, including healthy living, faith and spiritual healing, and nutrition and exercise. M

Medicine *That Brings the* World CLOSER

BY LYNDA RUDOLPH

Medicine That Brings the World CLOSER

Ask anyone. They'll tell you the world is getting smaller. The more we know about one another from community to community, nation to nation, and even continent to continent, the more familiar we feel. That is particularly true in medicine. There is no longer a great divide in the study of population-level health interventions. Global health is everywhere people are—whether that's in Delhi, Bangkok, or Boston.

The shift in looking at medicine and health globally doesn't just help developing nations. It benefits everyone—in understanding both the epidemiology of diseases and how they spread. A by-product of all this is the experience involved in developing a global perspective and the collaborative research that results from helping one another.

Above: The Himalayan Health Exchange (HHE) medical camp in Kwar, India.

Facing page, top: Robert Wood Johnson Medical School students (left to right) Marlene Wang, Julie Szymaniak, Melissa Villars, and Eleni Stavrou, at the HHE medical camp in Kwar.

Gaining Experience Halfway around the World

Julie Szymaniak is a second-year medical student at Robert Wood Johnson Medical School who spent last summer in India working with the Himalayan Health Exchange (HHE). Jacobo Santolaya spent the end of his first year of medical school—the summer of 2013—in Palma de Mallorca, Spain, working in the Hospital Universitario Son Espases.

Julie's group comprised five Robert Wood Johnson Medical School students and an additional 15 students from around the world, including students from Great Britain.

The learning began almost at once. After landing in Delhi, Julie and her group spent two days getting to the Rupin Valley, using a path that is closed six months of the year due to weather. From the valley, the group set up at five different villages, moving from place to place to see and serve patients. "There were many life-affirming moments at the clinics," Julie says. Four students each alternated working in an internal medicine tent, a

PHOTOS COURTESY OF JULIE SZYMANIAK

Above left: Students walking back from medical camp.

Above right: Patients awaiting their examination at the HHE medical camp in Kwar.

Far right: At the Robert Wood Johnson Medical School Global Health Fair, Jacobo Santolaya (right) describes his experiences working in the Hospital Universitario Son Espases, in Palma de Mallorca, Spain.

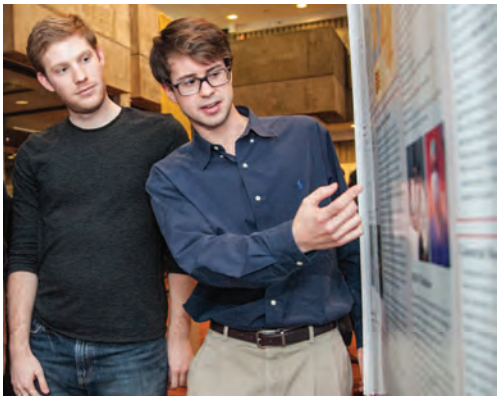
gynecology tent, a pediatrics tent, and a dental tent. "It was very hands-on. You work with translators to communicate, adding to the complexity," she adds. Over the course of ten days, Julie and her fellow medical students worked with 1,500 patients.

Jacobo spent four weeks in the hospital following residents, or attending physicians in some cases, on their rounds, where he recorded medical histories as well as performed physicals on various patients. He saw infectious diseases, including MRSA and HIV/AIDS. When he rotated in the Pediatric Emergency Department, Jacobo had his first experience in pediatrics. "It really got me thinking about taking this direction for my career," he says.

His last rotation, in obstetrics and gynecology, was the most structured. He was able to scrub in for a total hysterectomy and helped with consults for high-risk pregnancies—including one mother whose fetus had developed omphalocele, in which a defect in the development of the abdominal wall muscles causes the intestines, liver, and sometimes other organs to be in a sac outside the abdomen.

The kinds of ailments Julie saw included musculoskeletal pain, back and joint pain, dehydration, headaches, and gastrointestinal issues related to diet. "These are people who live an agrarian lifestyle," says Julie. "Their aches and pains are associated with their lifestyle and dehydration." There was very little if any obesity, diabetes, or hypertension. However, the gynecologic issues included sexually transmitted diseases and menstrual irregularities. Because the culture has such gender divisions, there were some barriers in discussing sensitive issues. For those situations, local and female physicians joined the team.

Both Julie and Jacobo came away with a different perspective on medicine in general and their careers in particular. For Jacobo, the experience in pediatrics engaged him, and he learned about a new medical system that was



KIM SOKOLOFF

fascinating. "In Spain, students go right to medical school after high school. I was working with residents who were just a year older than me. They also don't have the debt we have here," says Jacobo. "But I do feel the competency levels, at this stage of training, are different. Here we are more mature and seem to be better prepared, since we have had so many more years of schooling prior to becoming medical residents." In Julie's case, the clinic environment pushed her to become a better diagnostician and to deal with personal challenges. "You really learn a lot about yourself in situations like this," Julie says.

Missions to Ghana and Vietnam That Give Back

Missions to both Ghana and Vietnam have made personal advocates for change out of two Robert Wood Johnson Medical School professors and ignited a passion about global health in those who work with them. Charletta Ayers, MD, MPH, interim vice chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, and chief, obstetrical services, at Robert Wood Johnson University Hospital (RWJUH), directs the Ghana Global Health Elective through International Healthcare Volunteers (IHCV). Leonard Y. Lee, MD '92, associate professor and interim chair, Department of Surgery, and chief, division of cardiothoracic surgery at Robert Wood Johnson Medical School, directs the Mission to Vietnam through the organization Hearts Around the World.

Dr. Ayers takes medical students and residents to Ghana once a year. They have provided health services to 10,000 women and their families since 2002. IHCV is a not-for-profit organization that provides both health care services to women and their families and continuing medical education to health care professionals in underserved areas. This past year, Dr. Ayers co-led a group of 34 volunteers to Ghana, including two fourth-year medical students—Tejumola Adegoke and Pheobe Askie—as well as surgical residents Sharita Nagaraj, MD, and OB/GYN resident Karima Smith, MD.

The group worked at five different clinical sites, each with a special interest or challenge in mind. In Apam, they taught about HIV, working with mothers and their newborns. In other areas, they looked at umbilical cord infections and taught mothers how to decrease them. At the Kumasi site, they did surgical simulations with surgeons as part of a teaching initiative to upgrade skills. In Cape Coast, where there are two hospitals, they provided obstetric and gynecologic help and services. They also still work with the Ministry of Health to provide continuing medical education, presenting lectures and simulations on topics such as laparoscopic surgery. A women's health advocate, Dr. Ayers feels that during these experiences, "We learn so much from each other."

The Ghana mission began for a very personal reason. When Dr. Ayers and her husband—James Aikins, MD, FACOG, FACS, gynecologic oncologist at Cooper Medical School of Rowan University—were visiting 13 years ago, a niece of his died giving birth. Dr. Aikins's grandmother looked at both him and Dr. Ayers and asked, "What are you going to do?" It was then that the mission was born.

The creation of sustainable programs is what matters most to Dr. Ayers. Screenings for the prevention of cervical, colon, and breast cancer and continuing medical education are all important. And mentoring is key—the idea of teaching someone who can teach someone else.

"We are a profession of healers," says Dr. Ayers. "To practice medicine—the act of it—helps foster empathy and compassion in all of us."

Seeing 10,000 Patients a Day Who Are Desperate for Care

Dr. Lee began working with Hearts Around the World four years ago. It is a group of cardiologists and car-

"We are a profession of healers. To practice medicine—the act of it—helps foster empathy and compassion in all of us," says Charletta Ayers, MD, MPH (far right), interim vice chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, and chief, obstetrical services, at Robert Wood Johnson University Hospital, with Phoebe Askie, MD '14, who joined Dr. Ayers on the Ghana mission.

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diac surgeons who provide services in less technically advanced areas of the world. The same group of physicians goes every year to Ho Chi Minh City to work in the Cho Ray Hospital. It is a 1,700-bed facility, with two patients to a bed—a place with more need than resources. The hospital treats 10,000 patients a day; many sleep in the lobby waiting to get an appointment to see a physician. The issues are all complex. And the need is great. There are patients who need heart valve surgery or have acute myocardial infarction but can't afford to pay for treatment.

The heart team that includes Dr. Lee spends a week at a time working to help people who don't have the ability or technology to help themselves. In turn, Dr. Lee has learned a few things as well: "You see how little you can get away with—sometimes you are forced to be creative and inventive because of the lack of technology." He places great importance on initiatives of this type in academics. "Especially here," says Dr. Lee, "teaching gives us a way to give back. To arrange to do this and bring teams to the world stage—there is a lot to be gained."

Global Research That Finds Relatable, Practical Answers

How do air pollution in Beijing and pesticide exposure in Bangkok relate to the health of the rest of the world? Faculty members from the Environmental and Occupational Health Sciences Institute (EOHSI) can give you a personal perspective. Howard Kipen, MD, MPH, professor of environmental and occupational medicine and acting associate director, EOHSI, and Nancy Fiedler, PhD, professor of environmental and occupational medicine, were involved in research initiatives pursuing answers about the effects of pollution and pesticides.

Dr. Kipen's research took place between 2005 and 2009, mostly when Beijing was mandated to work on its overwhelming air pollution problem before hosting the 2008 Summer Olympics. The study, funded by a grant from the National Institutes of Health (NIH), continued until 2009 and was published in 2012.

"Their goal was to temporarily clean up the air to protect the athletes," says Dr. Kipen. A percentage of factories were going to be closed temporarily, particularly those that were burning coal. Vehicles were also restricted to use inside the city only every other day. After the Olympics, these pollution measures were going to be lifted, allowing the businesses and vehicles to go back to the way they had operated before. It was the perfect opportunity to measure the before-and-after effects of pollution on the body.

Dr. Kipen explains the pollution-disease connection this way: "There is lots of epidemiology that links the quality of the air we breathe with increased risk of heart attacks—not just day to day but hour to hour." For this study, measurements were taken in three different time periods—before the restrictions were initiated, while they were in force, and, finally, after the restrictions were lifted. The panel study was performed through a partnership with the Peking University First Hospital, where 128 medical students were recruited to give samples of their blood, breath, and urine six times—twice during each of the three periods. "We were not measuring clinical events, because these were healthy individuals. What we were looking at were biological markers that we think are involved in how heart and lung disease develops," says Dr. Kipen.

The study found that during the second time period—when pollution had been restricted—all the adverse biomarkers from breath and blood decreased, especially for inflammation and coagulation. And in urine samples, pollution-damaged DNA attributed to oxidized stress showed the same thing. What was most interesting, Dr. Kipen says, was that in the last time period, after the measures to reduce pollution were lifted, a

"Teaching gives us a way to give back. To arrange to do this and bring teams to the world stage—there is a lot to be gained," says Leonard Y. Lee, MD '92 (facing page) associate professor and interim chair, Department of Surgery and chief, division of cardiothoracic surgery at Robert Wood Johnson Medical School, directs the Mission to Vietnam through the organization Hearts Around the World.

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Medical School
Leonard Y. Lee, MD
Cardiothoracic Surgery

reversal occurred, bringing the levels back up toward their original unhealthy levels. "So, you're on the freeway surrounded by vehicles with high emissions of pollution—that short-term exposure could impact your health right then and there," explains Dr. Kipen.

Since the publication of the study, the doctor's hope is to continue collaborative efforts such as this one in China, where high pollution levels allow experiments to be done with fewer subjects. Recently, Dr. Kipen and his team were funded for a trial of the effectiveness of air cleaners on indoor air pollution in apartments.

Howard Kipen, MD, MPH (below), professor of environmental and occupational medicine and acting associate director, Environmental and Occupational Health Sciences Institute, was involved in a National Institutes of Health research initiative to study air pollution exposure in Bejing.

PHOTOS BY JOHN EMERSON

As for Dr. Fiedler, her research focused on the effects of pesticides on children. In Thailand, children who live on rice farms are exposed to pesticides daily. Her work—which received a Fogarty International Center R21 grant funded by the National Institute of Environmental Health Sciences—assessed pesticide exposure in that environment by analyzing children who live on the farms, looking in particular for any compromised cognitive and motor functions. Another goal was to help the local university build capacity for doing these types of assessments themselves through the participatory learning experience.

The children were tested in three different sessions, and researchers looked at specific urinary biomarkers indicative of pesticide exposure. During the time period, Dr. Fiedler gave seminars and helped to train the university team on the Behavioral Assessment and Research System—a series of computerized tests that can detect cognitive and motor deficits in children exposed to neurotoxic chemicals such as pesticides.

The study found that children growing up on rice farms have a significantly higher exposure compared both to those who are reared on shrimp farms in the same Thai community and to children in the United States. In regression analysis, however, the biomarkers of exposure did not predict decrements in cognitive or motor skills. It is important to note that these biomarkers reflected only the prior 24 hours of exposure. There are no good biomarkers to assess long-term exposure, which is the greater concern.

"In the United States," says Dr. Fiedler, "several birth cohort studies have documented effects on cognition that are a result of prenatal exposure, even at lower levels of pesticide exposure than often found in developing countries such as Thailand." It appears that prenatal exposure may be more relevant for effects on neurodevelopment than exposure during childhood, but this remains to be established. Based on Dr. Fiedler's experience

Nancy Fiedler, PhD, professor of environmental and occupational medicine, Environmental and Occupational Health Sciences Institute, has been involved in research initiatives pursuing answers about the effects of pesticides on children who live on farms in Thailand.

in Thailand, new funding is being applied for to evaluate the effects of prenatal exposure on cognitive and motor development of Thai infants and children.

Training the university faculty in collaboration with the NIH-funded Fogarty International Training and Research in Environmental and Occupational Health Center is essential in helping the faculty work with farmers to teach them how to use chemicals more safely. "It is so hot there, and family homes are open and directly adjacent to the fields, offering no real protection from home to field. You walk straight in from work," says Dr. Fiedler. "Storage for pesticides and equipment is often within the living quarters. It's all right there with the kids and family." Dr. Fiedler credits the Fogarty Foundation for bringing home these concerns, which have received too little attention.

Why We Care about the Rest of the World

The focus on global health is more important than ever. The issues facing developing nations have a much greater impact than most people realize. According to the World Health Organization, the consequences of an adverse event in one part of the world are highly contagious. Sharing knowledge can promote change in one small nation that can eventually improve lives all over the world.

Those who choose to understand the role of health care educators and practitioners in the grandest context of all—the world stage—will be the change agents who lead us into the future. M

Jeffrey Brenner, MD '95, Receives MacArthur Award "Genius"

In 2013, the John D. and Catherine T. MacArthur Foundation awarded a fellowship to Jeffrey Brenner, MD '95, executive director, Camden Coalition of Healthcare Providers, and medical director, Urban Health Institute/Advanced Care Center, Cooper University Health Care. The MacArthur Fellowships, informally known as "Genius Awards," recognize people who have demonstrated "exceptional creativity, promise for important future advances based on a track record of significant accomplishment and potential for the fellowship to facilitate subsequent creative work." MacArthur Fellows receive $625,000 over a five-year period, with no strings attached.

BY KATE O'NEILL

The Master Storyteller

Last fall, on a typically hectic afternoon, Dr. Brenner was addressing a succession of pressing issues when a call came in on his cell phone. Unfamiliar with the number, he sent it to voice mail. Fortunately, the caller phoned back immediately, this time on the office line, and Dr. Brenner picked up. He was stunned to find himself speaking to a representative of the MacArthur Foundation, calling to congratulate him for having been named as a 2013 MacArthur Fellow. Dr. Brenner was sworn to secrecy for three weeks; he could tell only one person, his wife.

Twenty-four in all, this year's "Genius Award" recipients include a typically diverse group: in addition to Dr. Brenner, a primary care physician, they include a medical historian, an immigration lawyer, a choreographer, a paleobotanist, a jazz pianist, and a planetary scientist.

The description of that "day like all days" afternoon, with its unpredicted climax, is characteristic of Dr. Brenner. He is a low-key storyteller, with a natural ability to re-create a scene. Whether he is describing an urban shooting or explaining a graph depicting emergency room visits, he completely engages the listener.

Dr. Brenner earned his bachelor's degree in biology at Vassar College and entered the MD/PhD program at Robert Wood Johnson Medical School, looking forward to a research career in the neurosciences. However, after four years in Vassar's self-motivating environment, he was uncomfortable, he says, with "the regimentation and dry memorization" of the

COURTESY OF THE MACARTHUR FOUNDATION

first two years of medical school. He enjoyed only one course: pathology—a science that tells a story.

"I *still* love pathology," he adds, recalling pivotal figures in the course: Robert L. Trelstad, MD, then professor and chair, Department of Pathology and Laboratory Medicine, "cutting out lectures and introducing self-directed small groups with faculty facilitators," and Peter S. Amenta, MD, PhD, then assistant professor of pathology and laboratory medicine. "Dr. Amenta was outstanding," Dr. Brenner recalls, "not only for his knowledge of pathology, but also his huge enthusiasm for the topic and his ability to energize the discussion."

Taking Risks, Building Collaboration

The basic science curriculum lacked experiential education, an omission that troubled Dr. Brenner. "You need to intertwine clinical experience with the curriculum from day one," he says. "The most important thing for a doctor to learn is communication."

It was 1992, and national health care reform was in the spotlight. Not only did the United States have the world's highest health care costs, but also a substantial portion of its residents lacked basic medical insurance. Affordable primary and preventive health care services were conspicuously inadequate in American cities—including New Brunswick, the medical school's immediate community.

In addition to his gift as a raconteur, Dr. Brenner has an uncanny ability to unify people with varied, often competing, agendas in a collective effort. He called on this skill to tackle both of these concerns: how to provide clinical experience for first- and second-year medical students and how to address the need for affordable primary care. He worked with the Office of Student Affairs and classmate Jamie Reedy, MD '95, MPH, to establish the student-outreach program that they named HIPHOP (the Homeless and Indigent Population Health Outreach Project).

Following the advice of David Seiden, PhD, then associate dean for admissions, and Paul Mehne, PhD, then asso-

ciate dean for academic affairs and student programs, Dr. Brenner successfully advocated for making HIPHOP an elective course, not an extracurricular club. "To me, community health education and outreach are just as important and valuable as dissection and anatomy," he says.

"HIPHOP is the essence of Jeff Brenner. He takes the risks and puts others out front. He gives people a sense of ownership," says Anthony Mazzarelli, MD '02, JD, MBE, assistant professor of emergency medicine and senior vice president and chief medical officer, Cooper University Health Care. "HIPHOP does 90 percent of the community service work at the medical school. The great thing is that today's students feel it belongs to them, but it's the core, the legacy, of Jeff Brenner."

Dr. Brenner's commitment to HIPHOP shifted his interest from the research bench to the bedside. After graduation, he completed a residency in family medicine at the Swedish Health Center, in Seattle, before returning to New Jersey to practice and live in Camden, the nation's most impoverished city. He eventually opened a private medical office in Camden, where he offered a full spectrum of family health services to a largely Hispanic population on Medicaid.

Mapping the Hot Spots

In 2002, a small group of primary care providers began meeting regularly over breakfast to share the challenges and frustrations of practicing family medicine in Camden. The group expanded as its members discovered common experiences and developed a common goal: to improve the delivery of health care and social services and reduce the astronomical cost of medical inefficiencies.

From these informal beginnings, Dr. Brenner founded the Camden Coalition of Healthcare Providers, in 2005, serving as executive director. He continued in private practice, though declining reimbursements would force him to close the practice several years later.

The coalition's first project was to create a comprehensive database of patient-level information from Camden's three hospitals and a few private practices. Dr. Brenner proposed the project based on his familiarity with CompStat, a data-driven model used by the New York City Police Department to identify crime patterns, or "hot spots," and then develop and focus appropriate police, government, and community resources in those areas.

"You can't fix a hard problem unless you have a way of counting the hard problem," Dr. Brenner told Atul Gawande in "The Hot Spotters," a profile published on January 24, 2011, in the *New Yorker*. He realized the potential for replicating the CompStat approach in a health care setting. Instead of mapping crime data, he would use discharge data to map hospital visits, particularly to the emergency department, by the city's residents. The results would pinpoint health care hot spots by neighborhood, block, and building. With this knowledge, the coalition could begin planning to address the city's core health needs.

> "My goal is to continue bending the cost curve, to make Camden first in the nation in health care," says Dr. Brenner. "The MacArthur Award has attracted new funding and provided a huge boost for that effort."

Camden's three hospitals serve a nine-square-mile city, competing for patients among its 77,000 residents. The stakeholders didn't communicate, there was no flow of information across systems; Dr. Brenner had to work hard to persuade them to share patient-level information with the coalition. "It was like persuading a Target, a Kmart, and a Walmart in one community to allow you to get all their customer data, put it all into one database, and then convince the customers to stop shopping there," says Dr. Brenner.

Ultimately, Dr. Brenner demonstrated the value of sharing patient information: without a comprehensive database of information from all the city's major providers, a patient could and would rebound in and out of different hospitals without anyone's awareness, and as a result, they would continue to receive both too much and too little care. Discharge instructions and follow-up care, if any, would remain fragmented and disjointed, "like falling off a cliff," says Dr. Brenner. The costs to the community would continue to skyrocket.

Over a three-year period, Dr. Brenner and a dedicated skeleton crew, composed mainly of students, amassed an enormous quantity of patient-level information. In this vast effort, the coalition's researchers had help from CamConnect, a Camden-centered nonprofit that offers other nonprofits technical assistance in areas such as geographic information system (GIS) mapping, research, and data management.

A Data Set with a Story to Tell

The initial data gleaned from discharge and claims information were episodic, uncoordinated, and extremely inefficient, telling their own incredible story "of wasteful, disorganized services, delivered by good doctors working at good hospitals every day," says Dr. Brenner. But gradually, data analysis revealed that a very small number of patients, or "super-users," were consuming a large share of the overall costs of health care and social supports. In a single year, coalition analysts would find, nearly half the city's residents visited a city emergency department or hospital, most often for primary care issues such as head colds, viral infections, ear infections, and sore throats.

The coalition used a business technique to profile and target the scattershot use of the health care system by its super-users. "'Hot spotting' is not mapmaking," says Dr. Brenner. "It's tearing a data set apart and looking for outliers and doing root cause assessment," to find why those locations had the health care system's highest numbers of super-users. Why would one patient, in a single year, have visited every emergency room or hospital in the city, for a total of 113 visits? And what services would have prevented it and made the patient healthier?

"In Camden, the super-utilizers are about 1 percent of the population, which is fewer than 1,000 people," says Dr. Brenner. "Yet they account for about 30 percent of the total payment for hospitalization and emergency department care in Camden." Over a five-year period, the total cost for hospital and emergency department care in Camden was $650 million, mostly public funds. Some 80 percent of the costs were spent on 13 percent of the patients, and 90 percent of the costs were spent on 20 percent of the patients.

The coalition's analysis identified two of the hottest of the city's health care hot spots: an apartment building and a nursing home. Next, it focused on understanding why so many residents at these locations were continually visiting the emergency rooms for care. Most important, by organizing the data around business principles not previously used by health care providers, the coalition was able to start implementing new strategies to help provide appropriate care to the city's sickest people.

Not all its attempts were successful. It focused an extensive effort on the apartment building that housed the highest number of super-users, providing a center for preventive care and support services that proved popular with most residents. But not all, they learned. Many super-users isolate themselves by choice or necessity, so they weren't using the on-site services. Because super-users often live alone and have complex, unmanaged illnesses, no one knows when a real or perceived health crisis is brewing, and they continue to check into the hospitals for emergency care.

The Coalition Today

With the stakeholders on board, the coalition was able, in 2010, to create and run the Camden Health Information Exchange (HIE). The system shares real-time information among the local hospitals, notifying physicians when their patients enter the hospital and providing access to their full medical records.

Much of the coalition's work focuses on improving care of super-users through a large, community-wide care coordination program. Hospitalized patients are identified through the coalition's HIE each morning, the patients are enrolled at the hospital bedside, and then an outreach team visits them at home, checks on their health, reviews medications, accompanies them to medical appointments, and helps them to navigate the health care system for 90 days. Another coalition team works on improving the primary care capacity to "catch"' these recently hospitalized patients.

In 2012, Dr. Brenner founded the Urban Health Institute, a new business unit within Cooper University Health Care that runs the Cooper Advanced Care Center. The center uses modern business tools to provide better care to urban, high-risk, medically underserved patients at a lower cost. The redesigned work flow seeks to contain costs and teach patients self-management. "Smart booking" uses predictive modeling to schedule appointments. Patients with similar health concerns share group visits and learn self-management from a health care team of physicians, nurses, social workers, and a behaviorist. Common topics include diabetes, hand pain, heart failure, headache, and seizure disorder. "Good service delivery has a heart," says Dr. Brenner. "It empowers the client."

Dr. Brenner seeks to build super-user programs that can be easily adapted in other areas, and replication is already happening: more than 50 communities across the country have programs focused on high-cost, complex patients. "My goal is to continue bending the cost curve, to make Camden first in the nation in health care," says Dr. Brenner. "The MacArthur Award has attracted new funding and provided a huge boost for that effort." M

BY LYNDA RUDOLPH

Exploring The Brain

The Far Reaches of

FROM THE BENCH TO THE BEDSIDE

The mysteries of the nervous system and the brain are the challenges faced every day by M. Maral Mouradian, MD, William Dow Lovett Professor of Neurology and director, Center for Neurodegenerative and Neuroimmunologic Diseases. And she looks forward to them. "I've been fascinated by the brain since my first year of medical school," says the neurologist and molecular neurobiologist.

Exploring The Brain
The Far Reaches of

It was a parallel interest in pharmacology that led to a concern with Parkinson's disease—a primary focus of Dr. Mouradian's work since the mid-1980s, when she started at the National Institutes of Health (NIH) intramural program. "Among all the neurodegenerative diseases, Parkinson's is the only one for which we have truly effective drugs to make a clear impact on symptoms," she says.

Her research encompasses a wide range of disciplines, from molecular and cell biologic studies to animal models of Parkinson's to clinical trials. "Of course, the Holy Grail in this field is to find ways to slow down the progression of disease—or stop it if possible," says Dr. Mouradian. But the starting point is to understand the basis of the disease. In the past two decades, scientists have discovered a great deal about its genetic underpinnings. Dr. Mouradian's laboratory carries out a number of studies at the bench to understand how those genetic underpinnings contribute to neurodegeneration. Then they are modeled into organisms or cells to see how that process unfolds from mutation to neurodegeneration.

Using animal models, researchers study various interventions that can potentially have therapeutic applications in patients. Dr. Mouradian explains, "It's a whole investigative process from a gene or a molecule—trying to understand what it does to the brain—and then using that information to understand the cascade of events that we can interdict at some point that's therapeutically feasible."

A Promise of New Neuro-protective Treatments

Currently, Dr. Mouradian is leading a research effort on Parkinson's disease surrounding the protein alpha-synuclein. The goal is to develop a neuro-protective or disease-modifying therapy for Parkinson's. "This protein is abnormally aggregated in the brains of Parkinson's patients and is excessively phosphorylated—which makes it more prone to aggregate and be toxic," explains Dr. Mouradian. "We thought it would therefore make sense to try to minimize phosphorylation as one way to mitigate toxicity."

In collaboration with Jeffry Stock, PhD, professor of molecular biology at Princeton University, her lab has tested a compound that does just that, removing the phosphate group from alpha-synuclein, and found it to protect the brain in two mouse models of Parkinson's disease. What's even more interesting is that the compound is present in coffee. "There is considerable epidemiological evidence that coffee consumption is associated with reduced risk of Parkinson's disease," says Dr. Mouradian. The next step is to find a suitable formulation to test in patients.

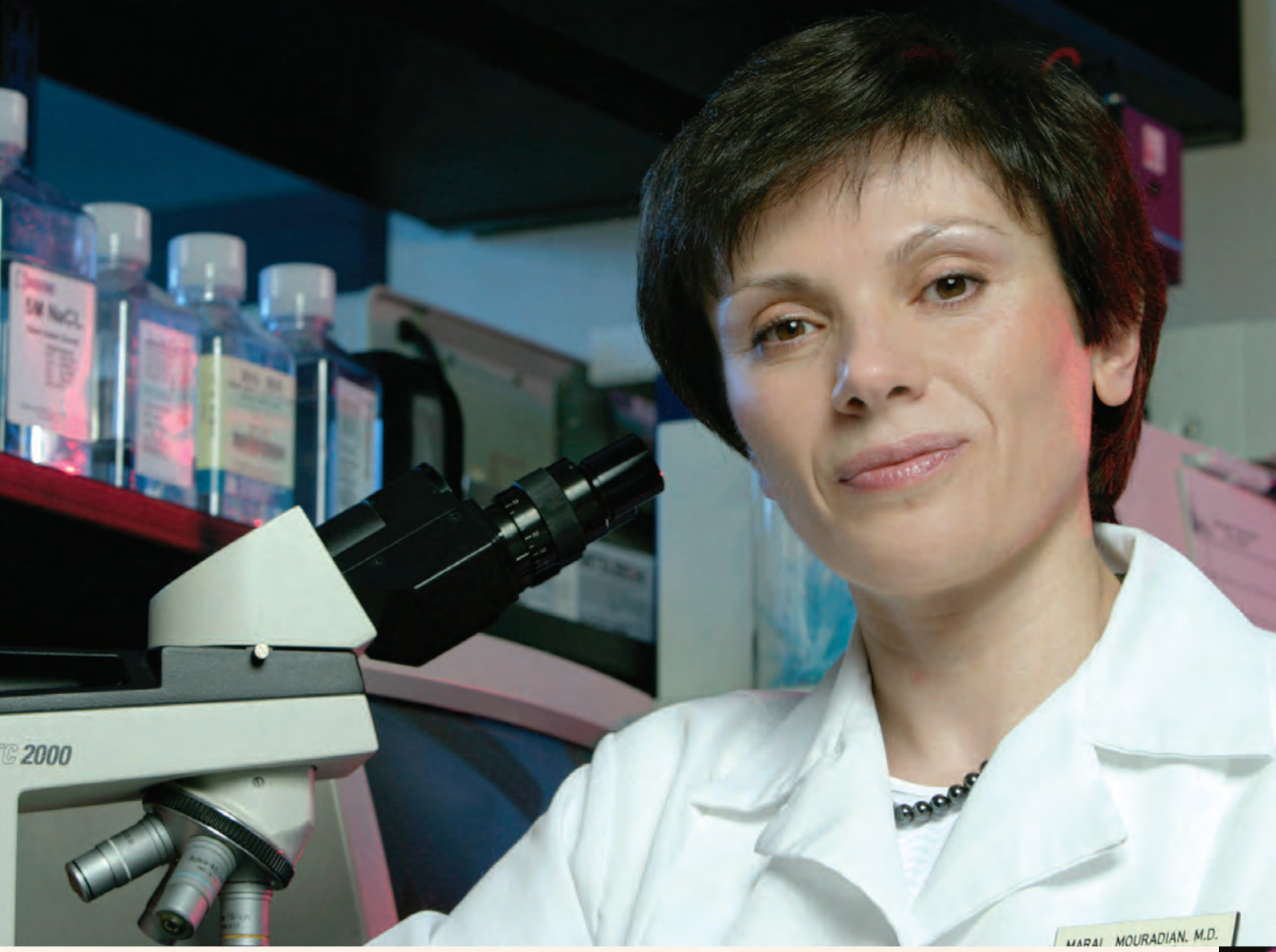
Other work related to alpha-synuclein that is being pursued in the lab involves looking at the regulation of protein levels in the brain. "We know that an excess of alpha-synuclein is bad for the brain," says Dr. Mouradian. "If there are more than the normal two copies of the gene in the genome, let's say an extra functional copy, the person develops Parkinson's disease." In collaboration with Eunsung Junn, PhD, assistant professor of neurology, the team launched an investigation to look at mechanisms that the brain uses to regulate alpha-synuclein level and found small RNA molecules called microRNAs—specifically, microRNA-7—that reduces the amount of this protein. This approach is another way in which toxicity of the alpha-synuclein protein can be modified.

Repurposing FDA-Approved Compound to Target Parkinson's Symptoms

Aside from neuro-protective approaches, Dr. Mouradian's laboratory has been studying possibilities for better treatments of symptoms of Parkinson's. A number of drugs are designed to treat the symptoms—most notably L-dopa—but they work well only initially. Over time, patients who take L-dopa develop a condition that manifests as involuntary movements—called L-dopa-induced dyskinesia, or LID—that forces some patients to undergo brain surgery.

Based on work performed in Dr. Mouradian's laboratory, a compound that the U.S. Food and Drug Admin-

STEVE HOCKSTEIN



istration (FDA) has already approved for use in another target indication appeared to have potential to minimize involuntary movements. Through a grant from the Michael J. Fox Foundation for Parkinson's Research, her team tested the compound in nonhuman primates and found it to repress involuntary movements with no adverse effects. Since the drug is already given to humans, testing can quickly move on to clinical trials in patients with Parkinson's who have LID.

The idea of repurposing or repositioning a drug for a different indication accelerates the process and reduces the delay in bringing a drug to the market for patients. Dr. Mouradian has founded a start-up company, MentiNova Inc., to increase interest. "Research discoveries can have greater impact if you can commercialize them—you get investors to help bring the process along," she says. "That helps enhance the pace of translating scientific knowledge for the good of public health."

Foundation Venture Capital Group, part of the New Jersey Health Foundation, has provided seed financing. "We are looking for additional funding through grants and other potential sources to push this forward," explains Dr. Mouradian. She believes that after successful clinical trials, FDA approval could happen in four to five years.

The patients she sees and the hope she knows they are always looking for fuel much of Dr. Mouradian's work. "I am a clinician too. I see what they go through," she says. "They ask me, when are you going to find a cure?" When she sees them, it gives her the energy and enthusiasm to do something to change things. "I am optimistic," she says. "I think we will have an impact—that we can and will make a difference."

Dr. Mouradian was recently named editor-in-chief of *Neurotherapeutics*, a journal that explores the frontiers of translational neuroscience through therapeutic discoveries with direct applications to nervous system disorders. M

NEWS

Cystic Fibrosis Center Receives National Quality Care Award

COURTESY OF THE CYSTIC FIBROSIS FOUNDATION

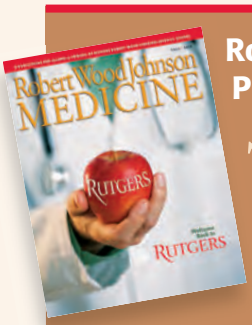
Thomas F. Scanlin Jr., MD, professor of pediatrics, chief, division of pediatric pulmonology, and director, Cystic Fibrosis Center of Robert Wood Johnson Medical School and The Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital (far left); and Sabiha Hussain, MD, assistant professor of medicine (far right); receive the 2012-2013 Cystic Fibrosis Foundation Quality Care Award from Bruce C. Marshall, MD, senior vice president for clinical affairs, Cystic Fibrosis Foundation (second from left); and Jordan M. Dunitz, MD, chair, Cystic Fibrosis Foundation Center Committee, University of Minnesota Cystic Fibrosis Center (second from right).

The Cystic Fibrosis Center of Robert Wood Johnson Medical School and The Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital has been selected by the Cystic Fibrosis Foundation for its prestigious Quality Care Award for 2012–2013.

Instituted in 2008, the foundation's Quality Care Awards recognize centers that have continuously demonstrated a commitment to improving the quality of care they provide to people with cystic fibrosis (CF). The Cystic Fibrosis Center has been consistently ranked among the best programs in the nation for lung function and nutrition status in individuals with CF. It is one of only three level III CF centers in the state that are accredited by the Cystic Fibrosis Foundation. The center's Adult CF Program, accredited by the foundation in 2007, is one of only 96 accredited programs nationwide serving adults with CF.

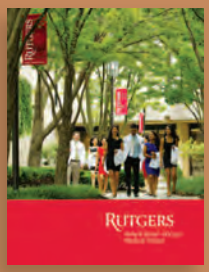
—*K.O'N.*

Robert Wood Johnson Medical School Publications Receive Awards



The Fall 2013 issue of *Robert Wood Johnson Medical School* received the following awards for excellence:

- A gold award from the 31st annual Healthcare Advertising Awards
- A bronze award from the 2014 Aster Awards: Excellence in Medical Marketing



The Robert Wood Johnson Medical School Viewbook received the following awards:

- A gold award from the 2014 Aster Awards: Excellence in Medical Marketing
- A silver award from the 31st annual Healthcare Advertising Awards

Robert Wood Johnson Medical Group Physicians Named to Prestigious 2014 Best Doctors in America List

Eighty-five physicians affiliated with Robert Wood Johnson Medical Group, the faculty practice of Robert Wood Johnson Medical School, have been selected for the Best Doctors in America List for 2014. Only 5 percent of physicians in the United States earn this prestigious honor, decided by impartial peer review.

This selection represents the latest acknowledgment of the medical group's physicians for their expertise. Overall, 112 Robert Wood Johnson Medical Group physicians have been recognized this year as leading physicians in their fields by Best Doctors and such publications as *New Jersey Monthly*, *Inside Jersey* magazine, and *New York* magazine.

"Robert Wood Johnson Medical Group physicians constitute approximately 10 percent of the New Jersey physicians selected for the Best Doctors in America List this year. They represent a comprehensive range of primary and specialty care, including cardiovascular disease, women's health, surgery, and pediatrics, among others," says **Vicente H. Gracias, MD**, dean (interim). "We congratulate our physicians and are proud of the dedication to exceptional care that each of our doctors exhibits every day."

—*K.O'N.*

Dr. Sara J. Cuccurullo Named Chair of the Department of Physical Medicine and Rehabilitation

Sara J. Cuccurullo, MD, was appointed chair of the Department of Physical Medicine and Rehabilitation. Since 1998, Dr. Cuccurullo, clinical professor of physical medicine and rehabilitation, has served as director of the department's residency program, located at JFK Medical Center, in Edison. She has been an attending physiatrist at JFK/Johnson Rehabilitation Institute since 1991 and also has an appointment at Robert Wood Johnson University Hospital.

COURTESY OF SARA J. CUCCURULLO, MD

Sara J. Cuccurullo, MD

Dr. Cuccurullo has served as course director and instructor of third-year medical students. As an elective director, she developed five electives focused on physical medicine and rehabilitation, traumatic brain injury, and prosthetics and orthotics. She helped develop the curriculum to meet Accreditation Council for Graduate Medical Education standards for the Pain Medicine Fellowship sponsored by the department, as well as the Traumatic Brain Injury Fellowship at JFK.

Dr. Cuccurullo was named Teacher of the Year for the residency program five times, most recently in 2012, and has been recognized twice with the Robert Wood Johnson Medical School Volunteer Faculty Award. She earned her medical degree from the State University of New York Health Science Center at Brooklyn and completed her residency at JFK/Johnson Rehabilitation Institute.

—*K.O'N.*

Class of 2014 Celebrates at Convocation

The first graduating class of Rutgers Robert Wood Johnson Medical School received their diplomas at the Convocation ceremony on Sunday, May 18, at the State Theatre in New Brunswick.

KIM SOKOLOFF

Research News

By Kate O'Neill

Research Grants

The National Institutes of Health awarded grants of $1 million or more to the following members of the Robert Wood Johnson Medical School faculty:

- **Jeffrey D. Laskin, PhD**, professor of environmental and community medicine, and **Jason Richardson, PhD**, associate professor of environmental and community medicine, a five-year, $3,965,225 grant (1U01NS079249-01A1) for "Developing Drugs to Mitigate Parathion Intoxication."
- **Kiran Madura, PhD**, professor of pharmacology, a four-year, $1,203,916 grant (1R01GM104968-01) for "A Role for Protein Degradation in Nucleotide Excision-Repair."
- **M. Maral Mouradian, MD**, William Dow Lovett Professor of Neurology and director, Center for Neurodegenerative and Neuroimmunologic Diseases: a five-year, $2,223,995 grant (1R01AT006868-01A1) for "Synergistic Neuroprotective Mechanisms of Coffee Components in Parkinson's Disease."
- **Monica J. Roth, PhD**, professor of pharmacology, a four-year, $1,172,331 grant (1R01GM108487-01) for "MuLV p12 Function in Tethering and Integration."

Published Research

The following is a representative sample of articles by Robert Wood Johnson Medical School researchers published in leading biomedical journals:

- **Jeffrey L. Carson, MD**, Richard C. Reynolds Professor of Medicine, chief, division of general internal medicine, and interim provost, Rutgers Biomedical and Health Sciences, was the author of "Blood Transfusion and Risk of Infection: New Convincing Evidence," published in the *Journal of the American Medical Association* April 2, 2014:311(13):1293–1294.
- **Stephen C. Gale, MD**, clinical assistant professor of surgery, was first author of "APOε4 Is Associated with Enhanced in Vivo Innate Immune Responses in Human Subjects," published in the *Journal of Allergy and Clinical Immunology* March 18, 2014, http://dx.doi.org/10.1016/j.jaci.2014.01.032.
- **James S. Goydos, MD '88**, professor of surgery, was the author of "Who Should Be Offered a Sentinel Node Biopsy for Melanoma Less Than 1 mm in Thickness?," published in the *Journal of Clinical Oncology* December 10, 2013:31(35):4385–4386.
- **Vassiliki Karantza, MD, PhD '01**, assistant professor of medicine and resident member, Rutgers Cancer Institute of New Jersey, was senior author of "ERBB2 Overexpression Suppresses Stress-Induced Autophagy and Renders ERBB2-Induced Mammary Tumorigenesis Independent of Monoallelic Becn1 Loss," published in *Autophagy* April 1, 2014:10(4):662–676.
- **Janice M. Mehnert, MD '01**, associate professor of medicine and resident member, Rutgers Cancer Institute of New Jersey, was senior author of "Ipilimumab Administration in Patients with Advanced Melanoma and Hepatitis B and C," published in the *Journal of Clinical Oncology* July 20, 2013:31(21):e370–372.
- **Gaetano T. Montelione, PhD**, adjunct professor of biochemistry and molecular biology and resident member, Center for Advanced Biotechnology and Medicine, was senior author of "Protein NMR Structures Refined with Rosetta Have Higher Accuracy Relative to Corresponding X-ray Crystal Structures," published in the *Journal of the American Chemical Society* February 5, 2014:136(5):1893–1906.
- **Vikas Nanda, PhD**, associate professor of biochemistry and molecular biology and resident member, Center for Advanced Biotechnology and Medicine, was senior author of "Self-assembly of Left- and Right-Handed Molecular Screws," published in the *Journal of the American Chemical Society* December 18, 2013:135(50):18762–18765. **Fei Xu, PhD**, a senior postdoctoral researcher in Dr. Nanda's laboratory, was first author of the article.
- **Monica J. Roth, PhD**, professor of pharmacology, was senior author of "Viral DNA Tethering Domains Complement Replication-Defective Mutations in the p12 Protein of MuLV Gag," published in the *Proceedings of the National Academy of Sciences of the United States of America* June 4, 2013:110(23):9487–9492.
- **Alexey G. Ryazanov, PhD**, professor of pharmacology, was senior author of "Germline Quality Control: Eef2k Stands Guard to Eliminate Defective Oocytes," published in *Developmental Cell* March 10, 2014:28(5):561–572.
- **Steven M. Silverstein, PhD**, professor of psychiatry, was senior author of "Inflammation and the Two-Hit Hypothesis of Schizophrenia," published in *Neuroscience and Biobehavioral Reviews* January 2014:38:72–93.
- **Chi Kwan Tsang, PhD**, adjunct assistant professor of pharmacology, and **X. F. Steven Zheng, PhD**, professor of pharmacology and resident member, Rutgers Cancer Institute of New Jersey, were first author and senior author, respectively, of "Superoxide Dismutase 1 Acts as a Nuclear Transcription Factor to Regulate Oxidative Stress Resistance," published in *Nature Communications* March 19, 2014:(5):3446.
- **Nancy A. Woychik, PhD**, professor of biochemistry and molecular biology, was senior author of "An RNA–seq Method for Defining Endoribonuclease Cleavage Specificity Identifies Dual Rrna Substrates for Toxin Mazf-Mt3," published in *Nature Communications* April 8, 2014:5:3538. **Jason M. Schifano**, a PhD candidate in Dr. Woychik's laboratory, was first author of the article.

LETTER FROM THE ALUMNI ASSOCIATION PRESIDENT

Dear Alumni and Friends:

I was honored to speak at Convocation to welcome the Class of 2014, the first graduating class of Rutgers Robert Wood Johnson Medical School, to the Alumni Association. We are extremely proud of the graduates' 98 percent match rate and their other outstanding accomplishments. We extend our best wishes to the class members as they enter their residency programs and encourage them to stay in touch in the future.

Alumni who attended the Fourth Annual Scholarship Gala to Celebrate with Alumni and Friends in April enjoyed a great evening filled with wonderful school spirit. Special congratulations to our Distinguished Alumni Award recipient, Jeffrey N. Bruce, MD '83. The Gala was a great success, raising $135,000 to support scholarships for Robert Wood Johnson Medical School students. *(Please see Gala article and photos on pages 48–49.)*

We were pleased to honor the Class of 1974, the first-four year graduating class of our medical school, at the Gala. I know you will enjoy the article "Class of 1974 Celebrates Its 40th Anniversary" *(starting on page 54)*, a wonderful walk down memory lane about the history of our medical school from the perspective of our alumni.

The Alumni Association looks forward to the Fifth Annual Scholarship Gala on Saturday evening, April 11, 2015, at the Hyatt Regency New Brunswick. We will celebrate the anniversaries of the following classes: 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, and 2010. If you are interested in a class list to contact your classmates and arrange for a great reunion at the Gala, please contact: Roberta Ribner at ribnerrs@rwjms.rutgers.edu.

STEVE HOCKSTEIN

The Alumni Association contributes to the success and future of Robert Wood Johnson Medical School by providing financial aid to our students. The cost of medical education is increasing at an overwhelming rate. Our Board of Trustees awarded $80,000 in scholarships and loans to our medical students during the 2014–2015 academic year. I would like to thank you for your generous past contributions and invite you to support the Alumni Association Annual Fund again this year.

The Alumni Association is a great way to keep in contact with fellow classmates, interact with our students, and stay informed about events and programs at our medical school. Please join us on Facebook (www.facebook.com) by searching for Robert Wood Johnson Medical School Alumni Association.

The Alumni Association looks forward to another successful year to support Robert Wood Johnson Medical School as it continues its pursuit of excellence.

Sincerely,

Andrew Stefaniwsky, MD '77
President, Robert Wood Johnson Medical School Alumni Association

P.S. Gifts to the 2014 Alumni Association Annual Fund can be made by credit card on the Rutgers University Foundation website at: http://support.rutgers.edu/RWJMSAlumni, or mail your gift in the envelope enclosed in the magazine.

ALUMNI NEWS

PHOTOS BY KIM SOKOLOFF

Fourth Annual Gala Is a Grand Success: Event Builds New Support for Medical Student Scholarships

1. Left to right: Natalia Bistiny, chair, Eric B. Chandler Health Center Board of Trustees; Eric Jahn, MD '88, senior associate dean for community health; Sandra Adams, executive director of the health center; Vicente H. Gracias, MD, dean (interim); and awardees Jeffrey Bruce, MD '83, Edgar E. Housepian Professor of Neurological Surgery, New York-Presbyterian/Columbia; and Joseph Bertino, MD, university professor of medicine and pharmacology and associate director and chief scientific officer at Rutgers Cancer Institute of New Jersey.

The Fourth Annual Scholarship Gala to Celebrate with Alumni and Friends, co-hosted by Robert Wood Johnson Medical School and the Rutgers University Foundation, was a spirited and memorable evening. Building on three previous, highly successful events, the Gala raised $135,000 in support of medical student scholarships.

The celebration, held on April 12 at The Heldrich, in New Brunswick, included more than 250 alumni, faculty, staff, students, and friends of the medical school. They were joined by leaders from nine of the medical school's hospital affiliates located throughout New Jersey. The evening included a special salute to the Class of 1974, the medical school's first four-year graduating class, which was celebrating its 40th reunion.

"On behalf of Robert Wood Johnson Medical School, I am extremely grateful to our alumni and colleagues who supported the Scholarship Gala," says **Vicente H. Gracias, MD**, dean (interim), who served as master of ceremonies. "Their generosity provides necessary financial support for our medical students who face a growing amount of debt in pursuit of becoming physicians."

Three exemplary honorees were recognized at the Gala for their dedication to promoting medical and scientific education, research, philanthropy, patient care, and community health.

The Eric B. Chandler Health Center received the Meritorious Service Award for 25 years of leadership and dedication to improving the health care of underserved children and adults in the New Brunswick area.

The Honorary Alumni Award was presented to **Joseph R. Bertino, MD**, university professor of medicine and pharmacology at Robert Wood Johnson Medical School and chief scientific officer at Rutgers Cancer Institute of New Jersey. As a physician-scientist, Dr. Bertino has dedicated his career to the design and development of anticancer agents to optimize treatment for cancer patients.

The Distinguished Alumni Award was given to **Jeffrey N. Bruce, MD '83**, Edgar M. Housepian Professor of Neurological Surgery at New York-Presbyterian/Columbia. Dr. Bruce, one of the country's preeminent neurosurgeons, was recognized for his contributions to translational brain tumor research. He has served as a mentor to Robert Wood Johnson Medical School graduates completing their residency training at the College of Physicians and Surgeons.

—K.O'N.

Please
SAVE THE DATE!

The Fifth Annual Gala will take place on Saturday evening, April 11, 2015, at the Hyatt Regency New Brunswick.

2. Vicente H. Gracias, MD, dean (interim), and his wife, Wendy Klein-Gracias, MD.

3. Left to right: Melissa Miller, MD '80; Andrew Stefaniwsky, MD '77; Mary Holowinsky, MD '84; and her husband, William Chen, MD.

4. Left to right: Barbara Ostfeld, PhD, program director of the SIDS Center of New Jersey, and Thomas Hegyi, MD, professor and vice chair, Department of Pediatrics, celebrate with Jeffrey Bruce, MD '83, recipient of the Distinguished Alumni Award.

5. Left to right: Eduardo Fernandez, MD '89, past president, Alumni Association, and his wife, Brenda, enjoy the Gala with medical students Danika Paulo and Wylie Lopez.

6. Left to right: Céline Gélinas, PhD, interim senior associate dean for research; Barbara Bennett: and Arnold Rabson, MD, director, Child Health Institute of New Jersey.

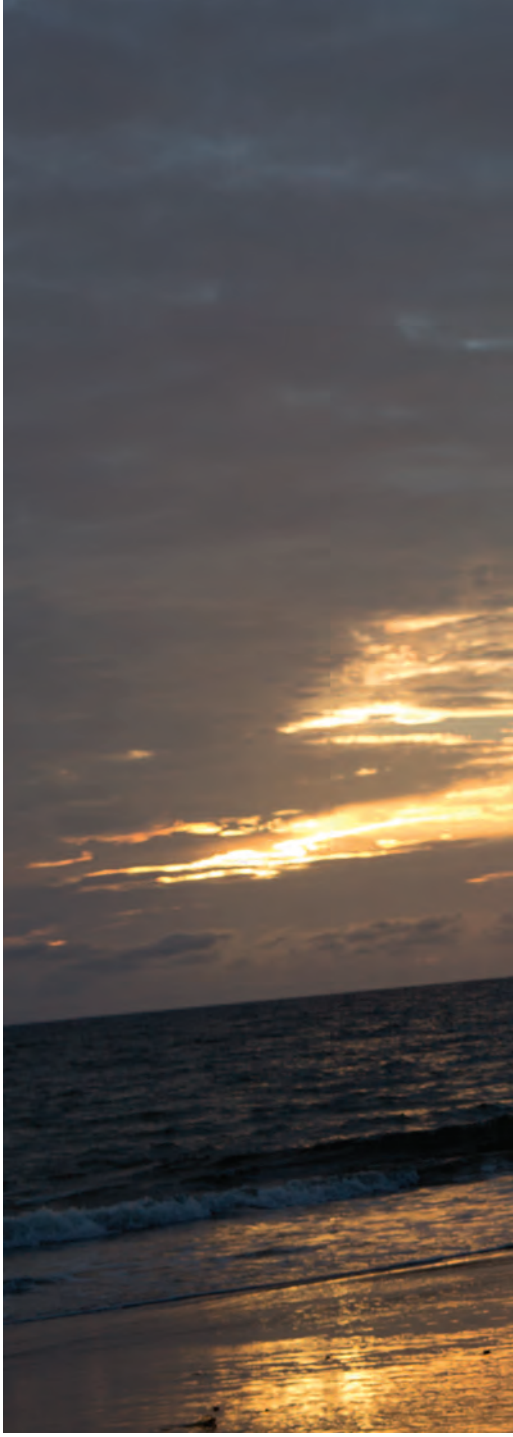
7. Richard Edwards, PhD, executive vice president for academic affairs, Rutgers University, and Carol Friedman.

8. Christopher Molloy, PhD, senior vice president for research and economic development, Rutgers University, and Laureen MacEachem.

9. Alfred F. Tallia, MD '78, chair, Department of Family Medicine and Community Health, and Elizabeth Tallia.

A CD from a Notable MD

He is perhaps the only person who has or ever will have created both a book about surgery and songs about the beach on iTunes. That's because when he's not performing resections of neuroendocrine tumors, F. Charles Brunicardi, MD '80, professor, Moss Foundation Chair in Gastrointestinal and Personalized Surgery, and vice chair, Department of Surgery, at the David Geffen School of Medicine at UCLA, is strumming his vintage 1954 Gibson guitar and musically musing about life.



PHOTOS COURTESY OF F. CHARLES BRUNICARDI, MD '80

Dr. Brunicardi is a New Jersey guy. He attended North Plainfield High School and played in the All-State Stage Band in the 1970s. He and his brother Edward even wrote a musical together that was performed at Monsignor Donovan High School on the Jersey Shore. Performing helped him pay his way through college and medical school. Between 1977 and 1978, he toured England, playing at the Troubadour and the Roundhouse and performing at the Cambridge Folk Festival—where he rubbed shoulders with the headliners Richie Havens and Don McLean. Next came a recording contract with the Robert Stigwood Organization—better known then as RSO Records.

BY LYNDA RUDOLPH

But medicine was calling, and Dr. Brunicardi graduated from Robert Wood Johnson Medical School, then Rutgers Medical School, in 1980 and began what has been a brilliant career, including a lengthy stay at Baylor College of Medicine in Houston as the DeBakey-Bard Chair, Michael E. DeBakey Department of Surgery; pancreatic cancer research funded by the National Institutes of Health; the position of editor-in-chief of the textbook *Schwartz's Principles of Surgery*; and work on more than 270 peer-reviewed publications.

Dr. Brunicardi's debut album—entitled *Where Sunset Meets the Beach*—is about family and friends and in large part happened because of them. Dr. Brunicardi's sister Pat was instrumental in getting the songs online at ReverbNation.com, where they picked up a respectable 3,000 fans and 16,000 hits. Contacts through friends brought some highly regarded musicians into recording sessions, includ-

ing Mark Dearnley, famed British soundsmith for AC/DC's *Highway to Hell* album; singer-songwriters Patrick Davis and Pat McGrath; Mark Hill, bass player and bandleader for Reba McEntire; Dan Dugmore, who works in James Taylor's band and previously in Linda Ronstadt's; and Wes Hightower, a Nashville artist who did the backup vocals.

Dr. Brunicardi flew to Nashville to record 12 songs and brought the master tracks back to California, where vocals were rerecorded and remixed. "Today, music is so different in the way it gets heard," he says. "Independent artists have an opportunity to produce good music and have it go viral."

Living in the Pacific Palisades area was the inspiration for the album's cover. Although this foray into music once more was something he just "wanted to do," Dr. Brunicardi also says he has no intention of giving up his day job. In fact, he points out that a portion of the proceeds from the sale of his album goes to cancer research, adding, "The Moss Foundation is named for Jerry Moss of A&M Records, so it's a fitting tribute." M

To hear samples from the tracks, search for Chuck Brunicardi on iTunes or visit www.chuckbrunicardi.com.

Christina T. Mora Mangano, MD '79:

Blazing Trails, Fostering a Passion for Research

Christina T. Mora Mangano, MD '79, has helped blaze a few trails in her nearly three decades as a fellowship-trained cardiothoracic anesthesiologist.

A staunch advocate for subspecialization of anesthesiology, she has argued tirelessly for the necessity of individuals with specialized expertise in dealing with complex cardiac conditions. Her research has helped define the perioperative management of patients requiring cardiothoracic surgery. And, in a male-dominated profession, she has on many occasions been the first or one of a few female cardiovascular anesthesiologists on staff, culminating in 2007 with her selection as the first female president of the Society of Cardiovascular Anesthesiologists (SCA).

Throughout her career, she has never been one to shy away from potential conflict if it has meant standing up for what she feels is in the best interests of her patients—or her profession. "If I am swimming with the sharks . . . I don't plan to be eaten alive," she responded unapologetically to a former division chief of cardiothoracic anesthesiology who suggested that she was too assertive.

BY BETH-ANN KERBER

In 1994, Dr. Mora joined the faculty of Stanford University—at the time, already internationally recognized for its cardiovascular center—and she has been part of the center's continued evolution. "To be able to work with world-class surgeons and enhance the role and influence of the cardiothoracic anesthesiologist has been very rewarding," she says.

Currently, she is a professor in the Department of Anesthesiology, Perioperative and Pain Medicine and chief, division of cardiovascular anesthesia, a position she has held for the past 15 years. As an attending anesthesiologist at the Stanford University Hospital, she specializes in managing complex cardiovascular cases, including major aortic surgery with profound hypothermic circulatory arrest, heart and lung transplants, and emergencies. She states, "Some nights it seems that every patient west of the Mississippi suffering an aortic dissection arrives by helicopter on the hospital roof.

"I feel tremendously fortunate, because I found my passion and was able to identify something I love doing," Dr. Mora says. "I tell my children, the best thing in life is to find something you love to do, and—even if there are days you don't want to get up in the morning—once you're at work, you can say, 'Wow! Let's rock and roll!' And, remarkably, I am paid to do this! It is a gift and a privilege."

It would have been difficult for the former otolaryngologist hopeful to imagine such enthusiasm for the career during her surgical residency. But when a midnight-shift epiphany in her third year of residency brought the realization that a career change was needed, she began to consider other options.

"The decision was very emotional, and I realized what I was walking away from, but I knew it just wasn't for me," Dr. Mora explains. Someone recommended anesthesiology, and her initial reaction was less than glowing: "Those guys don't do anything but keep people asleep!" Still unconvinced, she decided to explore it fur-

COURTESY OF CHRISTINA T. MORA MANGANO, MD '79

ther, and during her residency at Mount Sinai School of Medicine in New York City, she soon came to realize that anesthesiology was much more than just "keeping people asleep."

"I loved it, and the immediate nature of it. It includes a task to complete, challenges, and the necessity of real-time decision making. In the course of some operations, you will need to make hundreds of decisions that will impact patients' lives," she says.

Finding Your Passion

Already having expressed an interest in cardiovascular surgery and, in particular, the nascent techniques of coronary bypass surgery, Dr. Mora was especially attracted to the idea of caring for these types of critical patients: "As a cardiovascular anesthesiologist, you have the mandate of being the ultimate patient advocate. You have to control, impact, and positively affect all of the physiology of your patient."

Cardiovascular anesthesiologists also are uniquely positioned to improve the safety and efficiency of cardiac OR suites, says Dr. Mora, who was involved in the implementation of the SCA's Flawless Operative Cardiovascular Unified Systems (FOCUS) initiative, which was intended to help develop strategies to improve safety for cardiac surgery patients. "We are the professionals most likely to 'speak' all of the 'dialects' of the OR personnel—the surgeons, nurses, and perfusionists—and thus are able to provide 'translation' services on an ongoing basis," she explains.

An associate examiner for the American Board of Anesthesiology, Dr. Mora also has been serving as an editor, guest editor, or reviewer for a host of peer-reviewed journals, including the *Journal of Thoracic and Cardiovascular Surgery*, *Circulation*, the *Journal of Cardiothoracic and Vascular Anesthesiology*, the *Annals of Thoracic Surgery*, and *Anesthesiology*. She has published multiple peer-reviewed articles and has contributed to more than a dozen other articles and book chapters, as well as edited the book *Heart-Lung Bypass: Principles and Techniques of Extracorporeal Circulation*.

—Continued on Page 59

Class of 1974 Celebrates Its 40th Anniversary

The Class of 1974 was a class of firsts for Rutgers Medical School. It was the school's largest entering class to date, and it was the first class to earn a four-year medical degree from the school.

Women represented 17 percent of the entering class, at a time when the national average was less than 10 percent. The student-faculty ratio remained low, allowing first- and second-year students to work closely with remarkable teachers such as John Kostis, MD, and Teodoro Santiago, MD. On clinical rotations, despite the Arab oil embargo, students overcame gas lines and shortages to reach seven widely separated clinical sites, nicknaming themselves "the Road Scholars."

They worked directly with Paul Winokur, MD, chief of pediatrics at Muhlenberg Hospital, and Hunterdon Medical Center's Frank Snope, MD, a national figure in his field, who founded the medical school's Department of Family Medicine. In lectures with Richard Cross, MD, they gained indelible insights from a pioneer in medical school sexuality education.

Women in the class appreciated the presence of strong faculty role models, including Joanne Medlinsky, MD, and Parvin Saidi, MD. And this class, like its successors, remains grateful for the dedication of Paul Stein, director, Kessler Teaching Laboratories.

Every member of the class earned an MMS (master of medical science) in 1972, and while half pursued earlier plans to complete their MD elsewhere, 16 transfer students promptly took their place.

In May 1974, Rutgers Medical School awarded its first 31 MD degrees.

BY KATE O'NEILL

1974 FACULTY:

John Kostis, MD

Teodoro Santiago, MD

Paul Winokur, MD

Frank Snope, MD

1974 FACULTY:

Joanne Medlinsky, MD

Parvin Saidi, MD

Richard Cross, MD

Mark A. Bloomberg, MD '74, MBA

After graduating from Boston University, Dr. Bloomberg, a native of Trenton, returned to New Jersey for medical school. He completed his residency at St. Elizabeth's Hospital, in Boston, and has remained in that area ever since.

Following his residency, Dr. Bloomberg launched a solo medical practice, "the last solo practice in Waltham, [Massachusetts,]" he believes. Today, in semiretirement, he is a senior physician executive with HealthNEXT. In addition, he serves as president of the Bloomberg Healthcare Group, a solo consultancy specializing in quality improvement, a subject he teaches at the Harvard School of Public Health. Always an entrepreneur, he helped launch the first yearbook at Rutgers Medical School. And last year, he enthusiastically volunteered to chair his class's 40th reunion, enjoying the opportunity to rebuild connections and round up classmates to celebrate.

Dr. Bloomberg's professional evolution began in 1977 at Waltham Hospital, where he was assigned to the Quality Assurance Committee. He found that the topic interested him, accepted appointment as committee chair, and, in 1982, became medical director of the hospital's independent practice association. In 1987, Tufts Health Plan, a cutting-edge health management organization, recruited him as corporate medical director. Dr. Bloomberg continued in private practice for several years, "burning the candle at both ends," he says. "Then I realized that, by improving the quality and coordination of patient care, I could influence the lives of hundreds of thousands of people."

He sold his practice and went with Tufts full time, while earning an MBA at Northeastern University. The "lives-influenced" number grew to six million in 1996, when Dr. Bloomberg became chief medical officer of Private Healthcare Systems, a nationwide preferred provider organization.

He is a physician surveyor for the National Committee for Quality Assurance, with a particular interest in developing the concept of the patient-centered medical home. In addition, he is one of only 60 distinguished fellows of the American College of Physician Executives.

COURTESY OF MARK A. BLOOMBERG, MD '74, MBA

Class of 1974 Celebrates Its 40th Anniversary

Ruth S. Feldman, MD '74

A child of the South Bronx, Dr. Feldman graduated from the City College of New York before accepting a full scholarship from Rutgers Medical School.

COURTESY OF RUTH S. FELDMAN, MD '74

The school's first building had been dedicated in 1970, just months before the arrival of Dr. Feldman and her classmates. Landscaping was still under way. "It was new and gorgeous," she says. "Everything was state of the art." In the Great Hall, enlargements of woodcuts from Andreas Vesalius's text on human anatomy added a sense of history, a link to the Renaissance origins of modern medicine, she adds.

Dr. Feldman made lifelong friends at both the medical school and Rutgers, The State University of New Jersey. As a first-year student, she formed an immediate bond with classmate Linda Roe. Both were elected to Alpha Omega Alpha, both became radiologists, and they remained close until Dr. Roe's death from cancer in 2001.

The Columbia College of Physicians and Surgeons offered a residency in anatomical and clinical pathology at Overlook Hospital, in Summit, which Dr. Feldman completed along with a residency in radiology. She joined the Department of Medical Imaging at

Hunterdon Medical Center and was later appointed department chair; she also served as president of the Hunterdon Medical Society. Dr. Feldman served on the clinical faculty at Robert Wood Johnson Medical School and was a champion of women's health issues, particularly breast cancer and osteoporosis.

"I fought tooth and nail to establish the Hunterdon Regional Breast Care Program," she says. From biopsy to treatment, every patient in the pioneering, comprehensive program had a personal advocate—often the program director: Dr. Feldman herself. "People said, 'Radiologists don't talk to people,'" she says. "'Well,' I told them, '*I* do!'"

Richard Levandowski, MD '74

As Dr. Levandowski was running track for Princeton University, he developed a clear plan for his career in medicine: he wanted to become a primary care sports medicine physician. The plan took shape early on at Rutgers Medical School, where Dr. Levandowski appreciated the opportunity to work with

patients, especially at the school's student-run community clinic, inspired by the late Christian Hansen, MD—who became a lifelong friend.

A second major influence, during clinical rotations at Hunterdon Medical Center, was Frank Snope, MD, a seminal leader in family medicine. "He taught a respectful whole-patient approach," recalls Dr. Levandowski, "treating patients as people with illness, not as 'the gallbladder in Room 203.'" That was also the approach at Lancaster General Hospital, where Dr. Levandowski completed his residency in family medicine.

During a decade at Princeton University Health Services, first as team physician and then as director of athletic medicine, he volunteered as a physician with the U.S. Olympic Committee. Other opportunities followed, including service to U.S. Track and Field and the Intercollegiate Tennis Association.

Since 1978, as a clinical faculty member, Dr. Levandowski has taught an integrated allopathic/osteopathic approach to the whole patient at Robert Wood Johnson Medical School and New Jersey Medical School. In the mid-1980s, wanting "to give something

KIM SOKOLOFF

Class of 1974 Celebrates Its 40th Reunion at the Gala

The Class of 1974 celebrated its 40th reunion at the Fourth Annual Scholarship Gala to Celebrate with Alumni and Friends, where Andrew Stefaniwsky, MD '77 (far left); president, Alumni Association, and Vicente H. Gracias, MD, dean (interim) (far right); honored members of the medical school's first four-year graduating class, Mark Bloomberg, MD (second from left); Mark Lehrman, MD (third from left); and Ronald Neal, MD, with a special salute.

back" to the medical school, he succeeded his friend Robert Eidus, MD '74, as president of the Alumni Association. In 2007, the American Academy of Family Physicians named him the Outstanding Volunteer Faculty Physician. Board certified in sports medicine, he started the medical school's fellowship in sports medicine.

Dr. Levandowski's practice, Princeton Sports and Family Medicine, in Lawrenceville, serves as team physician for The College of New Jersey, Mercer County Community College, and six high schools. He feels especially honored to be serving as head physician for the Special Olympics 2014 USA Games, held in New Jersey this summer.

COURTESY OF RICHARD LEVANDOWSKI, MD '74

Stephen Rabin, MD '74

When Dr. Rabin transferred to Rutgers Medical School in 1972, he was returning to his alma mater, he says—"on the banks of the old Raritan."

Two years earlier, following graduation from Rutgers College, he had entered medical school at the Universidad de Guadalajara, in Mexico. He chose to complete his third and fourth years at Rutgers Medical School, a small setting that would allow him, as a new student, to readily connect with the faculty. His expectation proved correct: "We learned cardiology, for instance, by talking with the head of the department, not sitting in a lecture hall," he says.

After discovering that he loved performing surgery, Dr. Rabin considered a range of possibilities before settling on OB/GYN. "I enjoyed both sides of the field: you could practice surgery," he says, "but you could also serve as a general doctor to your patients."

At Muhlenberg Hospital, during his OB/GYN rotation, Dr. Rabin found an excellent mentor in Michael Kreitzer, MD, a recent graduate of the residency program at the University of Southern California (USC)/L.A. County–USC Medical Center—"considered the number one OB/GYN program in the country at that time," says Dr. Rabin. Encouraged by Dr. Kreitzer, he completed his residency at USC, where, as a first-year resident, he recalls admitting patients and performing 12 deliveries a day.

L.A. County Hospital was a leader in the evolution of the field of obstetrics: women were choosing to participate in their baby's birth with minimal anesthesia or none at all. "Most were

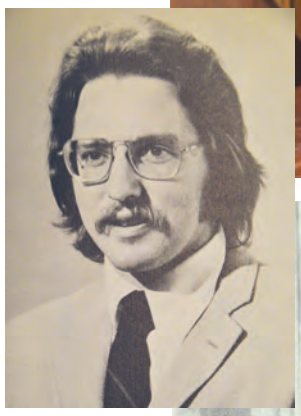
Class of 1974 Celebrates Its 40th Anniversary

conscious throughout the delivery," says Dr. Rabin, "and in the recovery room, they were ready to hold and enjoy their babies."

Dr. Rabin teaches gynecologic surgery at USC Medical Center and has been in private practice in Beverly Hills since 1978. Now, his only new OB patients are women he delivered as babies. "I love my OB/GYN patients," he says. "I've been seeing them and the next generation for years."

COURTESY OF ROBERT SIMPSON, MD '74

Robert Simpson, MD '74



Dr. Simpson arrived at Rutgers Medical School via an unconventional route, and, to this day, his career path has taken unexpected turns. A native of Bergen County, he taught high school mathematics and coached football after graduating from Lafayette College, then completed his first two years of medical school at the Universidad de Guadalajara.

"We worked very hard for admission into American medical schools," says Dr. Simpson. "Rutgers welcomed us with open arms, and we truly appreciated the caliber of teaching and the resources of the medical school."

On his medicine rotation at Muhlenberg Hospital, he met one of his most influential mentors, Ellis Singer, MD. "I adopted his approach to patients," says Dr. Simpson. "For example, he always took a patient's blood pressure. It may not be critical to

the examination, but it has an extremely calming effect on the patient."

Dr. Simpson's initial interest in general surgery evolved into OB/GYN, and he completed his residency at Harbor General Hospital/UCLA. "OB/GYN was perfect for my personality: like being a family practitioner and doing surgery," he says.

In 1981, Dr. Simpson and his wife, Janalyn, purchased the 128-acre cattle ranch in Paso Robles, California, where they have lived ever since. The area's first OB/GYN specialist, he maintained a solo practice, delivering up to 35 babies a month and performing the full range of gynecologic surgeries. Meanwhile, the Simpsons discovered they were sitting on soil with world-class vineyard potential. From a small family operation, they developed Whalebone Vineyard, a producer of award-winning wines. In 1993, Dr. Simpson suffered a serious hand injury and decided to sell his 6,000-patient practice. He now enjoys overseeing the vineyard, the winery, and the ongoing cattle operation at the ranch. M

Christina T. Mora Mangano, MD '79: Blazing Trails, Fostering a Passion for Research

—Continued from Page 53

Research: More Than a Mandate

As with her career, Dr. Mora did not foresee her love of research while in medical school. Although she has been extensively involved in a variety of research since then, she is most proud of work she conducted while at Emory University School of Medicine, which revealed that temperature management during cardiac surgery can affect outcomes. Specifically, she and her co-investigators discovered that maintaining patients at higher-than-normal temperatures increased the risk of stroke afterward.

Her research continues to focus on cardiac surgery and extracorporeal circulation, exploring the long-term impact on patients, as well as interventions to reduce the severity of adverse outcomes, including prevention of postoperative strokes and renal failure. Currently, she and her group are conducting a stem cell trial whereby patients who experience important renal dysfunction within 24 hours of surgery are entered into a double-blind study involving the use of stem cells to help improve renal function and prevent further injury.

As residency and fellowship director for Stanford's adult cardiothoracic anesthesiology program, Dr. Mora enjoys the opportunity to see budding specialists develop their skills and consider research, and firmly believes in the need to train fellows in this expertise.

"The knowledge base has grown exponentially. As therapies are advancing and we are looking more at techniques such as total artificial hearts as destination therapy, we are caring for patients who are extremely compromised; tertiary care centers are seeking physicians who can provide the perioperative management for these patients and have this very specialized expertise," she says.

Dr. Mora has championed this subspecialization throughout her nearly three decades of involvement with the SCA. At her first meeting, she accepted an invitation to join the society's Education Committee, and she became progressively involved: chair of the Education, Allied Health, CME (Continuing Medical Education), and Program committees; founder of the CPB Update meeting; and secretary/treasurer, president-elect, and ultimately president of the society.

Finding the Balance

"I didn't have children until I was 48, so I enjoyed the luxury of time to pursue my professional interests. That luxury is gone, and I don't have any time now," she says, laughing. Her spare time today is taken up with sixth-grade social studies projects, piano lessons, volleyball tournaments, baseball, basketball—in short, the busy schedules of her children. "My days off are the days I'm at work," she jokes.

Still, she would not have it any other way. Dr. Mora says she had the opportunity before to travel extensively, lecturing and visiting other countries, and now just spending time with her family is more than gratifying.

While considering herself a feminist, she advocates for a societal change that reflects and supports women in the dual roles of career and motherhood. "I hope we are able as a society to better understand how we can ensure the success of our culture, so we don't limit success to half of the population," says Dr. Mora. "It's not about having it all; it's about having what you want. Perhaps more importantly, fundamental advances to improve the quality of life for all people will be more rapidly achieved if all, rather than only half, of the world's population have the opportunity to contribute substantively to science and culture."

Citing Sheryl Sandberg's *Lean In: Women, Work, and the Will to Lead*, Dr. Mora agrees with the need to find the right partner who will support you in the household.

She found that partner in her husband of more than 20 years, Dennis T. Mangano, PhD, MD, a highly accomplished physician-scientist and founder of the Ischemia Research and Education Foundation, San Francisco. He is known for his research investigating pharmacological and other types of therapeutics to mitigate end-organ ischemia in at-risk populations. He has been featured on *60 Minutes* and other programs for exposing the risks of using Trasylol to control bleeding during bypass surgery.

They have two sets of twins: a boy and girl who are 12 and two 6-year-old boys.

"I'm very grateful for the opportunity to be a parent and invest in family life. Although some describe parenthood as all joy and no fun, I have experienced joy squared, times two," Dr. Mora says. M

Janice Mehnert, MD '01

Her choice of specialization was inspired in part by a Yale University physician she trained with who died of melanoma at age 47.

But Janice Mehnert, MD '01, associate professor of medicine at Robert Wood Johnson Medical School, was first drawn to the research and science behind oncology when she was in medical school, beginning with a year she spent in translational research at the National Institutes of Health (NIH) as part of the Howard Hughes Medical Institute–NIH Research Scholars Program. She is a now a tenure-track medical oncologist at the Rutgers Cancer Institute of New Jersey, where her practice is dedicated to patients with soft-tissue and skin cancers—such as sarcoma, melanoma, and squamous cell cancers—that are aggressive and advanced.

Dr. Mehnert completed her undergraduate work at Rutgers, The State University of New Jersey, before enrolling at Robert Wood Johnson Medical School. She went on to complete her internal medicine residency at Mount Sinai Hospital, New York, and then moved northeast to New Haven, where she pursued fellowship training in hematology and oncology at the Yale Cancer Center.

In her current position, Dr. Mehnert focuses on translating new discoveries into clinical trials, working in the laboratory as well as the clinic. Her work focuses on ways to exploit the process of autophagy in the development of new cancer treatments. When tumors are stressed out because of oxygen deprivation, chemotherapy, or radiation, a spore-like state occurs—autophagy—that allows tumors to survive and develop resistance to anticancer therapies. If this spore-like state can be inhibited, tumor cell death may be accelerated, possibly improving clinical outcomes.

Through grants from the V Foundation for Cancer Research and the National Cancer Institute, Dr. Mehnert is utilizing laboratory models to explore how autophagy supports melanoma tumorigenesis and using these results to develop clinical trials for patients with advanced cancers. "This is a burgeoning area—we're at the very ground level in this research," says Dr. Mehnert.

This work is being conducted in collaboration with Eileen White, PhD, associate director for basic science and leader, Cell Death and Survival Signaling Research Program. Dr. White is also a distinguished professor of molecular biology and biochemistry in the School of Arts and Sciences at Rutgers University.

In addition to her investigator-initiated work, Dr. Mehnert has enjoyed being part of the wave of new therapies recently developed for patients with advanced melanoma, a disease that is very difficult to treat. In the past three years, the U.S. Food and Drug Administration has approved emerging treatments for melanoma in two classes: targeted therapies and immunotherapies. With targeted therapies, the genetic profiles of tumors from individual patients guide therapy selection. Immunotherapies inhibit blocks known as checkpoints that function as brakes within the immune system, so that the patient's own immune system may be mobilized to fight the cancer.

BY LYNDA RUDOLPH

JOHN EMERSON

Dr. Mehnert is a principal investigator on studies that involve both classes of therapies and explore ways to increase the efficacy of these treatments in fighting melanoma. "We're still a long way from a cure, but it's been tremendously exciting to offer new therapies—and hope, where there was little before," she says.

Dr. Mehnert enthusiastically welcomes the new partnership between Rutgers and Robert Wood Johnson Medical School. The commitment of Rutgers Cancer Institute of New Jersey to the pursuit of clinical trials was critically important to her when she and her husband, Peter Vaclavik, MD '02, considered where to practice and raise their three children. "I am a graduate of both institutions, and I am proud to be able to bring the latest science to my home community," she says. "The strides we make in this field are due to clinical research. It's important for patients to be able to have access to cutting-edge treatments and trials. I'm thrilled to help make that happen for the world in general, but it's even sweeter to be able to deliver this close to home." M

Letters

Dear Editor:

I was reading "Class Notes" from my Fall 2013 copy of *Robert Wood Johnson Medicine* magazine, and I was struck by how accomplished our graduates have been. Wow, what brain power and motivation! For myself, I graduated in 1978 and headed to Wake Forest School of Medicine for a pediatric residency and fellowship. From there, I went into private practice in Charlotte, North Carolina, where I am still today, in the same practice, 32 years later. I am now helping to raise my second generation of children, for many of whom I provided health care for their parents too! I have participated in teaching medical students and residents during my entire career as part of my volunteer role as an adjunct professor of medicine with the University of North Carolina, but I think my biggest accomplishment is my close relationship with literally tens of thousands of families and children.

Four years ago, I decided to go digital when I started my own pediatric blog/podcast for parents and children, called DocSmo.com. I love explaining health and lifestyle issues to parents and children, just as I did with another Rutgers Medical School graduate and classmate, Dr. Al Tallia, thirty-five years ago in the New Jersey public schools. Why not continue in a different format with my own podcast, I thought? The DocSmo.com podcast has become a labor of love. I bring my listeners, now numbering about 5,000 a month, articles about new pediatric health information, audio podcasts that I call "pedcasts" about subjects I know parents are curious about, and reviews about contemporary relevant books parents might like to hear about.

In summary, my career has been a humble one but important nonetheless. I have touched tens of thousands of families' lives with what I learned at Rutgers Medical School. All I can say is that I certainly got my money's worth from the $1,100-per-year tuition I paid in 1974, and I hope I have paid back that generosity by making the lives of many children and families healthier and better. By the way, I'm not finished yet.

Paul Smolen, MD
Class of 1978
Rutgers Medical School

Class Notes

1972

William Watters III writes: "I remain happily in practice as an orthopedic spinal surgeon in the Texas Medical Center in Houston and recently assumed the presidency of the North American Spine Society."

1976

Robert Amler is vice president for government affairs at New York Medical College and dean of its School of Health Sciences and Practice and Institute of Public Health. He received the Medical Entrepreneur Award at the inaugural "Doctors of Distinction" ceremony held by the Westchester County Medical Society and *Westchester Business Journal*. In addition, October 14 was proclaimed "Dr. Robert W. Amler Day" by the Democratic Conference leader of the New York State Senate.

Robert Chvala writes: "Fran and I welcomed our third grandchild, Noah. His siblings are Jonah (4) and Rebecca (2)."

1980

Robert Rothberg is an associate professor of emergency medicine at the NYU School of Medicine and attending physician, Immediate Orthopedic Care Clinic, at the NYU Hospital for Joint Diseases.

1981

Robert Ettlinger is a family practice physician at PinnacleHealth FamilyCare in Millersburg, Pennsylvania. He was elected to a two-year term as president of the Dauphin County Medical Society.

Francine Sinofsky joined the Robert Wood Johnson Medical School faculty as clinical associate professor of obstetrics, gynecology, and reproductive sciences.

1982

Jordan Garrison Jr. is medical director of bariatric surgery for CarePoint Health at Bayonne Medical Center, Hoboken University Medical Center, and Christ Hospital.

1983

Neal Collins was selected for a two-year term as an at-large member of the Alumni Leaders Council of the Rutgers University Alumni Association.

Linda Sieglen accepted a new position as chief medical officer at two Mission Hospitals, in Laguna Beach and Mission Viejo, California. These hospitals are part of the St. Joseph's Health System in California and Texas.

1984

Ricardo Rodriguez writes: "I am in private practice in Union County as a GI medical director of Amazon Health Project, a nonprofit organization serving the needs of indigenous communities in the Amazon. We run yearly missions to the Amazon."

1990

Bonni Goldstein is medical director of Ghost Group, a leading operating company focused on technologies for the emerging marijuana sector.

John O'Grady founded Affiliated Medical Associates in Florham Park in 1998. He is board certified in both internal medicine and infectious disease medicine.

1992

Pranav Shah is an interventional radiologist at Red Bank Radiologists in Holmdel. He is a specialist in thyroid/neck biopsies.

James Sosnowski practices OB/GYN in Cincinnati. He is president of the Academy of Medicine of Cincinnati for the 2013–2014 term.

1994

Sukumar Nagendran received the Father of the Year in New Jersey Award from the American Diabetes Association.

Charles Rosser is a urologist at the University of Hawaii Cancer Center. He recently won the fifth annual Weinman Innovator Award for Translational Research for developing a new urine-based test that uses 10 biomarkers to detect bladder cancer. The honor, which includes a $50,000 prize, recognizes leading-edge cancer research with the potential to move into preclinical and clinical trials.

1996

Dawn Bertram-Stewart practices pediatrics in Naples, Florida.

1997

Bruno Molino practices at Liberty Surgical Associates, a surgical group that provides Jersey City Medical Center with on-site coverage.

1999

Sonia Garcia Laumbach is assistant dean for student affairs at Robert Wood Johnson Medical School. She was selected for a two-year term as an at-large member of the Alumni Leaders Council of the Rutgers University Alumni Association.

2000

Didier Demesmin is an interventional pain specialist and founder of University Pain Medicine Center in New Jersey. He was honored at the ninth annual Harvest Jubilee by Bridgewater-based HomeSharing for his support of the organization, which works to prevent homelessness.

2001

Carmen Lebron is a pediatrician at Jersey City Medical Center.

2002

Sheila Mellody is a family physician at Farmingdale Family Practice Associates.

2003

Patrick Hsu is chief of plastic, cosmetic, and reconstruction surgery at Memorial Plastic Surgery in Houston.

2008

Rheumatologist *Gnanesh Patel* is a physician at the InterMountain Medical Group in Wilkes-Barre, Pennsylvania.

2009

Oliver Choo, one of the 2013 graduating residents in the Department of Anesthesiology at Robert Wood Johnson Medical School, received the highest score in the country on the American Board of Anesthesiology Part I written exam. He is currently an anesthesiologist at University Medical Center of Princeton.

Former Residents

Shailaja Shah is a psychiatrist in the Electroconvulsive Therapy Department of the Carrier Clinic in Belle Mead.

In Memoriam

Robert Dorian, MD '81, passed away on March 19, 2014.

Alan Miller, MD '74, passed away in October 2013.

What's New? Please send your professional and personal news for **Class Notes** to: Roberta Ribner, Editor, *Robert Wood Johnson Medicine*, Coordinator, Alumni Affairs, Robert Wood Johnson Medical School Alumni Association
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When the CMDNJ was recast as the University of Medicine and Dentistry of New Jersey in 1981, and we became UMDNJ-Rutgers Medical School, this seemed to me a simple administrative issue. Some years later, in 1986, the school's name was officially changed to Robert Wood Johnson Medical School, and Middlesex General Hospital was transformed into Robert Wood Johnson Hospital. This was a change I felt deeply. I was saddened to lose the very real connection with Rutgers and still always think of myself as an RMS alumnus. Over time, however—and a lot of time has transpired—I found the name Robert Wood Johnson Medical School began to take hold and flow easily from my mouth.

What joy, then, to learn last year that RWJMS itself would be realigned and incorporated into Rutgers University. For almost everyone, the name Rutgers Medical School is only a historical note, but for those of us who received our medical degrees from RMS it is a dearly cherished memory, and I am once again a Rutgers man.

Forty years have come and gone since my graduation, and it now feels as if my life has finally come full circle. I couldn't be more pleased. M

—Mark A. Bloomberg, MD '74, MBA
Senior Physician Executive,
HealthNEXT;
President,
Bloomberg Healthcare Group

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Full Circle

In September 1970, my wife, Judy, and I arrived in Piscataway, excited to be embarking on new careers. She went to the Lindeneau Elementary School in Edison as a teacher of sixth graders, and I went to the brand-new medical sciences building on the Rutgers Medical School (RMS) campus as a member of its first full class of 80 students. The RMS faculty and staff could not do enough for their new charges and were somehow even more excited than the students. And there were so many of them! We students were easily outnumbered by faculty members, and everyone did all that was possible to make us feel welcome. They carefully taught, guided, and counseled us in the many amazing new disciplines, and we all knew just how special the experiences were for all of us.

COURTESY OF MARK A. BLOOMBERG, MD '74, MBA

As the first full-sized class, we thoroughly enjoyed the new lecture halls, anatomy labs, and auditorium, even as we continued the tradition of working in our new sixteen-person multipurpose classrooms, faithfully copied from the original ones used by the four earlier, sixteen-student RMS cohorts that had been housed in the temporary buildings located just behind the new Research Tower and Teaching Laboratories.

Even as we attended our classes, changes were afoot. During our first year, the medical school was separated from Rutgers University and incorporated under the umbrella of the new College of Medicine and Dentistry of New Jersey (CMDNJ). We didn't care—our education continued unabated, and our school was still referred to as Rutgers Medical School.

A fortunate 32 of us were able to stay in Piscataway as the first students to fulfill clinical rotations at RMS. As the rest of our classmates dispersed across the country, transferring to other medical schools for their clinical years, we began our rotations at the Middlesex, St. Peter's, Muhlenberg, and Raritan Valley hospitals as well as Hunterdon Medical Center. Finally, in June 1974, we enjoyed a wonderful graduation ceremony held at the new Garden State Arts Center, located off the Garden State Parkway in Holmdel.

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BY MARK A. BLOOMBERG, MD, CLASS OF 1974

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