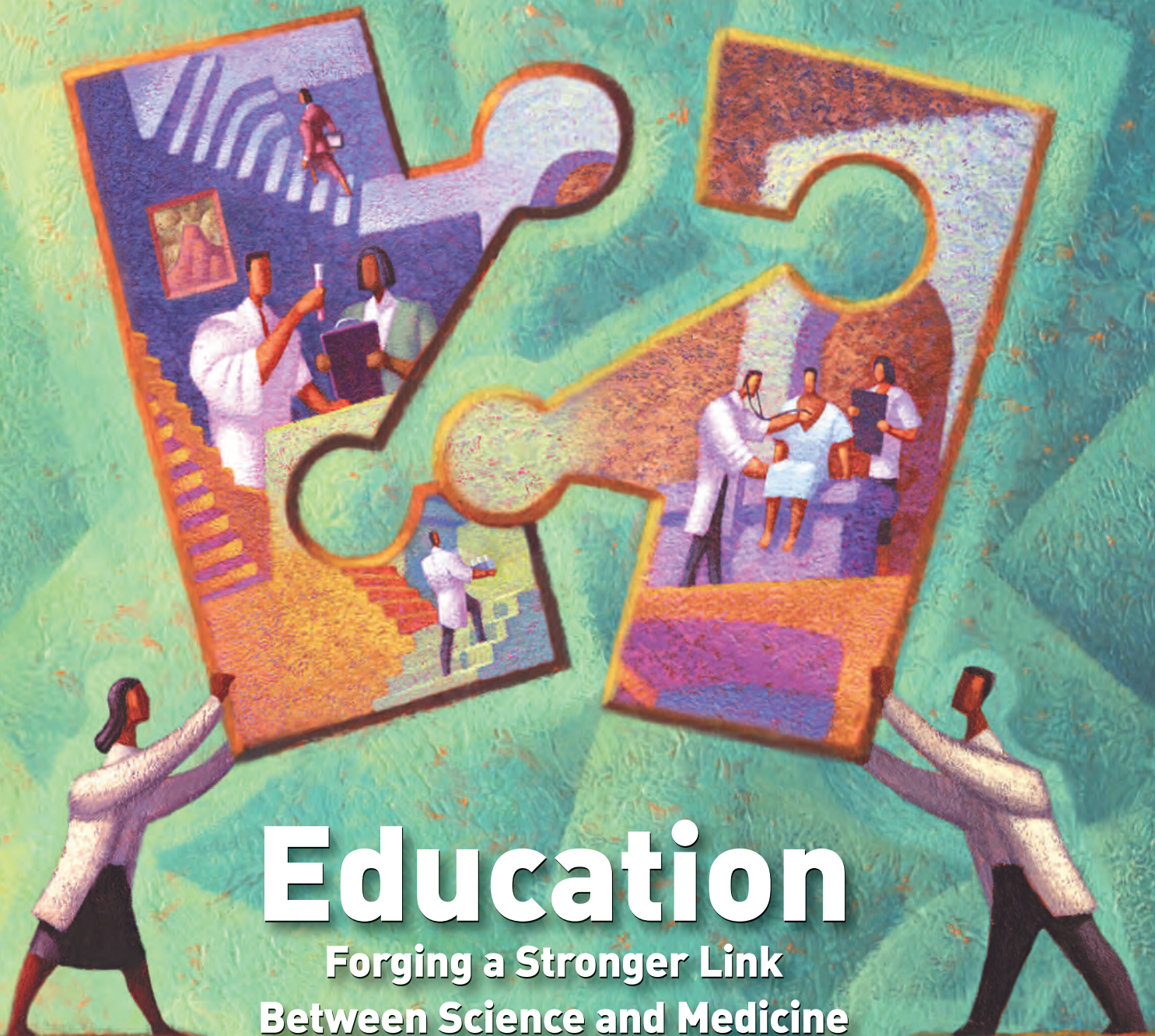


Robert Wood Johnson MEDICINE



Education

Forging a Stronger Link
Between Science and Medicine

*“We believe our first responsibility
is to the doctors, nurses and patients,
to mothers and fathers
and all others who use our products
and services.”*

Our Credo

Johnson & Johnson

Dear Colleague,

This issue of our magazine highlights the premium we place on our academic program. By pursuing excellence in our four mission areas — education, research, clinical care, and community health — we strive to achieve our leading priority: to preserve and advance medical education.

Our cover story, *The Evolution of a New Curriculum*, reports in depth on academic initiatives that are reshaping our academic program at UMDNJ-Robert Wood Johnson Medical School. This fall, with the introduction of Curriculum 2010, we will begin teaching the basic sciences through integrated modules, organized by body systems. We have added new opportunities for first- and second-year students to apply basic science knowledge in clinical settings. And we have intensified our graduation requirements for independent student research, while expanding our array of research programs.

With this issue we introduce six of our newest faculty members. They bring exceptional expertise and a record of leadership in a broad variety of fields: cardiac electrophysiology, surgical critical care, pediatric immunology, gastroenterology, maternal-fetal medicine, and developmental neuroscience.

Robotics and Beyond explores three areas in which we are applying and developing robotic technology: robotic surgery is improving patient outcomes, real-time intraoperative Magnetic Resonance Imaging is creating surgical and therapeutic miracles, and a new generation of robots safely analyzes environmental risks to children.

Turning Disabilities into Possibilities spotlights the Elizabeth M. Boggs Center on Developmental Disabilities. Thanks to this remarkable center, people with developmental disabilities lead fuller lives, and their families and teachers find the resources they need. The faculty and staff of The Boggs Center train our students and residents and share best practices in and beyond New Jersey.

On our Piscataway campus, two leading researchers are using the complementary tools of their disciplines to identify and decode autism-susceptibility genes. Their collaboration is the subject of *Genetics and Neuroanatomy: Teamed to Solve the Mysteries of Autism*.

RWJMS has launched New Jersey's first residency program for radiation oncology physicists. This complex, multi-disciplinary initiative takes our graduate education to the next level of excellence and enhances the quality of care available to our patients.

Steven J. Kravet, MD '92, introduced in our alumni profile, brings his training as a pharmacist, a physician, and a hospital administrator to his position as president of Johns Hopkins Community Physicians, comprising 18 primary care practices across the state of Maryland.

Our Young Alumni Profiles describe the outstanding work of two physician-scientists: Mahalia Desruisseaux, MD '00, who is investigating a cure for malaria, and Ronny Drapkin, MD '98, PhD, who has shifted the paradigm of ovarian cancer research.

As always, *Robert Wood Johnson Medicine* takes you into many corners of our school and introduces you to the faculty, staff, and students who are leading the way to the future.

Sincerely,

Peter S. Amenta, MD, PhD
Dean



JOHN EMERSON



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- **Make a significant contribution to a cause in which you believe; and**
- **Receive lifetime income for yourself or a loved one?**

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To learn more about how you can leave a legacy at Robert Wood Johnson Medical School and help to secure your financial future or the future of a loved one, contact Denise Gavala, vice president for development, at (908) 731-6595 or dgavala@njhf.org.

* Subject to rate changes.

Sample Rates

Beginning February 1, 2009.
Call Denise Gavala for updates.

Age	Rate
65	5.3%
70	5.7%
73	6.0%
76	6.4%
80	7.1%
85	8.1%
88	8.9%



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Robert Wood Johnson MEDICINE

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

Spring 2010 • Volume 12, Number 1

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NEWS

STUDY IDENTIFIES THAT MULTIPLE RISK FACTORS EXISTED IN 78 PERCENT OF SUDDEN INFANT DEATH SYNDROME CASES

Sudden Infant Death Syndrome (SIDS) continues to be the third leading cause of infant death, according to the Centers for Disease Control (CDC), despite a decline in SIDS that is associated with a rise in safe-sleep practices for newborns and infants. A new study by **Barbara M. Ostfeld, PhD** and **Thomas Hegyi, MD**, professors of pediatrics, has identified that more than 96 percent of infants who died of SIDS were exposed to known risk factors, among them sleeping on their side or stomach, or exposure to tobacco smoke, and that 78 percent of SIDS cases contained multiple risk factors. The study, “Concurrent Risks in Sudden Infant Death Syndrome,” appeared in the March issue of *Pediatrics*. The study provides evidence that despite a decline in SIDS, a continuing effort should be made by health care providers to educate parents and other caregivers and to do so with attention to all identified risk factors, as recommended by the American Academy of Pediatrics (AAP).

In 2005, according to the CDC, 2,234 infants died of

SIDS in the United States. Forty-four of those deaths occurred in New Jersey. The study notes that the incidence of SIDS has declined by more than 50 percent since the onset of public health initiatives during the 1990s, most notably the AAP’s “Back-to-Sleep” campaign, to raise awareness of infant care practices that elevate the risk of SIDS. However, the study indicates that risk-reduction education needs to be more comprehensive.

“It is important that health care providers communicate all of the risk factors of SIDS ideally during the prenatal period as well as at birth and throughout the first year of an infant’s life,” said Dr. Ostfeld, who also is program director of the SIDS Center of New Jersey.

“Risk-reduction education of new parents and all other caregivers, such as grandparents and babysitters should be detailed,” said Dr. Hegyi, who also serves as the medical director of the SIDS Center of New Jersey. “Parent’s questions and concerns should be addressed thoroughly.”

The authors note that guidance to parents regarding safe

sleep practices should address the importance of “Back-to-Sleep,” the position associated with the lowest risk, but also should cover all other practices that have been identified as lowering the risk of SIDS according to the guidelines of the American Academy of Pediatrics. These include, but are not limited to, avoidance of exposure to tobacco smoke, elimination of the use of pillows, quilts and soft or loose bedding in the infant’s sleep environment, avoidance of any face covering, and avoidance of the use of a shared sleep surface during sleep. The complete guidelines of risk reduction practices recommended by the American Academy of Pediatrics can be found on the SIDS Center of New Jersey website: www.umdnj.edu/sids. The site also contains a link to the publication by the American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome, with additional details on risk reduction.

SIDS is defined as a sudden and unexpected death of an infant before the first birthday that remains unexplained



Thomas Hegyi, MD and Barbara M. Ostfeld, PhD

even after a comprehensive evaluation consisting of a complete autopsy, a death scene investigation and a review of medical history of the infant and the family. Many studies now suggest that one of the potential causes may be an abnormality in the brainstem that would prevent an infant from responding to breathing challenges, such as those posed by prone (on the stomach) sleep in soft bedding. However, until the biological bases for SIDS are fully defined and can lead to the identification and treatment of living infants who may be vulnerable, risk-reducing practices, often defined as safe sleep practices, remain the most effective intervention to date.

The SIDS Center of New Jersey was established in 1988 and operates under a grant to UMDNJ-Robert Wood Johnson Medical School from the New Jersey Department of Health and Senior Services. An additional site based at The Joseph

MASTER EDUCATORS' GUILD INDUCTS NEW MEMBERS

“**T**he UMDNJ Stuart D. Cook, MD, Master Educators’ Guild recognizes faculty who have advanced the educational mission of the university in extraordinary ways,” says **Denise Rodgers, MD**, executive vice president for academic and clinical affairs, UMDNJ, and professor of family medicine, RWJMS. Dr. Rodgers led the 2009 University Day ceremony at which the guild inducted 13 new members, including three from the RWJMS faculty: **Joseph G. Barone, MD ’87**, associate professor of surgery and chief, division of urology; **Smita S. Patel, PhD**, professor of biochemistry; and **Susan Rosenthal, MMS ’75, MD**, clinical professor of pediatrics and corporate director of medical education for the Meridian Health System.

“Dr. Barone has been

instrumental in inspiring the next generation of physicians,” said Akira Yamamoto ’11 in presenting the first inductee. He noted Dr. Barone’s development of two teaching programs: the urology elective, for first-, second-, and third-year students, and an online video that allows students and residents to learn independently from simulations of Web-based cases. Educa-

classes for both medical students and graduate students.

“Dr. Rosenthal is the Oslerian ideal,” said **Brian Gable, MD ’03**, instructor of medicine, when introducing his longtime mentor. Dr. Rosenthal is an “innovator and a doer,” added Dr. Gable, noting her achievements in piloting and growing the White Coat Ceremony and the

M. Sanzari Children’s Hospital at Hackensack University Medical Center receives funding from the CJ Foundation for SIDS. The program provides families with bereavement support and information about sudden infant death, educates the health care community about methods for reducing the risk for SIDS, and monitors the epidemiology of SIDS in New Jersey. Since the onset of the program, the rate of SIDS in New Jersey has declined by more than half and remains below the national rate. Compliance with risk reducing infant care practices has also improved.

— *Jennifer Forbes Mullenbard*



Joseph G. Barone, MD '87



Smita S. Patel, PhD



Susan Rosenthal, MMS '75, MD

tion grants from UMDNJ provided key support for development of the programs, says Dr. Barone.

Dr. Patel was nominated for guild membership by the UMDNJ-Graduate School of Biomedical Sciences at RWJMS. “Biology research is at the forefront of the sciences,” she says, “and we can best teach our students how to tackle the complex problems of biology by employing interdisciplinary approaches.” Dr. Patel emphasizes the importance of using quantitative methods to solve biological problems by teaching the principles of thermodynamics and kinetics in her

Gold Humanism Honor Society at RWJMS. “She embodies professionalism and takes a personal interest in each student, helping them to maximize their potential.”

Sharing the master of ceremonies honors with Dr. Rodgers was the newly elected president of the Master Educators’ Guild, **Gloria A. Bachmann, MMS ’72, MD**, professor and interim chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, associate dean for women’s health, and director, Women’s Health Institute.

— *K.O’N.*

THE ROBERT WOOD JOHNSON MEDICAL GROUP

“**W**e are pleased to announce that the name of our faculty practice has changed from University Medical Group (UMG) to **The Robert Wood Johnson Medical Group**,” says **Anthony T. Scardella, MD**, professor of medicine and acting senior associate dean for clinical affairs. The Board of Governors recommended the name change to more accurately reflect the relationship of the medical group with the school and its reputation for quality programs. The UMDNJ Board of Trustees made this decision final at its November 17 meeting.

PRINCETON EVENT INSPIRES NEW SUPPORT FOR CINJ

In her incomparable style, Audrey S. Gould is helping to shape the future of The Cancer Institute of New Jersey (CINJ). A member of the CINJ Foundation Board of Governors, Mrs. Gould not only contributes her expertise

as a financial investment adviser, but she also demonstrates her commitment to philanthropy with a flair that inspires others to follow her example.

Last summer, as she waited in the CINJ lobby for a



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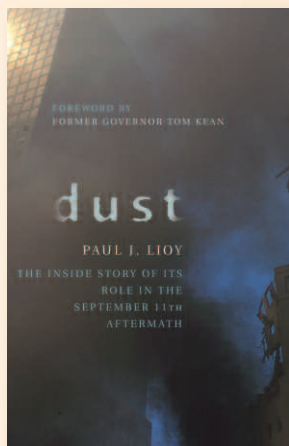
The Cancer Institute of New Jersey benefited from a dinner co-hosted by Kenneth S. Gould, MD, clinical professor of psychiatry, and Audrey S. Gould (second and third from left) and their family, including (from left): Georgeanne Gould Moss, Ellen Gould Baber, Charles Baber, and Jessica Goodman, the daughter of Mr. and Mrs. Baber.

DR. PAUL LIOY PUBLISHES *DUST*: AN EXPOSURE SCIENTIST'S ENGAGEMENT IN 9/11 AFTERMATH

The terrorist attacks that shattered and disintegrated the World Trade Center produced a dense plume of dust — a mixture composed of a then-unknown number and variety of particles that could circulate through Lower Manhattan for months, exposing anyone in its path.

To understand the short- and long-term risks of exposure to this complex cloud, the National Institute of Environmental Health Sciences immediately called in a world leader in exposure science: **Paul J. Lioy, PhD**, professor of environmental and occupational medicine, and deputy director of government relations and director of exposure science, Environmental and Occupational Health Sciences Institute (EOHSI). Since 1983, Dr. Lioy has been a member of numerous National Research Council committees on human

exposure and the health effects of environmental toxins. In addition, he is a member of the



Science Advisory Board of the U.S. Environmental Protection Agency.

Twice during the week following the attacks, Dr. Lioy and colleagues from EOHSI went into Lower Manhattan. Both times, Dr. Lioy collected samples of the material that would become known as "WTC dust."

Several more years would pass before EOHSI Laboratories and their collaborators could complete the minute analysis of the dust particles and determine their potential health risk — unique in each person exposed.

Dr. Lioy recently published *Dust: The Inside Story of Its Role in the September 11th Aftermath*, an account that melds scientific study with personal reflection. In *Dust*, Dr. Lioy rebuilds the timeline of his involvement with WTC dust, from the early days, working alongside rescuers amid the drama and chaos at Ground Zero, through the years of discovery and analysis that followed. The book ends by discussing ways in which an understanding of exposure science may provide the means to better prepare for future environmental catastrophes.

— K.O'N.

board meeting to begin, she observed the faculty and staff at work in the area. She recalls feeling an enormous sense of pride in their high level of competence, kindness, and collegiality. In that moment, Mrs. Gould decided to host an elegant dinner that would celebrate and benefit the institute, broaden its donor base, and raise public awareness of CINJ.

Organizing the dinner became a family affair. Mrs. Gould was joined by her husband, **Kenneth S. Gould, MD**, clinical professor of psychiatry; her daughters, Georgeanne Gould Moss and Ellen Gould Baber; her sons-in-law, Peter Moss and Charles Baber; and her granddaughter, Jessica Goodman. Mrs. Gould says that preparing for the party became "a second job" for her daughters and herself. The

three women are business partners in The Gould Group at Wells Fargo Advisors on Nassau Street in Princeton.

Ninety guests, including influential members of the Princeton community and CINJ's top leaders, attended the sparkling, sit-down dinner. The event — entirely underwritten by the family and hosted by the Babers — raised \$20,000 through a raffle featuring gift certificates to Princeton's best restaurants and a silent auction that included antique jewelry. But most important, says Mrs. Gould, the evening introduced her guests to the good work done by the people at CINJ, through extraordinary research and clinical care.

— K.O'N.

Volunteer

FACULTY MEMBER

Profile

JAMES C. SALWITZ, MD '81 TEACHING COMMUNICATION BY EXAMPLE

By Kate O'Neill

James C. Salwitz, MD '81, clinical associate professor of medicine, was selected as the Alpha Omega Alpha Volunteer Faculty Member of the Year in his second year on the faculty. Today, he continues to enjoy every opportunity to teach.

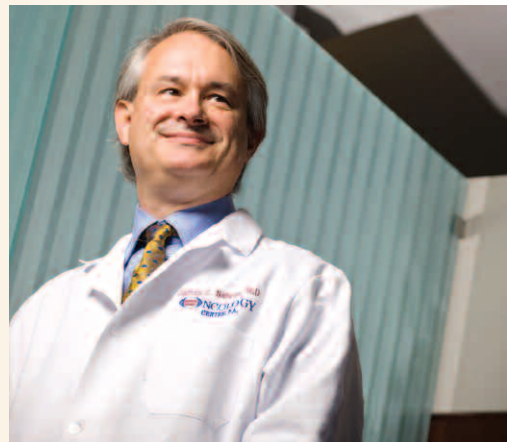
Dr. Salwitz completed his residency at Northwestern University School of Medicine, where he served as chief resident. In 1987, Dr. Salwitz joined his current practice: the Central Jersey Oncology Center, where policy requires everyone not only to teach at the medical school, but also to participate in cancer education programs throughout the community.

Although they are unsalaried, the 1,500 members of the RWJMS volunteer faculty find huge rewards in teaching, says Dr. Salwitz. "First, it's one way of repaying the medical community for the thousands of hours invested in our own education," he explains. "Second, teaching creates a good balance for the pressures of medical practice and keeps us humble.

"But above all," he adds, "we love the excitement that medical students, residents, and fellows bring to health care. They see the world differently, have a different take on the literature, and sense when a teacher doesn't have the same understanding they do. Their questions can be merciless! It's a very rare day when we don't learn something from them!"

Dr. Salwitz teaches a block of physical diagnosis, a second-year

course that relies heavily on the participation of the volunteer faculty. "The real question in clinical education is how to teach patient-physician communication, and the answer is, 'By example,'" says Dr. Salwitz. "Students can watch a lecture on video or learn basic science from a textbook, but they acquire the art of bedside medicine from a clinician's example."



JOHN EMERSON

"Every week, we have one or two pre-meds, medical students, or residents in our office," says Dr. Salwitz. "They see cancer patients with complex, challenging problems, and it's enormously gratifying to us to see how excited these students are when they see what we can do for these patients.

"As educators, physicians in private practice tend to put a different slant on clinical training," he adds. "We're not only in the trenches with their patients night and day, but we also have to run the business side of a private practice. Eventually, most medical students will be in private practice. They need to be exposed to physicians who have to balance business management with patient care."

PRESIDENT'S LECTURE SERIES EXAMINES "THE WOUNDS OF WAR"

A discussion about the challenges of treating the grave injuries suffered by thousands of men and women in Iraq and Afghanistan was the focus of this fall's second annual President's Lecture series. Featured speakers included **Joseph Costabile, MD '86**, a private-practice surgeon who served at a military hospital in Kuwait in 2005 and at a field facility in Iraq in 2008.

The program was presented by UMDNJ President **William F. Owen, Jr, MD**, and co-sponsored by UMDNJ-University Behavioral HealthCare, the New Jersey Department of Military and Veteran Affairs, and the New Jersey National Guard.

— J.S.



Community

HEALTH

BY KATE O'NEILL

COMMUNITY HEALTH FINDS AN ACADEMIC HOME IN FAMILY MEDICINE

In 2009, the Department of Family Medicine celebrated its 38th anniversary and acquired an expanded name: the **Department of Family Medicine and Community Health**. “The new name validates our department’s long-standing commitment to community health,” says **Alfred F. Tallia, MD ’78, MPH**, professor and chair, Department of Family Medicine and Community Health.



Alfred F. Tallia, MD '78, MPH

JOHN EMERSON



Eric G. Jahn, MD '88

STEVE HOCKSTEIN

high-quality health care. “The renamed department gives an academic home to our mission in community health,” says **Eric G. Jahn, MD ’88**, senior associate dean for community health. “It affirms the academic rigor that frames our preparation of learners as physicians in each of our four core mission areas.”

DR. SIRIADE FILIPE-IZAGUIRRE LEADS ST. JOHN’S HEALTH CENTER

Siriade Filipe-Izaguirre, DO, instructor of family medicine and community health (appointment pending approval by the Board of Trustees of UMDNJ), was appointed medical director of St. John’s Family Health Center. She most recently served on the faculty of UMDNJ-New Jersey Medical School in the division of academic medicine, geriatrics, and community programs. An enthusiastic teacher and respected mentor, Dr. Filipe-Izaguirre emphasizes that developing a lifelong understanding of health behaviors is key to providing optimum clinical care.



Siriade Filipe-Izaguirre, DO

PETER PERKINS

“St. John’s has been a clinical home for the many under-

served members of the community who have sought and found care within its walls,” says Dr. Filipe-Izaguirre. “I look forward to working with RWJMS faculty members to continue the center’s 20-year record of providing impressive care.”

While serving in private practice, Dr. Filipe-Izaguirre became interested in caring for homebound patients — the elderly and the frail, as well as younger patients. She developed a house-call business, first in Union County and then in Jersey City, which sought to remove barriers that block access to health care by immigrants and others with disrupted or non-existent insurance.

CAMDEN PILOT PROGRAM HELPS AVERT COSTLY TRIPS TO THE EMERGENCY DEPARTMENT

The department has made significant contributions to RWJMS programs for those in the community who are under- or uninsured. In addition to its close clinical and academic ties to the Eric B. Chandler Health Center and St. John’s Family Health Center, both in New Brunswick, the department includes the Center for Healthy Families and Cultural Diversity, an initiative that has earned an international reputation for promoting culturally responsive,

unnecessary trips to a hospital’s emergency department (ED) cost much and strain already overcrowded facilities. Yet to a large segment of Camden’s population, lack of funds and insufficient knowledge make the ED their choice of first resort for health care.

Camden-based family practitioner **Jeffrey Brenner, MD ’95**, instructor of family medicine, is leading a pilot to reduce ED visits by these so-called “super users.” The program, coordinated by the Camden Coalition of Healthcare Providers, is funded by the Robert Wood Johnson Foundation.

Dr. Brenner’s team, comprising a nurse practitioner, social worker, and community health worker,



Jeffrey Brenner, MD '95

KIM SOKOLOFF

has intervened in the lives of 35 patients responsible for racking up ED medical charges of \$1.2 million a month. By offering them focused care, the team is already showing positive results, with their average number of monthly ED visits shrinking from 61 to 37 and total hospital charges reduced to \$531,000 so far. The pilot costs about \$300,000 a year to run, but the savings gained by hospitals and federal programs such as Medicaid and Medicare more than validate that expense, says Dr. Brenner.

— J.S.

Research News

By Kate O'Neill

DR. STEVEN LEVIN APPOINTED MEDICAL DIRECTOR OF CHANDLER HEALTH CENTER

Steven J. Levin, MD, associate professor of family medicine and community health, has been appointed medical director of the Eric B.



Steven J. Levin, MD

Chandler Health Center. An exceptional family physician and a member of the faculty since 1989, Dr. Levin served for 20 years as medical director and sole physician at St. John's Family Health Center, which provides primary care to medically underserved members of the community.

A valued teacher and mentor, Dr. Levin was instrumental in guiding medical students in the creation of The Promise Clinic in 2004 and continues to supervise the group once a week. "We are fortunate that Chandler could recruit someone with Steve's credentials and knowledge of the community," says Eric G. Jahn, MD '88, senior associate dean for community health, who preceded Dr. Levin as medical director at Chandler. "Steve and Executive Director Sandra Adams form a good partnership that promises continuity

and constructive change."

Dr. Levin says his leading goal is to provide all Chandler patients with the same premium health services that would be available to them in a private practice. "It's extremely impressive that Chandler has minimal turnover of faculty and staff and provides such continuity of care," he says.

The new medical director looks forward to building on the synergy between the two centers. "Chandler is more complex than St. John's," he says, "but the two centers deliver the same type of services to similar populations, and they share the goal of improving the quality of care in New Brunswick. In addition, each fills an important role in providing programs and venues where students learn to provide culturally competent primary care."

The National Institutes of Health (NIH) awarded grants of \$1 million or more to the following UMDNJ-Robert Wood Johnson Medical School faculty members:

- **Jeffrey L. Carson, MD**, Richard C. Reynolds Professor of Medicine and chief, division of general internal medicine: a two-year, \$2,012,845 grant for "Transfusion Trigger Trial in Coronary Heart Disease: A Pilot Study."
 - **Joseph P. Dougherty, PhD**, professor of molecular genetics, microbiology, and immunology: a five-year, \$1,919,308 grant for "Gene Regulation Using Novel Drugs Modulating Premature Translational Termination."
 - **Cheryl F. Dreyfus, PhD**, professor and acting chair, Department of Neuroscience and Cell Biology: a five-year, \$7,515,018 competitive renewal for a five-institution program project, "Growth and Development of the Nervous System: Molecular Mechanisms." **Emanuel DiCicco-Bloom, MD**, professor of neuroscience and cell biology and pediatrics, division of child neurology and neurodevelopmental disabilities, is principal investigator on a sub-project of Dr. Dreyfus's grant. In addition to supporting the program project grant, the NIH awarded Dr. Dreyfus a four-year, \$1,365,000 grant for
- "The Role of Neurotrophins in Oligodendrocyte Function."
- **Michael Hampsey, PhD**, professor and interim chair, Department of Biochemistry: a four-year, \$1,303,938 grant for "Genetic Analysis of Transcription Initiation in Yeast."
 - **Masayori Inouye, PhD**, distinguished professor of biochemistry: a three-year, \$1,641,155 grant for "Deciphering of the Toxin-Antitoxin Systems in E-Coli."
 - **Alla S. Kostyukova, PhD**, assistant professor of neuroscience and cell biology: a four-year, \$1,482,000 grant for "Factors Influencing Regulation of the Dynamics of the Actin Filament."
 - **Michael Leibowitz, MD, PhD**, professor of molecular genetics, microbiology, and immunology and director of academic diversity initiatives, UMDNJ-Graduate School of Biomedical Sciences at RWJMS: a four-year, \$2,103,640 grant for the UMDNJ-Rutgers University Pipeline Program.
 - **Shaohua Li, MD**, assistant professor of surgery: a three-year, \$1,243,520 grant for "Regulation of Embryonic Epithelial Morphogenesis."
 - **Leroy Liu, PhD**, professor and chair, Department of Pharmacology: a five-year, \$1,492,358 grant for "Mechanism of Action of TOP2 Directed Anti-cancer Drugs."

— Continued on Page 10

Research News

By Kate O'Neill

Continued from Page 9



PUBLISHED RESEARCH:

The following is a representative sample of articles by RWJMS faculty members published in leading biomedical journals:

- **Vikas Nanda, PhD**, assistant professor of biochemistry and resident member, Center for Advanced Biotechnology and Medicine: a five-year, \$2,340,000 NIH Director's New Innovator Award for "Computational Design of a Synthetic Extracellular Matrix."
 - **Smita S. Patel, PhD**, professor of biochemistry: a four-year, \$1,271,400 grant for "Mechanistic Studies of Hexameric Helicases."
 - **William G. Wadsworth, PhD**, professor of pathology and laboratory medicine: a five-year, \$1,706,250 grant for "Molecular Mechanisms Regulating Axon Guidance Receptor Activity."
 - **Nancy C. Walworth, PhD**, professor of pharmacology: a four-year, \$1,537,877 grant for "Cell Cycle Checkpoint Control in Response to DNA Damage."
 - **Eileen White, PhD**, adjunct professor of surgery, associate director of basic science, The Cancer Institute of New Jersey (CINJ), and professor of molecular biology and biochemistry, Rutgers University, and colleagues: a two-year, \$1 million research grant for "The Role of Tumor and Stromal Cell Metabolism in Stress Adaptation and Progression."
- Additional grants of \$1 million or more included:**
- The New Jersey Commission on Cancer Research: a \$1 million, multi-institution, team-project grant to **Michael Reiss, MD**, professor of medicine and molecular genetics, microbiology, and immunology and associate director for translational research, CINJ, for "Imaging and Targeting TGF β in Breast Cancer."
 - **Marc R. Gartenberg, PhD**, professor of pharmacology, was the author of "Life on the Edge: Telomeres and Persistent DNA Breaks Converge at the Nuclear Periphery," published in *Genes and Development* 2009;23(9): 1027–1031. Dr. Gartenberg also was senior author of "Bypassing Sir2 and O-acetyl-ADP-ribose in Transcriptional Silencing," published in *Molecular Cell* 2008;31(5):650–659.
 - **Michael Hampsey, PhD**, professor and interim chair, Department of Biochemistry, was senior author of "Eukaryotic Transcription Initiation," published in *Current Biology* 2009;19(4): R153–156.
 - **Eunsung Junn, PhD**, assistant professor of neurology, was first author of "Repression of Alpha-Synuclein Expression and Toxicity by microRNA-7," published in the *Proceedings of the National Academy of Sciences of the United States of America* 2009;106(31): 13052–13057. **M. Maral Mouradian, MD**, William Dow Lovett Professor of Neurology, was senior author of the article.
 - **Terri Goss Kinzy, PhD**, professor of molecular genetics, microbiology, and immunology and senior associate dean, UMDNJ-Graduate School of Biomedical Sciences at RWJMS, was senior author of "Genome-wide Screen of *Saccharomyces cerevisiae* Null Allele Strains Identifies Genes Involved in Selenomethionine Resistance," published in the *Proceedings of the National Academy of Sciences of the United States of America* 2008;105(46): 17682–17687.
 - **Stephen F. Lowry, MD**, professor and chair, Department of Surgery, and senior associate dean for education, was senior author of "Influence of Acute Epinephrine Infusion on Endotoxin-Induced Parameters of Heart Rate Variability: A Randomized Controlled Trial," published in the *Annals of Surgery* 2009;249(5):750–756.
 - **Grace Lu-Yao, MD, MPH**, associate professor of medicine, was first author of "Outcomes of Localized Prostate Cancer Following Conservative Management," published in the *Journal of the American Medical Association* 2009;302(11):1202–1209. **Siu-Long Yao, MD**, clinical assistant professor of medicine, was senior author of the article.
 - **Monica J. Roth, PhD**, professor of biochemistry, was senior author of "Single-Round Selection Yields a Unique Retroviral Envelope Utilizing GPR172A as Its Host Receptor," published in the *Proceedings of the National Academy of Sciences of the United States of America* 2009;106(14):848–853.
 - **Federico Sesti, PhD**, associate professor of physiology and biophysics, was senior author of "Oxidation of a Potassium Channel Causes Progressive Sensory Function Loss during Aging," published in *Nature Neuroscience* 2009;12(5):611–617.
 - **Yufang Shi, DVM, PhD**, professor of molecular genetics, microbiology, and immunology, was senior author of "Mesenchymal Stem Cell-Mediated Immunosuppression Occurs Via Concerted Action of Chemokines and Nitric Oxide," published in *Cell Stem Cell* 2008;2(2):41–50.
 - **Michael B. Steinberg, MD, MPH**, associate professor of medicine, was first author of "Triple-Combination Pharmacotherapy for Medically Ill Smokers: A Randomized Trial," published in the *Annals of Internal Medicine* 2009;150(7):447–454. **Jeffrey L. Carson, MD**, Richard C. Reynolds Professor of Medicine and chief, division of general internal medicine, was senior author of the article.
 - **Ann M. Stock, PhD**, professor of biochemistry, Investigator, Howard Hughes Medical Institute, and associate director, Center for Advanced Biotechnology and Medicine, was senior author of "Biological Insights from Structures of Two-Component Proteins," published in the *Annual Review of Microbiology* October 2009;63:33–154.
 - **Eileen White, PhD**, adjunct professor of surgery and associate director of basic science, The Cancer Institute of New Jersey (CINJ), was senior author of "Autophagy Suppresses Tumorigenesis through Elimination of p62," published in *Cell* 2009;137(6): 62–75.

Research Highlights

Stimulus Grants to RWJMS Exceed \$15 Million

In February 2009, Congress made support for scientific research a key part of the nation's economic recovery. The American Recovery and Reinvestment Act (ARRA) provided an unprecedented level of aid: \$8.2 billion in extramural funding. The program benefits principal investigators as well as those hired to work on research teams — and, ultimately, the patients who will benefit from their discoveries.

"Congress has declared that research is good for science, good for the country, and good



STEVE HOOKSTEIN

Cheryl F. Dreyfus, PhD

for the economy," says Cheryl F. Dreyfus, PhD, professor and acting chair,

Department of Neuroscience and Cell Biology.

More than \$15 million was awarded to members of the UMDNJ-Robert Wood Johnson Medical School faculty. This included a total of 43 research grants to 39 different faculty members.

As soon as President Barack Obama signed the bill into law, RWJMS scientists pulled together in a coordinated effort to weigh priorities and determine which types of grants would most benefit both individual researchers and the medical

school. The result was a broad mix of proposals, and the National Institutes of Health (NIH) responded with a full range of grants: new and supplemental, program project, and instrumentation grants, to both junior and senior faculty.

Although not every proposal received funding, ARRA opened the door and keeps it open for scientists who can submit revised proposals through standard



A.J. SINDS/STROM

Céline Gélinas, PhD

funding mechanisms, says Céline Gélinas, PhD, professor of biochem-

istry and associate dean for research.

Grace Lu-Yao, PhD, MPH, associate professor of medicine,



JOHN EMERSON

Grace Lu-Yao, PhD, MPH

and member, The Cancer Institute of New Jersey, received a Challenge grant,

allowing her to accelerate her analysis of the benefits of different forms of treatment for prostate cancer. Using a national database, the project tracks outcomes for patients who were treated with radiation therapy as compared with those whose

disease was more conservatively managed. "Radiation therapy is common," says Dr. Lu-Yao. "Still, we really don't know whom it benefits, or why and how."

"Challenge grants were among the most competitive and difficult grants to obtain,"

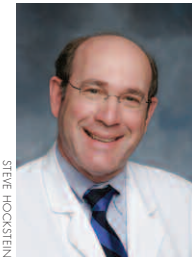
says Arnold B. Rabson, MD, professor of molecular genetics, microbiology, and immunology, pathology and laboratory medicine, and pediatrics; interim senior associate dean for research; and interim director, Child Health Institute of New Jersey.

The NIH awarded one of only a few grants for stem cell research to Shaohua Li, MD,

assistant professor of surgery, to advance his research on the mechanisms of

blood vessel formation and the creation of vascularized grafts for tissue repair using embryonic stem cells.

A "Grant Opportunity" grant to Jeffrey L. Carson, MD, Richard C. Reynolds Professor of Medicine and chief, division of



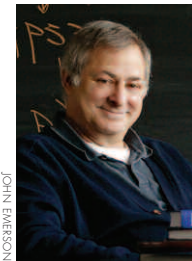
STEVE HOOKSTEIN

Jeffrey L. Carson, MD

general internal medicine, allows him to retain staff for a pilot study of the benefits

of transfusion for patients with coronary artery disease. "The NIH hopes this study will become the first step to a large, multi-center trial," says Dr. Carson.

In addition, an award to Arnold J. Levine, PhD, pro-



JOHN EMERSON

Arnold J. Levine, PhD

fessor of pediatrics and biochemistry, RWJMS, and professor of systems biology,

Institute for Advanced Study, provides funds for the hiring of a new, young investigator and a three-member support team to work in the field of systems biology and cancer.

Each institution was limited to three proposals for renovation of research infrastructure and expansion of core facilities. These awards were not announced in the first round. Dr. Rabson is optimistic that the medical school's high preliminary scores bode well for success in the next round too.

— K.O'N.

Research Highlights



Researchers Identify Missing Piece of the DNA Replication Puzzle

DNA replication is a basic function of living organisms, allowing cells to divide and multiply, while maintaining the genetic code and proper function of the original cell. The process, or mechanism, by which this is accomplished presents many challenges, as the double-helical DNA divides into two strands that are duplicated by different methods, yet both strands complete the replication at the same time. New research addressing this fundamen-

tal problem, by a team led by **Smita S. Patel, PhD**, professor of biochemistry, in conjunction with the University of Illinois, was published in the December issue of *Nature*. The study identifies three essential ways in which the synthesis of the two strands is coordinated by enzymes, settling scientific deliberations over how the two DNA strands are copied in the same time span.

“DNA replication is a fundamental reaction required for the maintenance, survival, and propagation of living cells,” says Dr. Patel. “Our study explains how the replication is coordinated — an important piece of the puzzle, because errors in DNA replication can cause disabilities and disease, such as cancer.”

— J.S.



Researchers Progress Toward AIDS Vaccine



A longstanding research team and their colleagues may have found a crack in the armor of the mighty AIDS virus — and with it the possibility of developing a routine HIV vaccine. The discovery was made by **Gail Ferstandig Arnold, PhD**, principal investigator, Center for Advanced Biotechnology and Medicine (CABM), and research

professor, Department of Chemistry and Chemical Biology, Rutgers, The State University of New Jersey; and **Edward Arnold, PhD**, adjunct professor of molecular genetics, microbiology, and immunology, resident member, CABM, and professor of chemistry and chemical biology, Rutgers University — along with a team of CABM researchers.

The researchers identified a part of the AIDS virus critical to its survival, which, if threatened by a strong vaccine, could potentially be destroyed. They discovered this so-called Achilles’ heel by fastening a portion of the human immunodeficiency virus (HIV) — which helps the disease enter cells — to the surface of a common cold virus,

using the resulting product to immunize lab animals. The animals responded by creating antibodies able to stop a wide array of HIV types — which is important because prior vaccines have proven effective only against limited HIV types.

Dr. Edward Arnold describes the discovery as a “proof of principle,” but still an early first step in developing a potent vaccine.

The Arnolds’ research was supported largely by a four-year grant from the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health. It was first reported in the *Journal of Virology* in March.

— J.S.

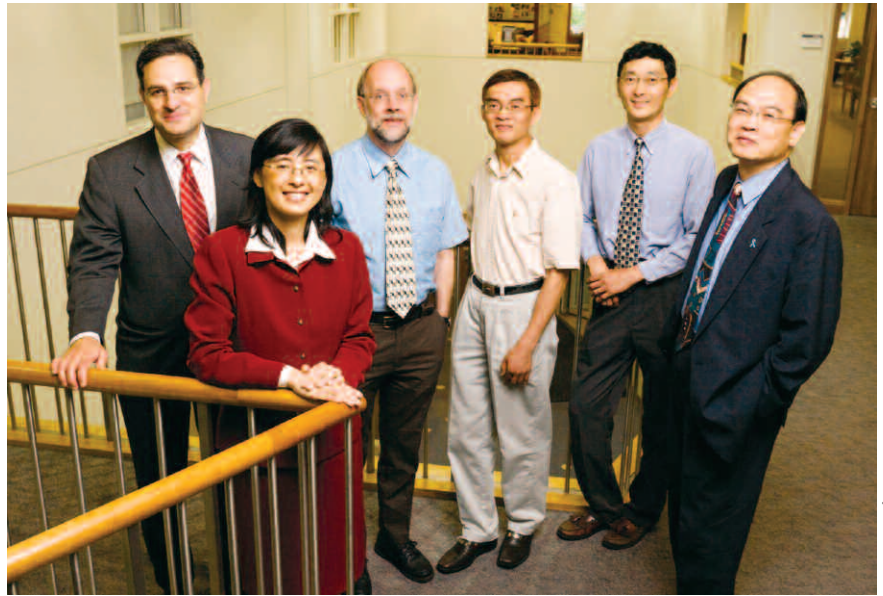
Survival Outcomes Improving for Prostate Cancer Patients

In what investigators say is the most comprehensive look at survival outcomes for prostate cancer patients to date, researchers at The Cancer Institute of New Jersey (CINJ) have shown that older men diagnosed with localized disease beginning in the early 1990s had significantly improved survival outcomes compared with those diagnosed earlier. Published September 16 in the *Journal of the American Medical Association*, the study found that a patient's risk of dying from prostate cancer over a ten-year period following diagnosis declined by more than 60 percent compared with patients diagnosed in the 1970s and 1980s. The investigators say these findings could lead to a reassessment of treatment options for localized

prostate cancer.

Grace Lu-Yao, PhD, MPH, associate professor of medicine and cancer epidemiologist at CINJ, was lead author of the study. Contributors included **Robert S. DiPaola, MD**, professor of medicine, chief, division of medical oncology, and director of CINJ; **Siu-Long Yao, MD**, clinical assistant professor of medicine and executive director of oncology clinical research at the Schering-Plough Research Institute; and **Dirk F. Moore, PhD**, **Weichung Shih, PhD**, and **Yong Lin, PhD**, all at CINJ and the UMDNJ-School of Public Health.

— J.S.



JOHN EMERSON

Above (from left): Robert S. DiPaola, MD; Grace Lu-Yao, PhD, MPH; Dirk F. Moore, PhD; Yong Lin, PhD; Siu-Long Yao, MD; and Weichung Shih, PhD, authors of the prostate cancer research study published in the *Journal of the American Medical Association*.

Study Offers Hope for Host of Neurodegenerative Diseases

Researchers at RWJMS are a step closer to determining how to protect human cells from the effects of age-related neurodegeneration,

which includes Alzheimer's and Parkinson's diseases. Their research also provides a foundation for developing therapies for disorders including multiple sclerosis and cardiovascular disease.

Their findings, published in *Nature Neuroscience*, link the oxidation of potassium channels — which control a variety of cell functions and are essential to neuronal function — to the loss of neuronal function in aging. The study also found that the oxidation process can be blocked by modifying the potassium channel, making it resistant to age-related deterioration.

The study was conducted by **Federico Sesti, PhD**, associate professor of physiology and biophysics, and **Shi-Qing Cai, PhD**, research associate. Their research was supported by a National Institutes of Health grant.

— J.S.

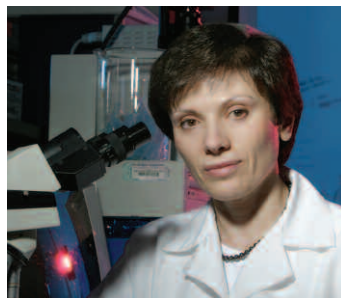
— J.S.

Researchers Discover Possible Therapeutic Target to Slow Parkinson's Disease

Researchers at RWJMS have discovered a therapeutic target that, when manipulated, may slow the progression of or halt Parkinson's disease, a debilitating neurodegenerative disorder that affects an estimated one million people in the United States.

A team from the Center for Neurodegenerative and Neuroimmunologic Diseases in the Department of Neurology carried

out the study. **M. Maral Mouradian, MD**, William Dow Lovett Professor of Neurology and director of the center, was the study's lead investigator. A paper on the team's findings, "Repression of A-synuclein Expression and Toxicity by MicroRNA-7," appears in the July 20 edition of *Proceedings of*



STEVE HOCKSTEIN

the National Academy of Sciences.

The investigators report that the small RNA molecule microRNA-7, present in neurons, directly represses the expression of a-synuclein, a protein that, in excess, proves deleterious to certain types of brain cells.

Research Highlights



International Team Discovers Role of Calcium in Cell Growth, Disorders

An international research team has solved the mystery of how calcium is released into the body. The team's study, reported in *Nature* in April, identified the mechanism that triggers the release of calcium,



STEVE HOCKSTEIN

as well as the specific sites of calcium stores targeted for release. It may have broad implications in cell biology and human disease research.

The researchers identified a new family of proteins, TPC2 (two-pore channels), that facilitates calcium signaling from structures within cells that perform a special function. They also are the first to isolate TPC2 as a channel that binds to a second-signaling messenger known as NAADP, which results in the release of

calcium from intra-cellular stores.

Calcium may prove to play a role in human disease, according to **Jianjie Ma, PhD**, university professor and acting chair, Department of Physiology and Biophysics.

"We are proud to be part of a study that will stand as the foundation for further exploration of human disease, helping researchers to better understand how calcium contributes to cell growth and disorders, including aging-related cardiac disease, diabetes, lysosomal cell dysfunction, and the metastasis of cells in cancer," Dr. Ma says.

The study involved investigative teams at Ohio State University, the University of Edinburgh, and the University of Oxford, as well as RWJMS. Support was provided by the United Kingdom's Wellcome Trust and the British Heart Foundation, the American Heart Association, and the National Institutes of Health.

— J.S.

AWARDS & Honors



Peers Help Smokers Make "CHOICES"

The division of addiction psychiatry's "CHOICES" program has been recognized by the American Psychiatric Association for its efforts to reduce tobacco use among mental health patients, a group estimated to consume nearly half of all cigarettes in the United States.



CHOICES — Consumers Helping Others Improve their Condition by Ending Smoking — provides peer counselors with intensive training to coach current smokers. Peer counselors are non-smokers or former smokers moderately impaired or disabled by mental illness who receive intensive training to coach current smokers.

"Peers are less threatening than professionals," says **Jill Williams, MD**, associate professor of psychiatry and co-founder and medical director of the program. According to Dr. Williams and co-founder **Marie Verna**, the program's advocacy director and senior training and consultation specialist at UMDNJ-University Behavioral HealthCare's Center for Excellence in Psychiatry, the CHOICES team has reached more than 9,600 smokers with mental illness since 2005.

— J.S.

CORRECTION:

There was a typographical error in "The Great Mystery of Cystic Fibrosis" in the Spring 2009 issue of *Robert Wood Johnson Medicine*. The first line on page 48 should have read: "Dr. Scanlin was appointed the new director of the CF Center in 2005."

Researcher Earns New Innovator Award

Vikas Nanda, PhD, assistant professor of biochemistry and a resident member,



Center for Advanced Biotechnology and

Medicine, is a recipient of the Director's New Innovator Award from the National Institutes of Health (NIH). Dr. Nanda will

receive \$1.5 million over five years to support his novel approach to creating a synthetic network of proteins resembling the extra-cellular matrix of mammalian cells. This will allow research into the role of the matrix in normal and disease processes and help translate new findings into the development of biomaterials, which can then be used to engineer artificial tissue for treatment of human diseases.

Distinguished Professor Receives Prestigious Psychology Award

Michael Lewis, PhD, university distinguished professor of pediatrics and psychiatry and director, Institute for the Study of Child Development, has received the 2009 Urie Bronfenbrenner Award for Lifetime Contributions to Developmental Psychology in the Service of Science and Society from the developmental psychology section of the American Psychological Association.

Dr. Lewis has directed the Institute for the Study of Child Development for more than 25 years, with

a commitment to research, education, and the exchange of information to share with parents. — J.S.

Award Highlights:

Joseph R. Bertino, MD, university professor of medicine and pharmacology and associate director and chief scientific officer, The Cancer Institute of New Jersey, was honored with the Freundlich Leadership Award by the Lymphoma Research Foundation.

Robert Pinals, MD, clinical professor of medicine and vice chair, division of rheumatology and connective tissue research, Department of Medicine, was honored by the Arthritis Foundation at its annual banquet.

— J.S.

RWJMS Celebrates Publication Awards

The UMDNJ-Robert Wood Johnson Medical School-Robert Wood Johnson Hospital 2007 Annual Report and Robert Wood Johnson Medicine magazine received several awards for excellence:

- A gold award from the 2009 Aster Awards: Excellence in Medical Marketing, for the annual report
- A silver award in the 26th annual Healthcare Marketing Advertising Awards Competition, for the annual report
- A bronze award in the same competition, for the Spring 2008 issue of the magazine — J.S.



IN MEMORIAM

DR. PARVIN SAIDI

Sadly, we report the April 22 death of **Parvin Saidi, MD**, professor of medicine and chief, division of hematology and oncology. Dr. Saidi joined Rutgers Medical School in 1968 and was named professor and appointed director of the Melvyn H. Motolinsky Laboratory for Hematology Research in 1974. She was the first to hold the Melvyn and Ab Motolinsky Chair in Hematology.

Recognized internationally for her work, she garnered nearly \$19 million in hematology/oncology research grants and earned numerous awards, including the Foundation of UMDNJ Excellence in Teaching Award and the 2006 Physician of the Year Award from the National Hemophilia Foundation. She also chaired the New Jersey Governor's Task Force on Women with Bleeding Disorders and served on the Governor's Advisory Council on AIDS.

Surviving are her husband, A. Verdi Farmanfarmanian, PhD, emeritus professor of physiology at Rutgers, The State University of New Jersey, and daughters Lara Terry, MD '95, and Kimya Harris, PhD.

— J.S.

The Class of 2013 in Profile

The Class of 2013 is remarkable for the high quality of its research and writing — including several articles published in top-cited journals. “Our students’ diverse experience is key to our education of competent physicians,” says **Carol A. Terregino, MD ‘86**, associate professor of medicine, associate dean for admissions, and interim senior associate dean for the Camden regional campus.



The new class had the highest undergraduate grade point average and the highest MCAT scores in the history of the medical school. Although their average

Carol A. Terregino, MD ‘86, associate professor of medicine, associate dean for admissions, and interim senior associate dean for the Camden regional campus (standing), with members of the Class of 2013.

New Degree Program at Forefront of Translational Research

Professionals wishing to expand career opportunities in science and medicine can take advantage of a new advanced-degree program recently introduced by the UMDNJ-Graduate School of Biomedical Sciences (GSBS) at RWJMS.



The program, toward a master’s degree in clinical and translational science, will provide innovative training for doctors, nurses, pharmacists, dentists, and research scientists, as well as others who want to learn the complexities of translational research and better understand how research is transformed into clinical diagnoses and treatments to improve patient care.

“This degree will enhance a professional’s employment value and strengthen his or her opportunities for career advancement,” says **Terri Goss Kinzy, PhD**, professor of molecular genetics, microbiology, and immunology and, senior associate dean for GSBS at RWJMS.

A relatively new discipline, translational research integrates basic biomedical investigations with clinical applications, accelerating medical research to improve health care delivery. The progressive degree, the first of its kind in New Jersey, was developed to complement the goals of the National Institutes of Health “Road Map” for medical research, designating clinical and translational science as a major initiative.

— J.S.

age is 23, the members of the class have accumulated an excellent record of scholarly achievement, while enjoying a broad spectrum of interests.

The 156 members of the Class of 2013 were educated at 58 different institutions. Twenty percent graduated from Rutgers, The State University of New Jersey, and 22 percent from Ivy League colleges, including 14 graduates of the University of Pennsylvania. Four students were admitted as members of the MD/PhD program. Half of the class majored in the biological and physical sciences; more than half of the 17 double majors were double science majors. Nine were undergraduate engineering majors, and 14 bring a liberal arts background to the mix. Twenty-three percent were born abroad, representing more than 21 different countries, and they have served in 19 different global health settings. Two-thirds were born in the tristate area — half in New Jersey. Ten percent are from groups traditionally underrepresented in medicine, and, reflecting a nationwide trend, more than half — 56 percent — are women.

— K.O’N.

Dean's Scholars

The Dean's Scholars Program was inaugurated in 2006 by **Peter S. Amenta, MD, PhD**, dean. The following exceptional students in the Class of 2013 were named Dean's Scholars this year. Each earned a four-year scholarship.

- **Janelle Billig** earned a BS in neuroscience and kinesiology at the College of William and Mary. An American Physiological Society award finalist, she co-authored an article published in the *American Journal of Physiology* and did research at the National Institutes of Health's Center for Molecular Studies in Digestive and Liver Diseases.
- **Gabriel Estremera** graduated Phi Beta Kappa from Rutgers College, where he earned a BS in biological science. He is committed to practicing medicine in an urban area.
- **Anmol Gupta** earned a BA in molecular biology from Princeton University and did genetic, stem cell, and cell signaling research at the University of Pennsylvania.
- **Matt Linger** taught English in the United States and China and completed pre-medical studies at Columbia University. At New York-Presbyterian Hospital, he assisted in a study of Parkinson's disease and researched how dystonia affects musicians.
- **Jessica Malin** holds a BA in biology from the University of Delaware. She did research at Nemours Biomedical Research/ Alfred I. duPont Hospital for Children, studying behavioral aspects of autism in children.
- **Andrew Moore** earned a BA in economics from the University of Pennsylvania, where he completed his post-baccalaureate studies. A nursing unit volunteer at Pennsylvania Hospital, he attended the



STEE HOCKSTEIN

Peter S. Amenta, MD, PhD, dean (fourth from left) is joined by Dean's Scholars from the Class of 2013 (left to right): Anmol Gupta, Elise Sideris, Hussein Rahim, Jonathan Wooden, Jessica Malin, Janelle Billig, Andrew Moore, and Aleksandr Rozenberg; not pictured: Gabriel Estremera and Matt Linger.

Wharton School of Business, where he researched political parties and affordable housing.

- **Hussein Rahim** holds a BA in genetics from Rutgers. From 2006 to 2009, he assisted in clinically focused research at The Cancer Institute of New Jersey (CINJ). He presented posters in consecutive years at the RWJMS Annual Retreat on Cancer Research and one at a Rutgers symposium.
- **Aleksandr Rozenberg** double-majored in chemistry and biomathematics at Rutgers, earning a BA. He was first author of a submitted research paper and presented posters at three symposiums.
- **Elise Sideris** holds a BS in biology from Cornell University, where she assisted in osteoarthritis-focused research at the Fortier Laboratory. She participated in a service-learning program in Peru.
- **Jonathan Wooden** earned his BA in biological science at Rutgers. He assisted in research at CINJ, where he studied the relationship between chemotherapy-caused DNA damage and the development of drug resistance.

— K.O'N.

RWJMS Taking Advantage of Mobile Technology in Education

Last fall, RWJMS introduced a mobility initiative designed to integrate electronic content (images, audio, video, and other digital assets) and make it available through mobile technologies. While it is anticipated that this initiative will significantly affect the way digital assets and technologies are utilized at RWJMS, it will not replace many of our existing resources (Web sites, Web applications, email, and so on).

The first mission area to benefit from mobility is education. In August, all entering medical school students were required to have an iPod Touch or iPhone 3G as well as a laptop computer. It was also recommended that all second-, third-, and fourth-year students purchase an iPod Touch or iPhone 3G. While first-year students require laptops, second-, third-, and fourth-year students may use any computer with Internet access and the capacity to connect to the RWJMS iTunes U.

— J.S.




**New Faculty
Bring Leading-Edge
Technologies
to RWJMS**

BLAZING A TRAIL

The UMDNJ-Robert Wood Johnson Medical School advanced significantly with the recent strategic appointments of six new high-profile faculty members. These medical experts are recognized leaders within their respective fields, bringing with them new knowledge and advanced therapies and technologies to help propel the medical school to higher levels of excellence.

PORTRAITS BY JOHN EMERSON



Vicente H. Gracias, MD, professor of surgery and chief, trauma/surgical critical care, and medical director, trauma and surgical critical care at RWJUH; says, "I really believe that creating a structured environment that supports education is the foundation that leads to our overall excellence. The division we are establishing at the medical school will have a philosophy of doing just that."

Vicente H. Gracias, MD: *A New Model for Trauma and Surgical Care*

IT'S NOT OFTEN THAT A NEW FACULTY arrival warrants a stream of superlatives from Stephen F. Lowry, MD, professor and chair, Department of Surgery, and senior associate dean for education. But in the case of Vicente H. Gracias, MD, professor of surgery and chief, trauma/surgical critical care, and medical director, trauma and surgical critical care at Robert Wood Johnson University Hospital (RWJUH), this enthusiasm seems more than justified.

A trauma/critical care surgeon with significant leadership and teaching experience, Dr. Gracias has been recruited to RWJMS to help merge and elevate the RWJUH's Level 1 Trauma Center and Surgical Critical Care programs to world-class status as a comprehensive catastrophic care center.

"He is a nationally recognized expert in quality improvement and protocol-driven care, so we are excited and filled with anticipation over his arrival. We think he's the kind of faculty member who will be the future of our institution, someone who can propel us to becoming one of America's premier medical schools," says Dr. Lowry.

Working with Dr. Lowry and Stanley Z. Trooskin, MD, professor of surgery and chief, division of general surgery at RWJUH, Dr. Gracias will be responsible for combining and improving the quality of Level 1 trauma care, surgical critical care, and emergency surgery services at the hospital, mirroring a growing national trend that maximizes efficiencies and services. Dr. Gracias will lead the effort to improve care while combining emergent surgical responses to trauma and other surgical diseases under Acute Care Surgery. He will also establish a fellowship program and create educational opportunities for graduate and undergraduate students.

Extensive Leadership Experience

Dr. Gracias arrived at RWJMS in July from the Hospital of the University of Pennsylvania, where he held numerous administrative, clinical, and faculty appointments over a career spanning nearly 12 years.

In addition to his teaching responsibilities as associate professor of surgery, Dr. Gracias's leadership positions at Penn included service as interim director, medical director, and chief of surgical critical care at the Hospital of the University of Pennsylvania. He also has served as a surgical liaison for trauma chaplains, medical director for performance improvement, and director of a medical sonogram implementation program at the hospital. He has taught students at all levels, including nationally, earning four teaching awards along the way.

"From a surgical point of view," says Dr. Gracias, "the majority of my interests now are to create a center that can deliver the cutting edge of catastrophic care — continuing the wonderful tradition the medical school and hospital have earned — combining the ability to render help to Level 1 trauma patients seen here at our trauma center while enhancing surgical intensive care."

In his new position, he hopes to be able to draw upon his extensive experience at the University of Pennsylvania, where, he says, "we learned how to develop and implement both the clinical and system aspects necessary for supporting a mature trauma system and the team it depends on."

Opportunities for Learning

Dr. Gracias's immediate goal is to establish a strong clinical program, but he says his ultimate goal is to develop a curriculum in acute care surgery — an integral part of his overall plan to create meaningful learning opportunities for students from differing professions at all levels. "I really believe that creating a structured environment that supports education is the foundation that leads to our overall excellence. The division we are establishing at the medical school will have a philosophy of doing just that," he adds.

To maintain that crucial link with students, Dr. Gracias is basing his offices within the school's Medical Education Building. Medical students, along with house officers (residents with additional surgical training), nurses, and other team members, will be considered a vital part of the trauma/acute

care surgical team. They will receive daily morning reports from attending physicians and participate in a review of clinical-care issues each day, he says.

Since coming to the school, Dr. Gracias has already recruited two new members to his staff. They are Adam Shiroff, MD, assistant professor of surgery, who completed the Penn Fellowship program in trauma and surgical critical care at the University of Pennsylvania, and Hesham Ahmed, MD, assistant professor of surgery, who recently completed his fellowship training at the Medical College of Virginia. He also welcomes the opportunity to work once again with Meredith S. Tinti, MD, assistant professor of surgery, whom Dr. Gracias mentored as a fellow at Penn and who is now at RWJMS and RWJUH.

Clearly a believer in teamwork, Dr. Gracias stresses that the work ahead will owe its success to the residents, fellows, house officers, students, nurses, and other team members working alongside him. “In my personal philosophy,” he adds, “it’s all about the team being created. It’s about the people we’re recruiting to help us.”


Students will be treated as important team members, he is careful to note. “The students who come here will not be looked upon as visitors,” he says emphatically. “They are very much a part of our overall philosophy and of the mission that we intend to live.”

— By Joni Scanlon

James Coromilas, MD: *Emergent Role of the “Heart Electrician”*

FOR THREE YEARS RUNNING, ROBERT Wood Johnson University Hospital (RWJUH) has ranked among the nation’s top heart and heart-surgery hospitals in *U.S. News & World Report*, this year placing 36th of 5,000 evaluated.

While hardly preoccupied by such rankings, James Coromilas, professor of medicine and chief, division of cardiovascular diseases and hypertension, and chief, cardiology at RWJUH, is certain that the cardiology program he is leading at RWJMS will one day be on



James Coromilas, MD, professor of medicine and chief, division of cardiovascular diseases and hypertension, and chief, cardiology at RWJUH, envisions a new cardiology center where breakthrough research and therapies can be applied to both complex and common heart disorders, especially those now afflicting aging baby boomers.



a par with any of the academic hospitals deemed “elite” in the magazine’s rankings.

In full agreement is his department chair, John B. Kostis, MD, John G. Detwiler Professor of Cardiology, professor and chair, Department of Medicine, and founding director of the Cardiovascular Institute of New Jersey. He is convinced that Dr. Coromilas is the man who will get the job done. “We anticipate his broad experience and achievements will elevate cardiology at our academic medical center to among the best,” says Dr. Kostis.

“So, he has a tall order to fill, which is to bring us to number ten in the *U.S. News* rankings,” quips Dr. Kostis.

Teacher, Researcher, Electrophysiologist

A board-certified electrophysiologist, or “heart electrician,” Dr. Coromilas came to RWJMS last year, leaving a distinguished career at New York-Presbyterian, the University Hospital of Columbia and Cornell, where he taught, practiced, and led a number of academic and research initiatives for the better part of two decades.

Through his affiliation with Columbia University’s College of Physicians and Surgeons, he conducted extensive research on a host of heart defects and diseases, particularly focusing on arrhythmia disorders. At Columbia, he directed the Ambulatory Electrocardiogram (ECG), Signal Averaged ECG, and Interventional and Diagnostic Electrophysiology laboratories. Dr. Coromilas directed the Cardiology Fellowship Training Program for nearly two decades, and he was selected by its fellows in 2002 as “Best Teacher.” For many years, he served as preceptor for the third-year student medical clerkship, and he also taught pharmacology courses to second- and fourth-year medical students.

No stranger to headlines, Dr. Coromilas has been published extensively in a number of prestigious, peer-reviewed journals. Recently, his writing touched off considerable debate when the *Journal of the American Medical Association* published his editorial supporting an accompanying, and provocative, Yale study. That study suggested that patients receiving implantable cardioverter-defibrillators (ICDs) might

be at greater risk if the device is implanted by a physician without experience in electrophysiology.

Electrophysiologists belong to one of the fastest-growing disciplines within cardiology. They're cardiologists who receive additional training to install cardiac rhythm-management devices such as defibrillators and pacemakers, and they also perform advanced cardiac ablations to treat such irregularities as atrial fibrillation — a common arrhythmia affecting more than 10 million Americans. In performing these procedures, electrophysiologists employ special catheters equipped with electrodes to promote non-invasive treatment and enhanced patient comfort.

It's a discipline Dr. Coromilas will expand in his new role by providing increased practice, research, and training opportunities to residents and students. He also envisions a new cardiology center where breakthrough research and therapies can be applied to both complex and common heart disorders, especially those now afflicting aging baby boomers.

He also plans research to better interpret fainting episodes, which he says are among the most common reasons for a hospital admission and often indicative of a serious problem. His other plans include introducing MRI technology and applying it to the analysis of complex cardiovascular diseases, as well as ushering in advanced cauterization techniques offering non-surgical valve replacement and artery-blockage repair options to patients.

Genetic mapping as it relates to cardiovascular disorders also intrigues him, and it could find a place in the program. "The theory is that certain genes could help us identify which people might be at risk for cardiac arrest and would benefit most from preventive treatment," he explains.

To Be the "Best of the Best"

Uhile mapping the future, Dr. Coromilas acknowledges the solid program he has inherited, which has a reputation for its mastery of minimally invasive heart surgery, heart transplantation, and the implantation of ventricular assist devices.

"All of these initiatives — past and future — go hand in hand," he says. "We can only be the best if we offer things that others don't have."

— *By Joni Scanlon*

Amale Laouar, PhD: Studying Childhood Gut-Related Diseases

IN HER NEW POSITION HEADING A BIOMEDICAL research team at the Child Health Institute of New Jersey (CHINJ), Amale Laouar, PhD, assistant professor of surgery, will lead vital research investigating gut mucosal immunity. Although it's not exactly a household term, parents of infants born with a gut immune disorder are all too aware of the potentially devastating effects it can have on their child's quality of life. And even if the child is healthy, no other system in the infant body is subject to so many problems as the gastrointestinal system, according to Dr. Laouar.

These disorders thwart the normal development of a balanced immunity that simultaneously allows tolerance of good antigens, such as milk and food, and provides active protection against harmful pathogens. Usually these immune disorders develop in the days following birth, during which the gut microflora — "good" bacteria — is allowed to populate the gut. But abnormal conditions, which are related to the levels at which these bacteria are present, can also occur during this time frame and can have serious, lifelong consequences for the baby.

This is indicated in recent studies, which have found that these "good bacteria" — usually passed from mother to child — have enzymes that help the human body break down the undigested carbohydrates it consumes, including some starches, fiber, and sugars. However, as the studies indicate, the level at which they are present in the gut has been linked to such problems as lactose intolerance. Even more disturbing, an alteration in the number or types of bacteria may interfere with the early development of an infant's immune system, both now and in the future.

It's suspected that this chain of action may very well be the culprit behind a whole host of diseases, including food allergies, inflammatory bowel diseases, food-borne infections, and gastrointestinal cancers. In her research, Dr. Laouar will specifically investigate the gut mucosal immunity as it relates to inflammation, tolerance, infection, and cancer.

Research Fulfills CHINJ Mission

The research that Dr. Laouar is leading reflects the work CHINJ hoped to foster when RWJMS established it in 1998, with the mission of advancing basic



In her new position heading a biomedical research team at the Child Health Institute of New Jersey, Amale Laouar, PhD, assistant professor of surgery, will lead vital research investigating gut mucosal immunity.

scientific knowledge of vertebrate development and childhood diseases. CHINJ is part of a larger biomedical research program that includes the neighboring Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital, The Cancer Institute of New Jersey, the Cardiovascular Institute of New Jersey, and the Stem Cell Institute of New Jersey.

"We are now in the process of recruiting world-class investigators such as Dr. Laouar to CHINJ," says Arnold B. Rabson, MD, professor of molecular genetics, microbiology, and immunology, pathology and laboratory medicine, and pediatrics; interim director, CHINJ; and interim senior associate dean for research. "These outstanding researchers will be studying basic and translational aspects of childhood diseases, trying to answer fundamental questions and to translate their findings into new approaches to treatment and prevention, and ultimately offering hope to parents of babies and children who are afflicted by these diseases."

Amid Challenges, a Researcher Finds Her Purpose

Dr. Laouar earned her MS and PhD in immunology from the Faculty of Medicine Saint-Antoine, Paris, and the Pierre and Marie Curie Institute, Paris, respectively. She completed her post-graduate training at the University of Chicago and Argonne National Laboratory in Illinois and the Harvard Medical School and Immune Disease Institute in Boston. She has taught in the Department of Pediatrics and at the Immune Disease Institute at Harvard. Dr. Laouar has published in many outstanding journals and contributed to numerous books.

She grew up in an Algerian family in which, she says, she was encouraged to transcend boundaries of gender, important in a society where women are not usually considered equal to men. She credits her parents, who highly value education, for inspiring her and her sisters to professional heights. It was in Algeria where the spark to research the root causes of diseases was lit within Dr. Laouar.

She first witnessed the ravages of gastrointestinal disease on the Algerian populace, as an influential biology teacher and later as the recipient of two prestigious MS and PhD fellowships.

— *By Joni Scanlon*

Jason Rogart, MD: Mastering Virtual Chromoendoscopy

FOR MOST ADULTS OF A CERTAIN AGE, A physician's referral for a colonoscopy can be part of a complete physical exam. Although a vital and fairly reliable predictor of a pre-cancerous condition, the colonoscopic procedure that most people have experienced can carry a significant "miss" factor in identifying pre-cancerous polyps.

But now, high-definition virtual chromoendoscopy techniques are available that not only improve the performance and success of routine colonoscopy and endoscopy, but also aid the gastroenterologist in determining the extent and type of lesion found so that it can be optimally treated.

These and other state-of-the-art diagnostic and therapeutic procedures are currently being employed at only a limited number of medical facilities, including at RWJUH. Administering these procedures there is a special cadre of doctors who have acquired extensive post-doctoral training to employ the sensitive, specially designed imaging equipment required for these procedures and to interpret test results accurately.

Building upon Strengths

One such expert is Jason Rogart, MD, assistant professor of medicine, who joined the division of gastroenterology and hepatology faculty in August. A graduate of Brown Medical School, Dr. Rogart served his residency in internal medicine — including a year as chief resident — at Yale Medical School. He completed a three-year clinical fellowship in digestive diseases at Yale. He spent an additional year as an advanced endoscopy fellow at Thomas Jefferson University Hospital in Philadelphia.

"Dr. Rogart will bring to our team yet another dimension of state-of-the-art, interventional endoscopic management of various complex gastrointestinal disorders," says Kiron M. Das, MD, PhD, professor of medicine, chief, division of gastroenterology and hepatology, and director, the Crohn's and Colitis Center of New Jersey.

"In particular," he adds, "Dr. Rogart has expertise in using narrow-band imaging to assist in the early detection and demarcation of pre-neoplastic and neoplastic tissue, such as Barrett's esophagus (a rare, often deadly cancer of the esophagus), ulcerative colitis,



Jason Rogart, MD, assistant professor of medicine, division of gastroenterology and hepatology, especially looks forward to his teaching responsibilities at RWJMS, and he hopes to inspire at least some of his students to take the extra time needed to specialize in advanced technologies that are improving patient comfort and outcomes.

colon cancer, and benign and malignant colon polyps.” The new faculty member also brings an important new capability to this select team, Dr. Das notes: experience applying new, deep small-bowel diagnostic and therapeutic enteroscopy technology for small-intestinal disorders.

Handing Down Knowledge

Dr. Rogart especially looks forward to his teaching responsibilities at RWJMS, and he hopes to inspire at least some of his students to take the extra time needed to specialize in advanced technologies that are improving patient comfort and outcomes.

Among the advances Dr. Rogart will share with his students are new, non-invasive diagnostic and therapeutic procedures used for treating a wide range of gastrointestinal conditions, including pancreatic cancers and cysts, pre-malignant lesions of the esophagus, and intestinal blockages. In some cases, they’ve eliminated the need for drastic surgery, while in others — such as in the diagnosis of pancreatic tumors and cysts — they’ve allowed for less invasive internal biopsies instead of needing to go through the skin.

Yet patients unable to travel for advanced diagnosis or treatment to the rare medical facility offering these advanced technologies are at a distinct disadvantage. Equipment costs and a shortage of available expertise substantially limit the expansion of these facilities.

Part of the problem is that most traditional medical students, residents, and fellows don’t have the time or the opportunity to master the technologies that are rapidly being introduced to the discipline — without committing to a significant extension to their post-doctoral training period, laments Dr. Rogart.

This year, there are perhaps 40 such fellowship positions available throughout the United States for the kind of advanced training Dr. Rogart received.

The problem is one that Dr. Rogart hopes to address during his tenure at RWJMS. “The complexity of diseases and the technical complexity of the procedures themselves are outpacing the years we have to train fellows,” he says. “The good news is that these advances are coming to us more rapidly than ever. The bad news is that they’re coming to us more rapidly than we have the time or the ability to train doctors.”

— *By Joni Scanlon*

Todd Rosen, MD: *Treating Babies at Risk*



AT THE CORE OF MODERN MATERNAL-fetal medicine lies one of life’s most enduring mysteries: How — and why — does natural childbirth occur precisely when it does?

“We simply don’t understand why women ovulate. We don’t know exactly what the mechanism is behind the normal timing of labor,” says Todd Rosen, MD (NJMS ’92), assistant professor of obstetrics, gynecology, and reproductive sciences and director, maternal-fetal medicine and the Regional Perinatal Center at RWJUH, who will explore this puzzling question in his new faculty position at RWJMS.

When not researching this age-old mystery, Dr. Rosen will take a leadership position in establishing a centrally located, state-of-the-art, multi-disciplinary maternal-fetal medicine center that incorporates advanced treatments and diagnostic options for not only high-risk pregnancies, but also extremely high-risk pregnancies. The center will give New Jerseyans a place to go for these at-risk pregnancies so that parents-to-be no longer have to travel out of state to receive this caliber of treatment.

Still another challenge that Dr. Rosen will turn his attention to as a specialist in the area of high-risk pregnancy is medical malpractice. It is well known that the malpractice crisis has hit the field of maternal-fetal medicine especially hard, through high insurance premiums and costly lawsuits.

New Challenges, New Opportunities

Dr. Rosen comes to RWJMS from Columbia University’s College of Physicians and Surgeons, where he served since 2005 as assistant clinical professor of obstetrics and gynecology, directed the perinatal research program, and was an attending physician in its division of maternal-fetal medicine. He completed his residency at Mount Sinai School of Medicine and a fellowship in maternal-fetal medicine at the New York University School of Medicine. He also has advanced training in invasive ultrasound-guided procedures. He brings an abundance of needed qualities to the program, including an extensive knowledge base of cutting-edge research necessary to build a world-class multi-disciplinary fetal medicine program, says Gloria Bachmann, MMS ’72, MD, professor and interim chair, Department of Obstetrics, Gynecology, and Reproductive Sciences, asso-



Todd Rosen, MD (NJMS '92), assistant professor of obstetrics, gynecology, and reproductive sciences and director, maternal-fetal medicine and the Regional Perinatal Center at RWJUH, will take a leadership position in establishing a centrally located, state-of-the-art, multi-disciplinary maternal-fetal medicine center that incorporates advanced treatments and diagnostic options for not only high-risk pregnancies, but also extremely high-risk pregnancies.

ciate dean for women's health, and director of the Women's Health Institute. "The fetal program Dr. Rosen is helping to bring to New Jersey will include neonatologists, pediatric surgeons, neurosurgeons, cardiologists, anesthesiologists, radiologists, and an entire team devoted to fetuses in need of special care for congenital anomalies and birth defects," she explains.

This inter-professional team will treat high-risk cases now referred to out-of-state hospitals, says Dr. Rosen. "We should be doing this here," he says. "We are centrally located, we have a brand-new children's hospital and operating room (The Bristol-Myers Squibb Children's Hospital at RWJUH) to take care of these newborns, and we have the required expertise to give babies the greatest chance of a healthy outcome."

The proposed fetal program also offers tremendous teaching possibilities for all students, optimally preparing them to be the next generation of health care providers. Currently, in addition to traditional lectures, Dr. Rosen leads clinical rounds as well as "strip rounds," for tracing fetal heart rates, to familiarize students and residents with hands-on practice in monitoring and managing fetal heart-rate tracings and tracking the stages of labor.

Harking back to the age-old question of why some women experience labor too early, Dr. Rosen will share his extensive knowledge of translational research on pre-term birth and lead an investigatory study on the topic. Finding answers could prove crucial in preventing pre-term labor — a leading cause of fetal death and disability. Yet, despite all of the advances made in maternal and fetal medicine, pre-term labor rates are actually on the rise in the United States, up from 9 percent in the 1980s to 13 percent today, he says.

Addressing the Malpractice Crisis

Dr. Rosen also hopes to reform the manner in which expert testimony is provided in childbirth malpractice cases. It is widely believed that the current malpractice system usually has parents waiting for years for a resolution of their cases, results in many experienced OB/GYN physicians leaving the practice of obstetrics, deters young physicians from entering this medical field, and ultimately drives up health care costs.

It's also hurting women by making many doctors hesitate to do the least invasive procedure when

there is a hint of risk evident during childbirth. As a result, says Dr. Rosen, Caesarean procedures are rising, performed today in 30 percent of all births.

The program Dr. Rosen envisions would bring together a blind panel of experts objectively reviewing potential malpractice cases based solely on the evidence. Indeed, Dr. Rosen's "expert reviewers" would not know whether they were working for the plaintiff or the defendant, and they would be able to serve as objective presenters of factual information in the courtroom. Such a program could be offered throughout New Jersey and potentially nationwide, he adds.

The program he envisions would provide a shorter time to resolution of the case for parents and provide expert medical feedback to obstetricians regarding each of their cases reviewed by the expert panel.

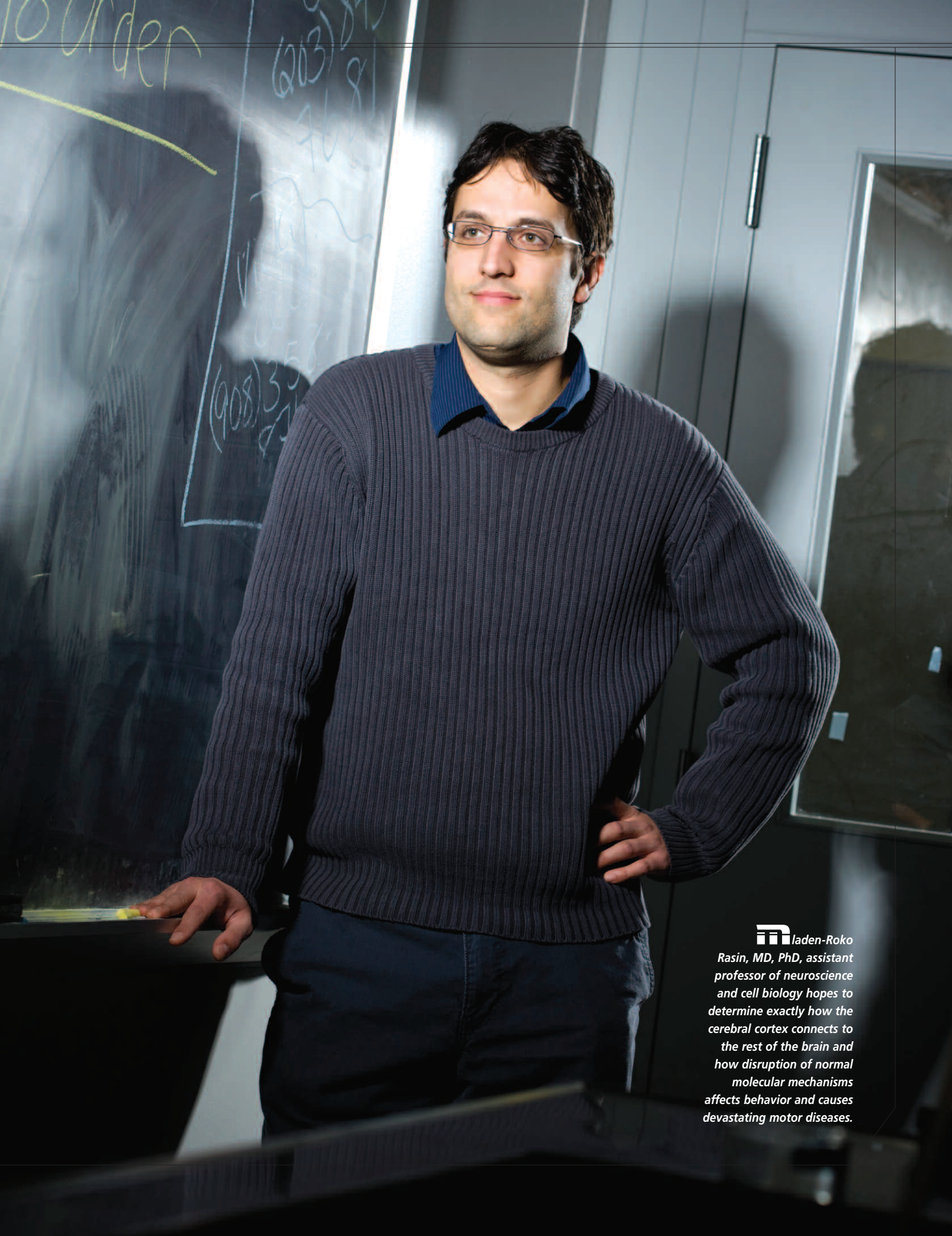
— By Joni Scanlon

Mladen-Roko Rasin, MD, PhD: *Decoding Molecular Secrets of the Cerebral Cortex*

"THIS IS LIKE SCIENCE FICTION," SAYS Mladen-Roko Rasin, MD, PhD, assistant professor of neuroscience and cell biology. "If you'd told me two years ago that I'd be here today, in my own lab, doing *in vivo* manipulation of genes and analyzing how they affect the development of the neurons that drive my voluntary behavior, I'd have said that was impossible."

Dr. Rasin, a developmental neuroscientist, joined the RWJMS faculty in October 2009, opening a new chapter in a decidedly *non-fiction* story, built on his discovery during medical school of a love for research, his evolving, insightful science, and a forward-focused attitude that all support his work and the work of those around him.

"Roko's sub-specialty appealed to the department," says Cheryl F. Dreyfus, PhD, professor and acting chair, Department of Neuroscience and Cell Biology. "He had excellent training in excellent places, and his research is very in tune with what we do. We knew it would add to the excellence of the department."



Iaden-Roko Rasin, MD, PhD, assistant professor of neuroscience and cell biology hopes to determine exactly how the cerebral cortex connects to the rest of the brain and how disruption of normal molecular mechanisms affects behavior and causes devastating motor diseases.

“Dr. Rasin’s recruitment drew not only on faculty from our department, but from all the basic sciences at RWJMS and Rutgers,” adds Dr. Dreyfus. In every setting — from his seminar to his “chalk talk,” lunches with graduate students, and one-on-one meetings with faculty — Dr. Rasin impressed fellow scientists with his deep knowledge of brain development and function, his well-conceived long-term goals in research, and his collaborative, enthusiastic spirit. “Roko makes everyone smile,” say Dr. Dreyfus. “He’s happy, because he loves his research.”

In his visits to RWJMS, recalls Dr. Rasin, he felt he “was coming home.” He was pleased by the high level of scientific inquiry and the genuine welcome extended by the medical school. And he found that his work reflects the interests of his departmental colleagues, who explore the development and function of the central nervous system and investigate the molecular basis for this process: “Each makes a special contribution that complements my study of the connections between the cerebral cortex and whole nervous system.”

Moreover, many members of the department use vertebral models to study human systems, just as Dr. Rasin uses a special line of “knock-out” mice and *in utero* electroporations to study molecular mechanisms *in vivo* in the cerebral cortex — the outer and most highly evolved part of the brain, the center of voluntary behavioral abilities.

One of his immediate goals is to determine the expression patterns in human brains of all the genes he studies in mouse brains. In the long term, Dr. Rasin hopes to determine exactly how the cerebral cortex connects to the rest of the brain and how disruption of normal molecular mechanisms affects behavior and causes devastating motor diseases, such as hereditary spastic paraplegia, primary lateral sclerosis, or Tourette syndrome.

A decade ago, Dr. Rasin entered the University of Zagreb School of Medicine, planning a career in neurology or neuropathology. But in his second year, he studied in the laboratory of Ivica Kostovic, MD, PhD, professor of anatomy and neuroscience, learning about the basic neuronal differences in the human brain — differences in neuronal morphologies that drive behavioral responses such as the initiation of voluntary movement initiation — and realized that his real passion was for research, not medicine.

After completing medical school, Dr. Rasin ad-

vanced his understanding of neuroanatomy and neurostructure in the laboratory of Tamas Freund, MD, PhD, director, Institute of Experimental Medicine, Hungarian Academy of Sciences, training in immunoelectron microscopy, a technology that would allow Dr. Rasin to study neurons in the minutest detail.

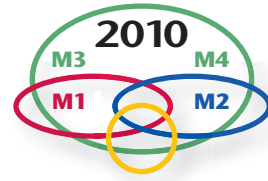
Upon his return to Zagreb, he met fellow Croatian and developmental neuroscientist Nenad Sestan, MD, PhD, associate professor of neurobiology, Yale University School of Medicine. Dr. Sestan learned that Dr. Rasin’s interests were a perfect match for the scope of work in his laboratory at Yale, which investigates how neuronal identity and connectivity are established and maintained in the cerebral cortex.

Dr. Rasin was soon headed for New Haven, where he completed his doctoral and post-doctoral work under Dr. Sestan’s mentorship. “His work in the Sestan lab opened up highly promising new areas of research,” says Michael P. Matise, PhD, associate professor of neuroscience and cell biology, who was on the team that recruited Dr. Rasin and now serves as his senior mentor. At Yale, Dr. Rasin also worked and published with Pasko Rakic, MD, PhD, professor and chair, Department of Neurobiology, a pioneer in the understanding of brain function, whom Dr. Matise characterized as one of the giants in the field.

“We anticipate that Roko’s research will contribute to a better understanding of the molecular and cellular mechanisms underlying a multitude of human neurological disorders — an understanding that will make a significant impact on diagnosing and treating such disorders in the future,” adds Dr. Matise.

While Dr. Rasin was still at Yale, the National Institutes of Health awarded him a highly competitive and coveted K99/R00 award. The grant, “Molecular Control of Corticospinal System Formation by Intermediate Targets,” is a Pathway to Independence Award, a category created to support the most promising young scientists, helping them to make the transition to an independent research position. The grant has provided funding for Dr. Rasin’s first laboratory, supporting the hiring of his first team and the pursuit of his own research, a process that he describes as “unknown, challenging, and, above all, exciting.”

— By Kate O’Neill

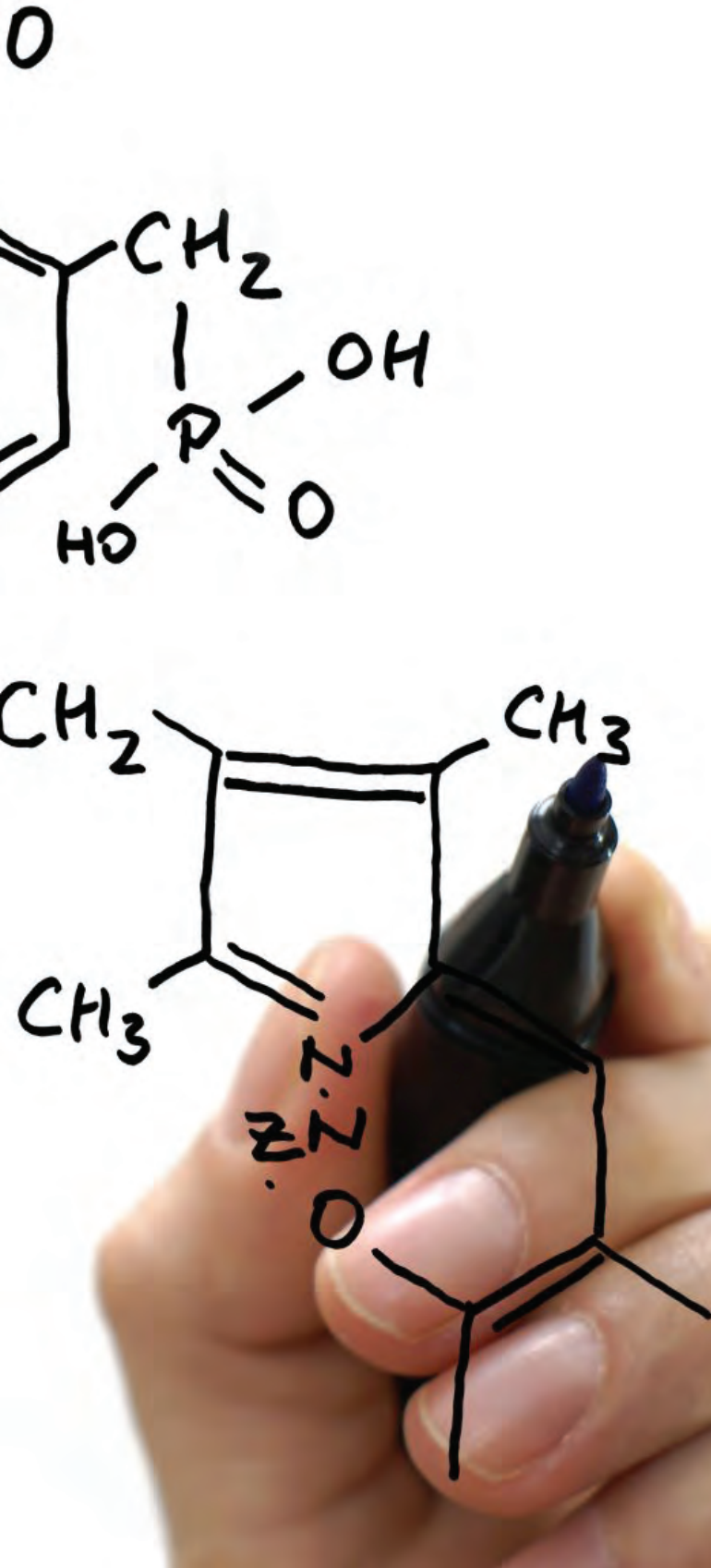


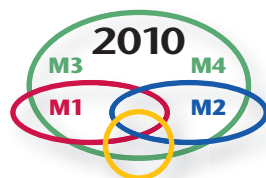
Forging Stronger Links between
Science and Patient Care

evolution of a new curriculum

To succeed, medical education must constantly evolve, adapting to a changing and challenging world. Over the past five years, UMDNJ-Robert Wood Johnson Medical School has responded dynamically to this need.

BY KATE O'NEILL





“In 2004, the Task Force on Education met and laid the groundwork for a curricular evolution that significantly reshaped the way medicine is taught and learned across all four years of our education program,” says **David E. Swee, MD**, professor of family medicine and associate dean for education. “This vision of the Task Force has given us a more relevant curriculum that might be the envy of students who graduated just five years ago.”

Systems-Based Learning and Early Clinical Training: Forging a Stronger Link between Science and Medicine

In 2010, RWJMS will launch a reorganized curriculum for first- and second-year students. Curriculum 2010 will improve integration of scientific information horizontally, or across a single year. At the same time, it will promote the integration of knowledge vertically — or through all four years — by increasing the number of clinical contexts in which students can apply the science they have learned.

“Curriculum 2010 makes an earlier connection between the sciences and clinical conditions,” says **Siobhan A. Corbett, MD ’87**, associate professor of surgery and chair, Curriculum Committee. “We want



PHOTOS BY STEVE HOOKSTEIN

students to see the impact of science on medicine.

“Traditionally, we emphasized acquiring data, not processing it,” adds Dr. Corbett. “Now we increasingly focus on critical think-

ing and problem-solving — how to link facts and make deductions.”

First- and second-year students formerly learned basic science in modules organized along disciplinary lines. Starting in 2010, a multi-disciplinary faculty will team-teach the basic sciences in modules organized according to body systems.

“Foundations of Biomedical Science,” a module devoted to cell function, will introduce the systems approach to first-year students. “The Body in Motion” will cover the musculoskeletal system and the skin, to be followed by “Maintaining Homeostasis: Normal Structure and Function,” encompassing four additional systems. The first-year modules will conclude with “Mechanisms of Disease and Defense.”

The second-year curriculum will revisit the systems, focusing on the disorders that can afflict them. In each block, students will explore a key scientific discovery that transformed the management of disease — such as the discovery of the gene mutation that causes cystic fibrosis. Cancer will be studied



with an emphasis on translational research.

Curriculum 2010 will be taught in a variety of learner-centered settings. The faculty will still present information in lectures, although there will be fewer lectures than before and more material will be available online. Students will be expected to take additional responsibility for their education in such ways as participating in small groups — team-based tutorials led for two years by the same faculty member — to complete laboratory exercises, self-directed learning modules, and correlations with clinical scenarios.

The curriculum also provides opportunities for self-directed learning through electives. Starting with the first year, students will begin exploring their options through pre-clinical, non-credit electives. By the third year, they will have up to eight weeks for electives, and, in the fourth, they will have an additional 26 weeks.

Adult Learning Assessment and Evaluation is one of many interdisciplinary working groups planning Curriculum 2010, says **Carol A. Terregino, MD '86**, associate professor of medicine, associate dean for admis-

sions, and interim senior associate dean, Camden regional campus. Weekly formative assessments will serve a dual purpose, by identifying weaknesses in the curriculum while alerting the faculty to any gaps in the students' grasp of content and concepts.

Pass/Fail and Core Competencies

"Over the last several years, we have taken deliberate steps to prepare the way for Curriculum 2010," says **Stephen F. Lowry, MD**, professor and chair, Department of Surgery, and senior associate dean for education. In 2007, RWJMS adopted a pass/fail grading system, encouraged by the system's success in a baseline trial during the previous academic year. "It takes students' attention from grades per se and frees them to study more broadly, looking for integrated — not siloed — content," says Dr. Lowry.

"We view pass/fail as a very positive change," says **Norma B. Saks, EdD**, associate professor of psychiatry, assistant dean of educational programs, and director,



Carol A. Terregino, MD '86, associate professor of medicine, associate dean for admissions, and interim associate dean, Camden regional campus (above, standing), looks on as second-year peer mentors teach physical examination skills to students in "Patient-Centered Medicine I."



PHOTOS BY STEVE HOCKSTEIN

cognitive skills program. Dr. Saks reports that the first pass/fail class achieved scores on the Step I U.S. Medical Licensing Examination (USMLE) that were much better than the national average. "The next class has also done very well," she adds, "demonstrating that this was a true effect of the change of the grading paradigm."

Coincident with the launch of Curriculum 2010, RWJMS defined six areas in which students must develop competence before graduation: patient care,

medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. Each area encompasses learning objectives that students must meet before being judged competent as physicians.

By establishing core competencies for medical students that reflect the ones established for residents by the Accreditation Council for Graduate Medical Education (ACGME), RWJMS expects to better position its students for their clerkships, residencies, and careers in medicine

The competence-building process begins with the recruitment of each new class, says Dr. Terregino, who directs the RWJMS Clinical Skills Center. "In our assessment of applicants, we look for future students whose motivations reflect the objectives of our core competencies. They demonstrate a humanistic outlook, an interest in communication, a desire to self-evaluate, an ability to work in teams, and they have a passion for learning and discovery."

Technology Upgrades and Innovations

Kessler Teaching Labs

Recent technological upgrades advance the medical school's missions. Two areas in particular have seen significant change. First, the multi-disciplinary Kessler Teaching Laboratories, the hub for teaching and learning basic science, underwent extensive improvements. The upgrades raised the Teaching Labs to the level of a core facility, which provides the learning community with specialized instruction, instrumentation, and methodology.

Eugene Martin, PhD, professor of pathology and laboratory medicine (standing), leads a small group session with second-year students.



STEVE HOCKSTEIN

In addition, the medical school introduced RWJMS iTunes U, making all first- and second-year lectures downloadable to computers. Early planning for an internal platform designed to integrate electronic content at RWJMS now includes all the schools within UMDNJ.

The Mobility Initiative

In September 2009, RWJMS rolled out new mobility resources. Through RWJMS iTunes U, students have mobile use of lecture presentation and audio files,



STEVE HOCKSTEIN

mobile access to email, and mobile access to the class calendar. “The university-wide mobility initiative has taken the medical school a quantum leap forward in learning possibilities,” according to **Alexander G. Izaguirre, PhD**, assistant professor of molecular genetics, microbiology, and immunology and director, Office of Information Technology (OIT).

CATS and KITTENS: Viewing Education from 30,000 or 1,000 Feet

Among the first applications of the mobility initiative is the Clerkship Activities Tracking System (CATS) — nicknamed “KITTENS” when mobile phones are used. The Web-based system provides students on clinical rotations — along with supervising residents and attending physicians — with the means to record every patient encounter, using a mobile phone or computer.

“To demonstrate competence before graduation, our clerks are required to see patients presenting with A, B, and C symptoms, such as abdominal or chest pain, and to have followed steps X, Y, and Z,” says **Archana Pradhan, MD, MPH**, assistant professor of obstetrics, gynecology, and reproductive sciences (OB/GYN), assistant dean for education, and clerkship director, OB/GYN. “The mobility initiative plays a huge role in tracking the clerkship experience and solves the problem of recording these minimum encounters.”



ZHANG PHOTOGRAPHY

By reviewing their accumulated experience and comparing it to the requirement list, students track and remediate any gaps in their clinical training. For instance, a student might partially fill the “abdominal pain” requirement in the OB/GYN rotation and have additional encounters that would complete this requirement — during the family medicine rotation or in a clinic setting, for example. CATS tracks these encounters and centralizes the records for easy access by students and their advisers. “CATS lets us see the progress of a whole class or an individual student,” says Dr. Pradhan. “It’s like viewing education from 30,000 feet, then zooming in to see it at 1,000.”



John Walker, MD, professor of medicine (above, center), reviews patient information with residents and medical students during rounds at Robert Wood Johnson University Hospital. Left to right: James Fischkoff, MD; Samira Farouk, MS III; Pankaj Kakkar, MS IV; and Arvin Kheterpal, MD.

The Clinical Continuum: Teaching, Learning, and Practicing Patient-Centered Care

Clinical training progresses along a continuum that begins in the first year and continues through clinical rotations in years three and four. Introduced in 2006 as a two-year course, “Patient-Centered Medicine” (PCM) I and II replaced several courses, including “Introduction to the Patient” and “Medical Ethics.” It is the central course for teaching medical ethics, cultural competence, communication skills, and diagnostic skills, and it is the only course that will remain unchanged in the new curriculum. It proved so successful that PCM I and II were expanded in 2008 to create PCM III and IV, completing a four-year progression.

In the first and second years, all students meet weekly for a half day of PCM. Starting in 2010, these sessions will be synchronized with the systems-based modules of the new curriculum. From day one, the course establishes

an effective learning community, based on small groups of eleven or twelve students. A single clinician leads the group, and follows it for the first two years.

Starting with the second week of the course, students work with standardized patients, developing interviewing skills, exploring the patient’s perceptions, and discovering that culturally sensitive communication is intrinsic to a correctly done physical examination or medical history. Objective Structured Clinical Examinations, better known as OSCEs, begin



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in the first year, as a regular means of evaluating the students' progress as clinicians.

The Proof Is in the Clerkship

PCM is better preparing students for the third- and fourth-year clinical experience, says Dr. Saks, who co-directs PCM I along with Dr. Terregino. "Ultimately, the proof is in the clerkship," Dr. Saks adds, "and we're hearing wonderful things from clerkship directors about how well prepared our third-year students are to



Gary Ebert, MD '93 (first person seated, top left), associate professor of obstetrics, gynecology, and reproductive sciences, leads an OB/GYN tutorial session with third-year students.

JOHN EMERSON

learn and to contribute during their clinical rotations."

Dr. Terregino attributes the logical and creative development of PCM III and PCM IV to **Robert Risimini, MD**, assistant professor of family medicine and community health and assistant dean for student affairs, Camden regional campus, and **Joyce G. Afran, MD**, assistant professor of family medicine and community health. Throughout the third and fourth years, PCM offers seminars, discussions, clinical activities, and peer teaching responsibilities that reinforce the principles learned in the first two years.

Every month, PCM III students spend an afternoon together dealing with problems commonly faced in clinical practice, including medical economics and end-of-life issues. Among the topics they explore are chronic illness, coordination and management of care, health promotion and disease prevention, and professionalism. In PCM IV, students gain teaching experience, working with students in PCM I and II. Those who teach in PCM III usually do it in the longitudinal care settings; if they teach in PCM I or II, they usually do it in the small group settings.

"The learning that takes place in PCM is important

preparation for the Residency Match, where a student's professionalism and clinical skills are extremely important to success," says **Marie C. Trontell, MD '76**, professor of medicine and associate dean for graduate medical education. RWJMS sponsors 43 residencies and fellowships accredited by the ACGME or the appropriate agency.



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The Resident's Role

A resident's responsibilities go far beyond teaching clinical skills, says **Brian P. Gable, MD '03**, instructor of medicine and assistant program director, internal medicine residency program. Residents are also responsible for modeling and reinforcing professionalism. As he teaches students and fellow residents, Dr. Gable has three main goals: first, to increase students' and residents' self-confidence and develop their full potential as physicians; second, to bridge any gaps in the continuum that runs from PCM through the residency; and third, to train them to think like a clinician — to trust their team members, to construct evidence-based differential diagnoses, and to interpret the data to formulate a treatment plan.

The Growing Role of Research in Medical Education

For Undergraduates: A New Research Requirement

In September 2007, RWJMS introduced a new requirement: before graduation, every student must complete 160 hours of independent research — another evolutionary step that grew out of the Education Task Force. Students are encouraged to work in teams of two or more, building a multidisciplinary approach into their investigation. The project may focus on any of the medical school's four mission areas and may take place at any time, as long as it is submitted in time for review



A.J. SUNDBLOW



before graduation. Many students satisfy the requirement through other research programs offered by the medical school or in off-campus fellowships, such as those offered at the National Institutes of Health (NIH) or the Doris Duke Foundation.

Exploring Research as a Medical Student

In January 2009, an RWJMS-based team published an article, “Medical Student Research Exposure via a Series of Modular Research Programs,” in the *Journal of Investigative Medicine*. **Christopher G. Langhammer**, an MD/PhD candidate, was first author of the article. The senior author was **Terri Goss Kinzy, PhD**, professor of molecular genetics, microbiology, and immunology and senior associate dean, UMDNJ-Graduate School of Biomedical Sciences (GSBS) at RWJMS.

Noting data indicating that physician-scientists are “a disappearing breed,” the team examined pro-

grams at RWJMS that respond to this critical problem. “[The drop-off in numbers of physician-scientists] is occurring at a time when increased translational, disease-oriented, patient-oriented, and clinical research are national goals,” says the report. “One of the keys to providing sufficient numbers of physician-scientists to support this goal is the active targeting of medical students.”

The report notes the importance of new RWJMS programs such as Students Interested in Research



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(SIR). This two-semester, lecture- and/or laboratory-based elective in the first-year curriculum connects students to UMDNJ's research resources and faculty and familiarizes them with the range of projects under way at the university.

"In addition," it says, "RWJMS has developed an array of research participation programs that are accessible throughout undergraduate medical education."

The Excitement of Scientific Discovery

When medical students have exposure to research, it is an enormous plus both for the student and for the school, says **Emanuel DiCicco-Bloom, MD**, professor of neuroscience and cell biology and pediatrics, division of child neurology and neurodevelopmental disabilities. "Research is exciting!" says Dr.



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DiCicco-Bloom, who accepts student interns in his lab, as well as doctoral and post-doctoral candidates. "The researcher's job isn't memorization, it's discovery and creating new hypotheses. In addition, research develops a healthy level of skepticism about what you read. As members of a research team, students learn how different areas of knowledge and skill come together to contribute to making research progress."

The RWJMS Summer Research Fellowship Program works particularly well for first-year students, who have the summer off. Accepted students receive a stipend co-funded by the Office of the Dean, the Office of Research and Sponsored Programs, and the Foundation of UMDNJ. This competitive program, which requires that participants design and conduct a short research project, can be a stepping-stone to pursuing Distinction in Research honors or other research-focused training programs, says **Diane Ambrose, PhD**, director of special projects.

The Distinction in Research program is one of three at RWJMS that offer graduation with distinction, a process that can take more than a year and approximates the rigors of graduate work. The other

"To be a good physician, you have to be a good scientist."

Nancy L. Hayes, PhD,
associate professor of neuroscience
and cell biology

"The faculty has widely and enthusiastically endorsed the new approach provided by Curriculum 2010," says Dr. Hayes, who is chair of the first-year course directors. "This is the way we love to teach, and students love to learn. With the systems approach to teaching science, students will learn the same amount of science as they did before, but it will be presented with clinical connections in a way that gets them charged up. It gives them a reason to understand and enjoy science and engage in learning.

"To be a good physician, you have to be a good scientist," adds Dr. Hayes, whose teaching innovations help students understand the connection between clinical practice and scientific research. In her first-year neuroscience course, Dr. Hayes offers a "selective" that requires students to pose a question about anything related to the content of the course. They must conduct independent research and then provide some element of an answer, describing what they discovered, where they found it, how it advanced their understanding, and what its applications might be.



STEVE HOCSTEN

"The old way was to teach science from a textbook, with the approach, 'Read it now. Use it later,'" she says. "Now, we're giving students more responsibility, treating them as colleagues and adult learners."

In addition, Dr. Hayes created "Neuroscience News of the Week," a series for her students, drawing on articles in current media, professional journals, or medical literature that demonstrate the practical applications of course material at both the popular and scientific levels.

Dr. Hayes shared these and other curricular innovations with colleagues at a retreat sponsored by the RWJMS Office of Education, and at "Gateway to Where?" — a symposium of the Northeastern Group on Educational Affairs of the Association of American Medical Colleges, held in May, in Hershey, Pennsylvania.



Barbara Brodsky, PhD, professor of biochemistry (above, standing), discusses results on collagen structure with Eileen Hwang, an MD/PhD student who is doing her thesis research in Dr. Brodsky's laboratory.

two are Distinction in Medical Education (DIME) and Distinction in Service to the Community. Participants in DIME develop an independent project, such as a scholarly work, educational resource, or instructional material appropriate for adoption in a course, clerkship, or elective.

Applicants for all three distinction programs must write an extensive proposal describing their independent project and identifying a mentor — at RWJMS or

outside the school — who has agreed to work with them. If they are accepted, candidates meet regularly with the Student Advisory Committee, which is comparable to a thesis committee. Ultimately, their manuscript, publication, or written report must be reviewed and approved by the committee as a condition for graduation with distinction.

The Multi-disciplinary Master's Program

In September 2009, RWJMS introduced a new graduate program: the Master's in Clinical and Translational Science. This program, the first of its kind in New Jersey, reflects the emphasis on bench-to-bedside research set forth in 2004 in the NIH Roadmap for Medical Research. People who hold, or are working toward, a PhD, DDS, PharmD, or MD are eligible, and the Office of the Dean makes scholarship funds available to RWJMS students accepted into the program.



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“With prominent researchers, clinicians, and industry professionals as faculty, participants learn how to take an idea from the hypothetical stage to the commercialization of a clinically useful test or treatment,” says the program’s director, **Ramsey A. Foty, PhD**, associate professor of surgery. “It’s important for clinicians to talk to scientists, and for both groups to talk to people in business outside the university’s walls. We’re trying to create and foster a multi-lingual community.”

This is the newest dual-degree program at RWJMS, which has offered other combined degrees for many years. They include an MD/PhD, MD/MPH, MD/JD, MD/MBA, and MD/MS in Jurisprudence; more recently it added an MD/MS in Bioinformatics. The MD/PhD program accepts about six students each year, who complete their degree with a mentor at one

of three schools: GSBS at RWJMS, the Graduate School of Rutgers, The State University of New Jersey, or the Graduate Program in Molecular Biology at Princeton University.

“When they are able to connect their research findings to related medical disorders, they succeed in translating basic science to the clinic,” he says.

His doctoral candidates learn about animals, tissues, cells, and genes. He also requires that they master at least two basic science research techniques or modalities, such as how to do cultures or how to work *in vivo*. Post-docs bring that training, knowledge, and experience to the lab, says Dr. DiCicco-Bloom. “In addition, they bring their own research, which often takes us into disparate new areas that I hadn’t expected.”



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The Post-doctoral Career Development Program: A Potential Model for Faculty Development

Richard S. Nowakowski, PhD, professor of neuroscience and cell biology, serves on the *ad hoc* steering committee for faculty development. The committee’s objective is to enhance faculty performance in the next few years, helping new faculty move ahead faster, while improving overall outcomes. “‘School’ is the defining word in our name,” says Dr. Nowakowski. “That means we have a commitment to helping our faculty produce scholarly products in teaching, research, and clinical care.”

The post-doctoral career development program offers a regular lecture series as well as mentors who guide post-docs in how to write basic science grants,



STEVE HOCKSTEIN

M Maral Mouradian, MD, William Dow Lovett Professor of Neurology (left), and her student Hilary Grosso, an MD/PhD candidate, observe the growth of yeast cells engineered to express certain genes involved in the pathogenesis of Parkinson’s disease.



STEVE HOCKSTEIN

of three schools: GSBS at RWJMS, the Graduate School of Rutgers, The State University of New Jersey, or the Graduate Program in Molecular Biology at Princeton University.

Graduate and Post-doctoral Research: When Science Becomes a Passion

The GSBS decentralized from UMDNJ in 2007. With greater local autonomy, the graduate school strengthened its interaction with the medical school and reinforced the long-standing affiliation in graduate education between RWJMS and Rutgers University. “Decentralization allowed us to enhance the research program, especially for students, by capitalizing on our own education and research environment,” says Dr. Kinzy. The medical school’s 220 graduate students have access to all clinical and basic science departments at RWJMS and in the eight PhD programs jointly run with Rutgers.

“For doctoral candidates and post-graduate students, the mission in research is science and the pas-



publish papers, and earn invitations to speak at international meetings. The program, which Dr. Nowakowski directs, could serve as an effective model for a revitalized faculty development curriculum, he believes. “We are training the trainers,” he says, “and we must train our faculty to educate great new doctors who can continue to learn.”

Cultural Competence and Community Health

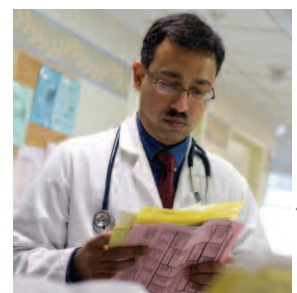
In addition to achieving competence in six core clinical areas, RWJMS students are expected to graduate as culturally competent physicians. Cultural competence has long been part of the RWJMS curriculum and continues to evolve to meet the needs of today’s patients. Now in its 22nd year, the **Eric B. Chandler Health Center** at RWJMS exemplifies this commitment. In 60,000 annual patient encounters, Chandler offers multi-disciplinary clinical care and social services. Its

clientele includes a high percentage of Spanish-speaking patients of all ages, and it is a superb site for training culturally competent students and residents.

Sensitivity and Cultural Humility in Patient-Centered Care

The longitudinal clinical care curriculum provides for students to follow a single patient in a clinic or practice setting, where they observe the course of treatment over at least several months.

PCM III also addresses cultural competence from many standpoints, says Dr. Afran. The uniqueness of each patient, family, and caregiver is the central question as students explore the importance of evidence-based medicine and patient-centered care through the life cycle. In a



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variety of settings, including many outside the medical school, students observe and discuss cultural differences, obstacles, and disparities in health care delivery and deliberate how to address them to improve clinical care.

Service Learning in the Curriculum

In 1997, the Department of Family Medicine created the Center for Healthy Families and Cultural Diversity. Under the directorship of **Robert C. Like, MD**, professor of family medicine, the center has promoted culturally responsive, quality health care for diverse populations. Dr. Like helped design the PCM course and shepherded the integration of the principles of cultural competence into the RWJMS curriculum.

RWJMS offers a wide variety of community health-



oriented electives that teach and reinforce cultural competence. They include the interdisciplinary Community-Oriented Primary Care Assistantship (COPC), a seven-week program that brings together a select group of medical students, physician assistant students, and social work students for intensive community-based projects. For the medical students, a summer COPC project can serve as a pathway to graduating with Distinction in Service to the Community.

Student Initiatives in Community Health: Programs Advance Cultural Competence

In both New Brunswick and Camden, students engage in school-run, student-run, and community-based outreach programs. The programs supplement the regular curriculum by providing wide opportunities to gain both cultural and clinical competence while caring for underinsured and uninsured patients in their communities.

The student-founded **Homeless and Indigent Population Health Outreach Project (HIPHOP)**, in New Brunswick,

sponsors programs both within and outside the required curriculum. Under the HIPHOP umbrella is the student-run **Promise Clinic**, established in 2006, which provides health care services, screenings, and supplemental social services to clients of Elijah's Soup Kitchen who have no regular access to primary care. Initiated by students on the Camden campus, the **Healthcare Outreach Project (HOP) Clinic** is a primary care center run by the third-year medical students.



Global Health: Experiential Learning in Unfamiliar Territory

The Office of Global Health was established in 2008 to help promote and advance programs in this area. Many students gain global health experience in “semester off” or summer programs. In the summer of 2009, assisted by 38 small scholarships, 50 RWJMS students traveled to every continent except Antarctica. “Students really begin to appreciate what they have at home, when they work in clinics in the third world,” says **Javier I Escobar, MD**, professor of psychiatry and associate dean for global health

Asking Questions and Seeking Answers

Dr. Lowry expects the medical school to evolve in many exciting directions. Medical education will become increasingly inter-professional, with teams of nurses, social workers, and other health care professionals helping to train physicians for the 21st century. “RWJMS will continue to follow the rule that knowledge comes from asking the important, if difficult, questions of yourself and those around you,” adds Dr. Lowry. “And not flinching when the answers suggest there is work to be done.”

Following this path, Dr. Lowry sees the medical school achieving a position in the topmost tier of American medical schools. “Forty years ago, we started out by recruiting a core of noted physician-scientists who were also leading educators, an indication from the start that our academic mission would always enrich — and be enriched by — our missions in research, clinical care, and community health,” he says. **M**



By Lynda Rudolph

PORTRAITS BY

JOHN EMERSON

and Robotics Beyond

How technology is

Transforming Therapy

Not long ago, robots and bionics were the stuff of science fiction. They had names like Hal, Robbie, Rosie, and the Six Million Dollar Man. Even the term “robotics”

(derived from “robot,” which originated in a 1920 Czech play by Karel Čapek, *RUR*) was coined by a popular science-fiction novelist, Isaac Asimov; the word first appeared in a futuristic short story he wrote in 1942. Today, robots, robotics, and implantable technology are changing the face of medicine. They are real, viable, prominent players not just in how treatment is delivered, but in the doors they open to new discoveries.

New technologies are performing astonishing feats. Robotic surgery is vastly improving not just outcomes, but the entire patient experience. Generators implanted into the brain are derailing tremors caused by movement disorders. Batteries surgically inserted into the spine are capable of telling the brain to turn off pain. Robots programmed to mimic children’s behaviors are uncovering environmental causes of childhood diseases. Although these technologies are remarkable in themselves, the goal of physicians and researchers isn’t simply to use them, but to improve them and explore new applications for them. The work they do is serving as a catalyst for discovery that could influence scientific thought and the practice of medicine.

isaac Yi Kim,
MD, PhD, associate
professor of surgery,
executive director, Dean and
Betty Gallo Prostate Cancer
Center, and chief, section
of urologic oncology at
The Cancer Institute of
New Jersey, has developed
a variation of robotic
prostatectomy surgery that
is dramatically improving
outcomes for patients.



Robotic Surgery Influences Creativity

Nowhere is the influence of technology more evident these days than in the operating room. Multi-arm robots capable of making infinitesimal incisions and rotating instruments 360 degrees, equipped with three-dimensional vision fields, have become the icons of surgical advancement. Even though robotic surgery is still considered to be in its infancy, more than 1,000 of the most commonly adopted robotic systems are already performing surgeries worldwide. And the use is destined to increase as hospitals learn how to take advantage of the technology's capabilities. According to recent research conducted by BCC Research in Wellesley, Massachusetts, the use of medical robots and computer-assisted surgical equipment is worth roughly \$648 million today and is projected to grow to \$1.5 billion by 2014. As more surgeons are ex-

posed to the technology, more creative applications are emerging.

Isaac Yi Kim, MD, PhD, associate professor of surgery, executive director, Dean and Betty Gallo Prostate Cancer Center, and chief, section of urologic oncology at The Cancer Institute of New Jersey, has developed a variation of robotic prostatectomy surgery that is dramatically improving outcomes for patients. After performing robotic prostatectomy procedures for two years, Dr. Kim developed a new approach known as the athermal intrafascial robotic, or AIR, prostatectomy. "The robot offers different angles not available during open surgery. I began to see that there was a radically different way to enter the tissue planes around the prostate rather than through the endopelvic fascia — the conventional approach," explains Dr. Kim. In the AIR prostatectomy, tissue that surrounds the prostate is spared, reducing trauma to the nerve that controls erections. Results have been very promising. The first 100 patients reported a 91% sexual potency rate in nine

the perspective of physicians who have been involved in minimally invasive techniques since their inception is insightful. **Murali K. Ankem, MD**, associate professor of surgery and director, minimally invasive urology at Robert Wood Johnson University Hospital, has experienced the evolution firsthand.

months and a 93% continence rate in three months. That represents a 16% to 26% improvement in return to sexual function and a 26% improvement in urinary leakage compared to the conventional robotic procedure.

The perspective of physicians who've been involved in minimally invasive techniques since their inception is insightful. Murali K. Ankem, MD, associate professor of surgery and director, minimally invasive urology at Robert Wood Johnson University Hospital (RWJUH), has experienced the evolution firsthand. "Now we benefit from a ten-times magnification of the surgical field. Instruments give us seven degrees of freedom," observes Dr. Ankem. The technology has recently been used on children to remove congenital bladder cancer and to perform more complex procedures including pyeloplasty — the surgical reconstruction or revision of the renal pelvis, necessary when there is a congenital malformation between the kidney and ureter.

Robert E. Weiss, MD, associate professor of surgery and chief of urology at RWJUH, believes the uses for robotic surgery will continue to grow. "We're already finding ways to improve outcomes in cardiac, urologic and gynecologic and oncologic procedures. It seems inevitable that we'll add to those as more surgeons begin to embrace robotics and recognize the opportunities the technology offers," he says.

What's the next big advancement in surgery? According to Stephen F. Lowry, MD, professor and chair, Department of Surgery, and senior associate dean for education, "Natural orifice transluminal endoscopic surgery (NOTES) is being explored. It involves using fine instrumentation through a natural orifice such as the mouth, vagina, or rectum, so there is no external scarring. The school is still out on how broadly it can be applied."

Brain and Spine Technology Improves Outcomes

Technological marvels that improve patient care aren't limited to robotic instrumentation. In the field of neurosurgery, amazing devices are help-

ing patients recover from and live with formerly debilitating conditions. One example is intraoperative Magnetic Resonance Imaging (iMRI). It provides real-time brain imaging so that tumors can be removed without injury or damage to the patient's brain.

According to Shabbar F. Danish, MD '01, assistant professor of surgery and director, stereotactic and functional neurosurgery at RWJUH, these image-guided tumor resections are not as universal as you might think. "We're one of only two hospitals in New Jersey who are using this technology to help us differentiate between residual tumor and normal brain tissue during the operation, rather than after the procedure is completed," says Dr. Danish. "Recently, iMRI was instrumental in the delicate resection of a pediatric brain tumor."

In the battle against Parkinson's disease, neurosurgeons are implanting a new-generation dual-channel battery — called an implantable pulse generator (IPG) — to rebalance the brain's electrical impulses and improve the symptoms associated with movement disorders. The IPG

Shabbar F. Danish, MD '01, assistant professor of surgery and director, stereotactic and functional neurosurgery at RWJUH, with his patient Audrey Mansfield, of Freehold, the first patient on the East Coast to have the new Activa PC device implanted.



provides deep brain stimulation (DBS) by emitting hundreds of pulses per minute to stimulate certain neural pathways.

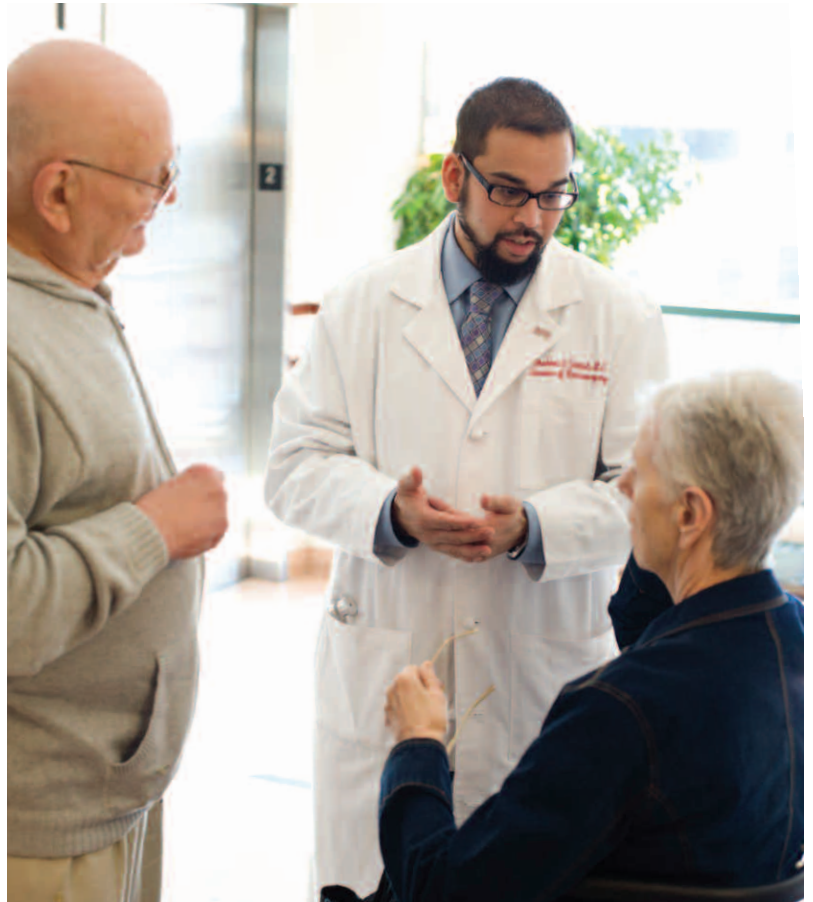
“This newer battery has vastly improved programming characteristics that give us greater control for more effective patient response,” Dr. Danish says.

Audrey Mansfield of Freehold, was the first patient on the East Coast to have the new device — called the Activa PC — implanted. “We call it my miracle operation,” she says. Diagnosed with Parkinson’s disease, Mrs. Mansfield was confined to a wheelchair. “I was incapacitated because of the dyskinesia, tremors and rigidity.” One week after the implantation, she was out of the wheelchair. “It has changed my life,” Mrs. Mansfield declares.

A similar type of battery-powered implant — called a neurostimulator — is being used to remediate chronic back pain. About the size of a silver dollar, this mini-battery delivers mild electrical pulses to nerves located near the spinal cord, interrupting or masking pain signals as they travel to the brain.

Low-Tech Idea Uncovers Environmental Toxins

Clinical applications of technology aren't all that's having an impact on patient care — and the level of sophistication, surprisingly, isn't necessarily critical to success. It's the idea that matters. Case in point: the Pre-Toddler Inhalable Particulate Environmental Robotic (PIPER) research project at the Environmental and Occupational Health Sciences Institute (EOHSI). A simply built robot — the invention of Stuart L. Shalat, ScD, associate professor of environmental and occupational medicine — is being used to understand how children are exposed differently to environmental toxins. The notion came to Dr. Shalat as he was watching his young son crawl on the floor to follow a toy robot. It occurred to him that children may be closer to the toxins just by virtue of the way they play and act on a daily basis. By creating a mechanism that would imitate those behaviors — and using a robot that could also filter samples — EOHSI re-

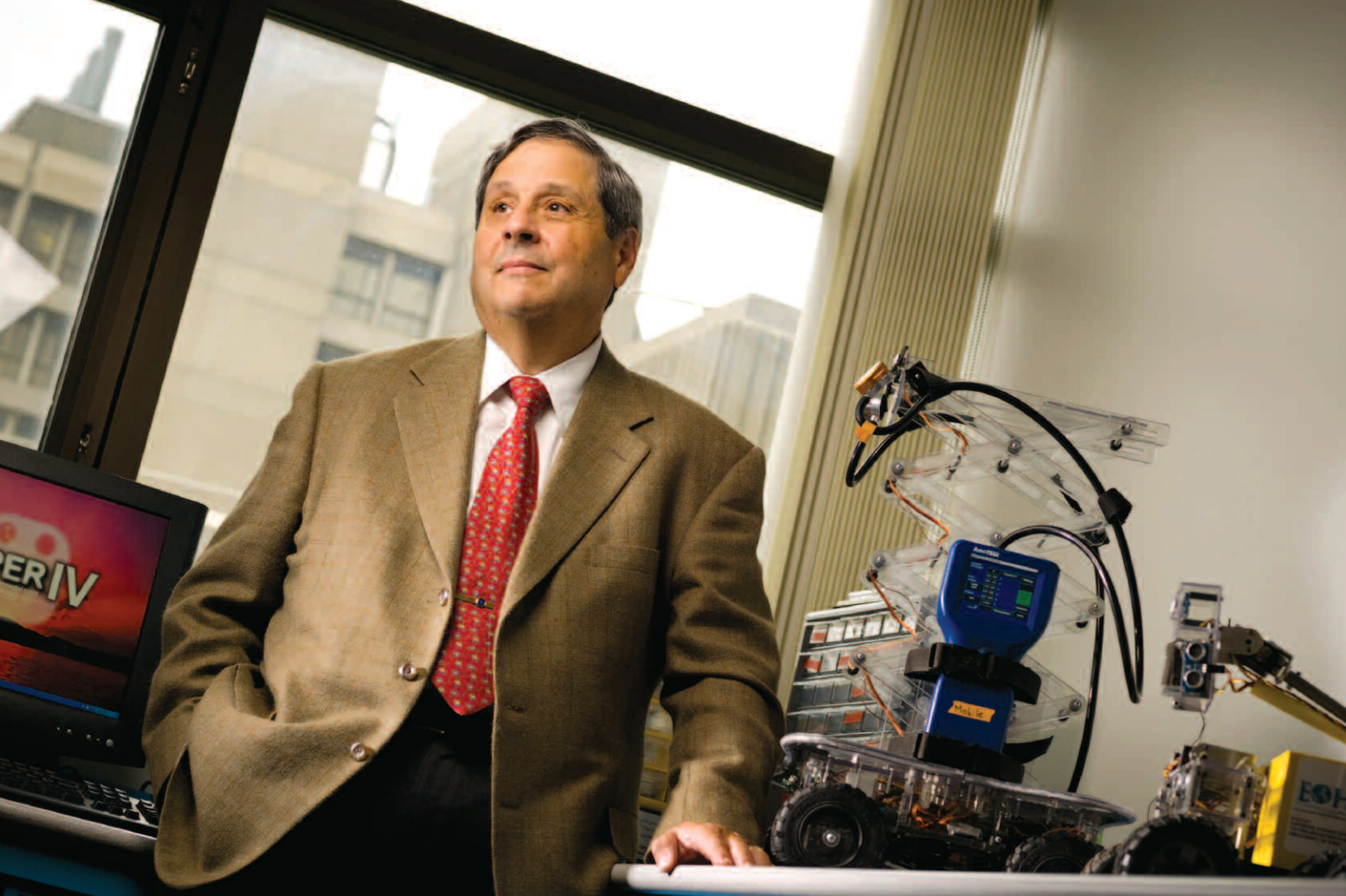


searchers could learn if there was a difference in how children are exposed because of their daily behaviors.

The prototype, made from a set of Legos, was sent on its way in homes randomly selected to participate in the project. Analysis of the first samples collected showed that children’s exposure to toxins was two to three times higher than standard U.S. Environmental Protection Agency (EPA) protocol. Even more alarming, peak exposures showed a thousand-fold increase in distribution levels. There is a supposition that health problems in children most likely are caused during these peak exposure periods.

As further National Institute of Environmental Health Sciences grants were won in both 2004 and 2007, the robots PIPER 2, 3, 4, and 5 came into operation. The current model is the size of a robotic vacuum and features a tiny air-sample pump that can collect even microbial and fungal samples. According to Dr. Shalat, “The programming of the new generation of PIPERs has evolved so that we can record data while playing, crawling, sitting, standing,

diagnosed with Parkinson’s disease, confined to a wheelchair and incapacitated, Dr. Danish’s patient, Audrey Mansfield, calls the surgery her “miracle operation.” One week after the implantation, she was out of the wheelchair. “It has changed my life,” Mrs. Mansfield declares.



and running. PIPER moves at the same speed as a child and in the same breathing zones as a child.

“The greatest thing about this technology is that we can learn how these toxins are hurting children without a child being present,” explains Dr. Shalat. Other subsequent studies have taken advantage of PIPER’s technology to aid in the discovery of how toxins affect humans. PIPER took part in a New Jersey public health study to learn if heavy metals in artificial turf had an effect on children playing on it. And a new pilot study that is a cooperative effort by the EOHSI, the University of North Carolina, Wilmington, and the University of Miami is helping to learn if chemicals present in beach sand affect children’s health.

The program was awarded a \$52,308 stimulus grant from the American Recovery and Reinvestment Act (ARRA) in relation to a current R01 grant on childhood asthma. The funds will be used to build a new PIPER robot and equip it with a real-time air-particulate monitoring device — which may contribute to

an understanding of how a child’s movements within a home suspend specific-sized particles that may cause asthmatic problems.

What could be the ultimate result of the wealth of information being collected? Examining the exposure of allergens in the home may lead to better coatings on carpets or safer cleaning strategies. Understanding what agents trigger problems in humans could lead to new treatments. By learning what factors and environmental toxins are present, better prevention strategies could be developed. “Very often the biggest breakthroughs happen not because of one thing, but an accumulation of things including chance finds,” Dr. Shalat says. “Good scientists doing good science — that’s where the magic happens.”

Imagination. Inventiveness. Innovation. These have always been the characteristics in science and medicine that have led to new discoveries. Now, technology is accelerating our ability to find new answers, giving us better ways to treat patients. In some cases, it is making the impossible possible. **M**

Very often the biggest breakthroughs happen not because of one thing, but an accumulation of things including chance finds. Good scientists doing good science — that’s where the magic happens.” says **Stuart L. Shalat, ScD**, associate professor of environmental and occupational medicine (above, with the PIPER robot).

“We recognize the contributions those with developmental disabilities can make in their communities as they lead meaningful lives,” says, Deborah M. Spitalnik, PhD, professor of pediatrics and executive director of The Elizabeth M. Boggs Center on Developmental Disabilities.



The Elizabeth M. Boggs
Center on Developmental
Disabilities changes lives

Turning Disabilities into Possibilities

By Lynda Rudolph

Photos by John Emerson

The day that Jonathan David Boggs was born in 1945, no one could have predicted he would become the catalyst that would inspire the launch of one of the most respected and recognized centers on developmental disabilities in the nation. Or that he would change the lives of thousands of people like him. David, as the family called him, was born with an umbilical-cord infection that resulted in mental retardation and cerebral palsy. His mother, Elizabeth M. Boggs, who until his birth was on the road to a career in mathematics and chemistry, shifted her focus to advocacy for the developmentally disabled.

Her influence as a policy maker and scholar became legendary and inspired the legislation that created a network of centers nationwide. Her involvement and contributions both locally and nationally challenged the conventional roles that those with developmental disabilities played in their communities. The Elizabeth M. Boggs Center on Developmental Disabilities, New Jersey's federally designated University Center for Ex-

cellence in Developmental Disabilities Education, Research, and Service, is aptly dedicated to her, and to fulfilling her vision of progressive social policy that supports individuals with developmental disabilities and their families.

Carrying on the mission of its namesake, who died in 1996 (followed by David four years later), The Boggs Center provides educational programs, technical assistance, consultation, and research to inspire others to value and promote the well-being of individuals with developmental disabilities. According to Deborah M. Spitalnik, PhD, professor of pediatrics and executive director of The Boggs Center, "We affect the community in two interlocking ways. We help enunciate a vision of full lives for people with developmental disabilities and their families, and we enhance the skills and capacities of practitioners, communities, and service systems to realize that vision. We recognize the contributions those with developmental disabilities can make in their communities as they lead meaningful lives."



Understanding the Diagnosis and Trends

Developmental disabilities are severe and chronic disabilities that originate in childhood, produce significant functional limitations, and extend throughout the life span of the individual. Conditions such as Down syndrome, Fragile X syndrome, cerebral palsy, and autism; metabolic disorders such as phenylketonuria (PKU); and degenerative disorders such as Rett syndrome are all classified as developmental disabilities. It is estimated that about 17 percent of all children have a disability or chronic health condition, and 2 percent have a serious developmental disability such as an intellectual disability/mental retardation, cerebral palsy, or autism. In the early part of the 20th century, those with developmental disabilities were feared and misunderstood, and institutionalization was a standard practice. But by the end of the century, attitudes had changed. Education and integration into the community emerged as trends that resulted in great successes.

Much of the education about developmental disabilities in New Jersey emanates from The Boggs Center. According to Michael Knox, PhD, assistant professor of pediatrics, and the center's deputy director, "People here are well grounded academically and have an impressive breadth and depth of expertise, but there is no ivory-tower mentality. We take our role seriously as a bridge between university thought and the community." One of The Boggs Center's hallmark community education offerings is an eight-part annual Developmental Disabilities Lecture Series, featuring nationally known experts, offered in central and southern New Jersey. Established in 1984, and funded in part by the New Jersey Department of Human Services' Division of Developmental Disabilities, the program has since gained a reputation for being the forum for forerunners in thought and practice innovations, and it attracts people from great distances.

Pioneers in Adding Value to Lives

Ellie Byra, whose son Matthew was born with multiple disabilities, began her relationship with The Boggs Center through the lecture series. “When I attended, I got a sense of vision for the future for Matthew that had until then looked bleak,” Mrs. Byra says. “They expose those who attend to new ideas and offer information and the tools to bring them to life.” Matthew had been in segregated schools until he was 11 years old. Mrs. Byra learned through the lecture series that there was a way for him to matriculate with his peers in a traditional school. With her advocacy and hard work, Matthew was the first child in New Jersey with severe disabilities to be totally included in a regular school environment. “Matt went to Hunterdon Central in all non-handicapped classes,” Mrs. Byra says.

Because of what Mrs. Byra has been able to do for Matthew, he and other people like him have a very different life. “As Matthew aged, the question arose about what his future would be like. Day care was not an option. We wanted him to have as normal a life as possible,” Mrs. Byra says. Today Matthew, who is 33 years old, is out in the community. He volunteers at Hunterdon Medical Center two days a week and works in the Raritan Cafeteria three days a week.

Mrs. Byra also believes that the lecture series and The Boggs Center’s educational efforts have had a huge impact on family members who have a loved one with developmental disabilities. “You learn how to deal with behavioral issues, how to understand what resources are available to you,” says Mrs. Byra. “Education is empowerment.”

Along with the lecture series, The Boggs Center is instrumental in bringing state-of-the-art practices to New Jersey. “The Boggs Center serves a unique role as a touchstone to give us balanced, person-centered guidance,” says Jennifer Velez, commissioner of the New Jersey Department of Human Services. “I feel it provides a safe space where we can bounce ideas off of each other. I know when I ask a question I’ll get feedback about a policy being considered that really takes the individual into consideration.”

Teaching, Training, Serving, Healing

Making faculty and staff available to serve as subject-matter experts, and on task forces and subcommittees, furthers the center’s mission to keep the dialogue going and the programs and thoughts about individuals with developmental disabilities evolving. By stimulating interest in what’s being done for those with devel-

Ellie Byra, whose son Matthew was born with multiple disabilities, believes that the lecture series and The Boggs Center’s educational efforts have had a huge impact on family members who have a loved one with developmental disabilities.



“You learn how to deal with behavioral issues, how to understand what resources are available to you,” says Mrs. Byra. “Education is empowerment.”

opmental disabilities, and by responding to a felt need, The Boggs Center raises awareness and interest, which in turn spawns a more intensive forum to take actions and solve problems. Last year alone, The Boggs Center conducted 838 activities, consultations, and advisory meetings with state and community agencies, school districts, and families. The faculty and staff serve on more than 20 national committees and more than 36 state and local committees to share best practices and work collaboratively to build capacity and create change.

One of the cornerstones of The Boggs Center’s educational efforts is the training it provides to students and residents in the Department of Pediatrics. All of the students in the required third-year pediatrics clerkship — most of



whom have had minimal prior experience with people with disabilities — spend 12 hours at The Boggs Center’s Seminar on Family Centered Care and Developmental Disabilities. First, there’s didactic study, during which the students’ own values, perceptions, and attitudes are clarified. Then a family member of a child with a developmental disability speaks about the family-centered-care approach. The most dramatic element — and for some students a career-altering event — is the component of the program during which students spend time in the homes of families who have a child with a developmental disability. The encounter gives the student an opportunity to see the child in the context of his or her family, talk with the family, and learn what physicians can do better to meet the challenges of those living with developmental disabilities.

Ginny and Stephen Bryant and their four-year-old daughter, Rachel, who has Down syndrome, are a host family for The Boggs Center medical students’ training initiative. Rachel typically meets and greets the students at the front door of the Bryants’ home and spends an hour

having a tea party with them. The students then join the family for dinner and, once Rachel goes to bed, have a conversation with Mr. and Mrs. Bryant. “It’s amazing to see the transformation of the students during the short time they’re with us,” says Mrs. Bryant. “Their expectations are blown away when Rachel makes eye contact and talks with them.” The Bryants agreed to participate in the program because they feel it is critical for medical providers to understand not just what Down syndrome children can’t do, but what they can. “It’s rewarding to leverage our influence on these students that could potentially have a ripple effect in the medical community,” adds Mrs. Bryant.

Erica and Steven Gendel and their son Joshua have also participated in the training initiative for two years. Joshua weighed just 650 grams at birth. His medical issues are significant, including severe cerebral palsy, seizures, vision impairment (he is legally blind), and Crohn’s disease. He has had more than 30 neurosurgeries, four gastrointestinal surgeries, and countless diagnostic tests in his young life.

As challenged as he is, Joshua is a sociable, happy child who refuses to let his medical and developmental challenges get him down. Although he's cognitively delayed, he attends school and does well in math. Mrs. Gendel feels that the work they do with medical students is valuable: "We want them to know what life is like on the other side of the wall. To be a better doctor, you have to be sensitive to all the issues people are facing." The typical interaction involves dinner with the family. "We pack a lot into that time at our house. At the end of the evening, we ask the students what they got out of being with us," Mrs. Gendel says. Some students give them hugs. Some shed tears hearing about and seeing Joshua, an outgoing, lively child who has been through so much. "In the end, we feel if we've made an impact on even a couple of students, to listen more, to see the big picture, and embrace a sensitivity, we've done our job," Mrs. Gendel adds.

At the end of the rotation, the students are asked to offer an evaluation of the experience. Among the comments (given anonymously), one was that, "it opened my eyes to a personal story of a disabled child." Another student offered, "I would hope every medical student was able to get this experience. I now feel more comfortable interacting with people with developmental disabilities and know what families like," and the person added that the experience would help the student "truly try to walk in the parent's and patient's shoes to understand their hardships and necessary changes in their health care." As to how the rotation will affect future dealings with families that include children with disabilities, comments included, "I learned to really listen to the family and that the families really appreciate physicians working as a team to provide the best care for their child."

There are other collaborations and programs that help provide care and education to those with developmental disabilities. The Boggs Center, in collaboration with the Department of Family Medicine and Community Health — and utilizing a grant from the Robert Wood Johnson Foundation and state funding — provides health care and a medical home to adults with developmental disabilities at the Family Practice Center. Family medicine residents care for patients with developmental disabilities throughout their residency. The Boggs Center has had a hand in making sure that children and adolescents with disabilities are prepared for meaningful adult life by working with school districts to provide behavioral support and educational and work experiences in the community. The center also is working with the state and provider agencies in New Jersey to ensure that children with significant behavioral disorders can live in the community.

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An Encouraging Future

One of the promising but challenging statistics is that those with developmental disabilities are living 90 percent longer. There is a growing need to serve these older populations. It requires a shift in thinking to build services and programs around people with developmental disabilities so that they can live and work in the community and age in place. "We are committed to promoting the understanding that people with intellectual disabilities are active, valuable individuals who can have a career, a social life, and make a contribution to society," Dr. Spitalnik emphasizes.

For David and Elizabeth Boggs, there is no legacy more fitting. **M**

Genetics and Neuroanatomy: Teamed to Solve

THE

Mysteries of Autism

BY KATE O'NEILL

A Passion for Puzzles

Christopher Boone has Asperger's syndrome. Although this form of autism is at the high-functioning end of the disorder's broad spectrum, it creates characteristic social and emotional hardships for Christopher — the fictional, 15-year-old narrator of the best-selling 2003 novel by Mark Haddon, *The Curious Incident of the Dog in the Night-Time*.

Christopher's challenges are not unusual for people with autism spectrum disorder (ASD): he is virtually incapable of deciphering people's emotions, obsessive in his interests, and inflexible in his views. But ASD gives him gifts as well, such as his passion and talent for mathematics, puzzles, and deductive logic.

ASD also gives Christopher a hero: Sherlock Holmes. Following the fictional detective's deductive methods, he solves a neighborhood crime by forcing himself to step outside his stringently self-limited world. Agonizingly, he solves the mystery on his own terms, not only expanding his own ability to decode people's emotions, but also

providing the book's readers with a window into the little-known inner world of autism.

Autism Spectrum Disorder:

*A Mystery with More Questions
Than Answers*

Although autism has probably existed throughout human history, it was not named until the 1940s. The designation of autism usefully grouped classic symptoms of ASD under one umbrella. But progress in understanding the disorder has been slow, and 65 years later, a full understanding of its etiology and pathogenesis is likely to remain elusive well into the future.

For several decades, ASD was thought to be caused by external factors, including parenting style. But when researchers discovered that people with autism share not only specific behavioral symptoms and coordination difficulties, but also certain brain malformations, it became clear that the explanation for ASD would prove much more complex than initially believed.

Today, most researchers and autism

UMDNJ-Robert Wood Johnson Medical School has brought together the complementary expertises of James H. Millonig, PhD, assistant professor of neuroscience and cell biology and resident member, Center for Advanced Biotechnology and Medicine (right), and Emanuel DiCicco-Bloom, MD, professor of neuroscience and cell biology and pediatrics, division of child neurology and neurodevelopmental disabilities, to understand and dismantle the mysteries of autism.

JOHN EMERSON

spokespeople recognize ASD as a complex, inherited, neurodevelopmental disorder. In addition, a high likelihood exists that, in some cases, the disorder is triggered by environmental factors.

Unlike Huntington's disease or Down syndrome, which are caused by one inherited gene or an entire chromosome,



autism results from the interaction among multi-genetic components and external factors. Alone, any — or even many — of these factors would not cause autism, but in permutations as yet unspecified, they create a “perfect storm” in brain development that leads to ASD.

Because autism has compound causes, understanding the disorder requires collaborative research, using the tools of diverse disciplines including genetics, neurology and physiology, epidemiology, and statistics. A bi-disciplinary collaboration at UMDNJ-Robert Wood Johnson Medical

School is among the leading studies aimed at dismantling the mysteries of autism. It brings together the complementary expertises of James H. Millonig, PhD, assistant professor of neuroscience and cell biology and resident member, Center for Advanced Biotechnology and Medicine, and

Growing Prevalence: Another Mystery of Autism

One of the mysteries of autism is its apparently increasing prevalence. Estimates of the risk of ASD vary, but the latest data from the Centers for Disease Control and Prevention (CDC) indicate that 1 percent of the children in the United States have been classified with the disorder — or about 1 child in 100. Diagnoses have increased by 10 percent annually, doubling in the last decade — data that may be influenced by revised referral patterns and diagnostic standards, or by diagnoses that substitute ASD for mental retardation. New criteria that qualify children with autism for special-education programs can also encourage clinicians to provide the diagnosis to enhance access to therapy. Another puzzle for researchers is the recent finding that ASD occurs in geographic clusters, an observation suggesting that environmental factors, including pollutants, and access to high-quality care might contribute to autism prevalence. To be classified as autistic, a child must be diagnosed by the age of three, but diagnosis is complicated because it relies on evaluation of a complex group of behavioral symptoms, which can vary widely in both expression and intensity. ASD ranges from Asperger's syndrome at the high-functioning end of the spectrum, through pervasive developmental disorder, to severe autism. In an infant, symptoms of ASD might include marked irritability or passivity, sleeplessness, or a lack of social reciprocity. Later, a normal, babbling toddler may turn quiet, introverted, or self-abusive. Early diagnosis is a priority, because behavioral interventions can facilitate developmental progress and moderate intensification of the disorder.

Emanuel DiCicco-Bloom, MD, professor of neuroscience and cell biology and pediatrics, division of child neurology and neurodevelopmental disabilities.

Dr. Millonig, a developmental geneticist, seeks to identify autism-susceptibility genes and decode their function. Dr. DiCicco-Bloom, a child neurologist, applies his knowledge of developmental neuroanatomy and neuroimaging to analyzing the physiological impact of autism-susceptibility genes and understanding the pathogenesis of the disorder.

“Cross-disciplinary collaborations are ideal for this sort of research,” says Dr. Millonig. “They get you out of your niche, encourage the cross-germination of ideas, and help you see the next step in your research.” In their current collaboration, Dr. Millonig and Dr. DiCicco-Bloom pursue parallel lines of inquiry aimed at identifying and validating at least one autism-susceptibility gene among up to 20 possible candidates and determining how, when, and why it is expressed during the lifetime of people with autism. In addition, they hope to determine how other genes and external environmental factors interact with autism-susceptibility genes to trigger the disorder.

“We want to identify at least one variant,” says Dr. DiCicco-Bloom, “to help us understand how gene regulation predisposes a child to autism and by what cellular pathways.”

ENGRAILED 2: *A Prime Suspect*

In 2005, the National Institute of Mental Health awarded a five-year, \$2,268,670 multi-institutional grant to Dr. Millonig and Dr. DiCicco-Bloom. The grant supports their project, “The Identification and Functional Assessment of Autism Susceptibility Genes.” Dr.

Millonig has further support from the National Institutes of Health (NIH), U.S. Department of Defense, New Jersey Governor's Council on Autism Research, and Autism Speaks. Dr. DiCicco-Bloom has additional support from the NIH and the National Alliance for Autism Research. Other grants are pending.

The RWJMS Piscataway campus is one of three sites for the current study; the others are at Rutgers, The State University of New Jersey, and the University of Ohio. Dr. Millonig is the principal investigator for the RWJMS site; Dr. DiCicco-Bloom serves as co-investigator. Their work builds on a 2003 collaboration between Dr. Millonig and Linda Brzustowicz, MD, professor of genetics, Rutgers University, in which they were assisted by Dr. DiCicco-Bloom.

A brain-based gene named ENGRAILED 2 (EN2) is the focus of their autism research. EN2 became a gene of interest when it was observed that mice with a certain mutation in the gene displayed brain malformations similar to malformations in the brains of humans with ASD. To investigate whether EN2 was associated with autism, Dr. Millonig and Dr. Brzustowicz compared the DNA of ASD-affected children with the DNA of the children's siblings. They found a DNA variant called the A-C haplotype that was consistently inherited more frequently in individuals with ASD than in their unaffected siblings.

In two subsequent data sets, Dr. Millonig and Dr. Brzustowicz replicated these results. Dr. Millonig says, “The probability that these findings would occur by chance are approximately one in a million.”

The next step was to learn whether the A-C haplotype was functional. Initially, Dr. Millonig

studied the function of the A-C haplotype in mouse neuronal cultures. He observed that the A-C haplotype results in increased expression of the gene. He then moved his studies *in vivo* by generating human EN2 transgenic mice. He again observed that the A-C haplotype results in increased expression in the adult brain.

The next step is to determine where and when the EN2 variants are functional during brain development, says Dr. Millonig. “These data will help develop hypotheses of how the A-C haplotype affects development of the central nervous system,” he adds. “We hope that ultimately the information will help translate our findings into new therapies for ASD.”

Cerebellar Pathways Hold New Clues

Neuroimaging and pathological studies of the brains of people with autism show that the cerebellum is significantly underdeveloped. This finding has led to a separate line of inquiry testing the hypothesis that EN2 might play a role in the development of the cerebellum. Evidence of the role of EN2 in cerebellar development was provided ten years ago, when “knock-out” mice, in which En2 (mouse *Engrailed*) was eliminated, proved to have a cerebellum that was up to 30 percent smaller than mice in the control group.

The developmental pathways of some other autism-associated genes, including Fragile X, are better known than the pathways of EN2. Dr. DiCicco-Bloom applies that knowledge to defining EN2’s genetic and molecular protein-signaling pathways. In the case of Fragile X, too much glutamate signaling in the synapses alters protein synthesis, but an antagonist can be used to offset that negative effect. Perhaps, he says, a similar therapy

could be used to correct pathways downstream of EN2, when dysregulation causes chaos.

Dr. DiCicco-Bloom studied the role of EN2 by examining the effects of deleting the mouse gene (*En2*), on individual cells as well as on the gross anatomical formation of the cerebellum and the whole brain. Comparing measurements of brain structures in the transgenic mice, he has found that tiny differences can have huge effects. This is not surprising, he notes, considering that a 1 percent variation in the genome can separate entire species.

Dr. DiCicco-Bloom credits a substantial finding about the *En2* knock-out mouse to Ian Rossman, PhD, MD ’09. Dr. Rossman, who did his doctoral work with Dr. DiCicco-Bloom, found that in the knock-out mouse, granule cells of the cerebellum — the most numerous cells in the brain — proliferate more and differentiate less. “The correct numbers of granule cell precursors must be made before they can differentiate,” he says. “But in the absence of *En2*, the precursors never reached the stage where they would develop axons and dendrites.”

Dr. Rossman further tested his hypothesis and substantiated his finding. He discovered that when he doubled the amount of *En2* in the mouse, the cells stopped proliferating sooner and differentiated more. “It was the first time the cellular role of this transcription factor had been described,” says Dr. DiCicco-Bloom, “and it helped explain the etiology of ASD.”

The brain stem, where EN2 is found before development of the cerebellum, is also the locus of the brain’s three monoamine neurotransmitters: serotonin, norepinephrine, and dopamine. The axons of the monoamine neurons project into the forebrain, including the cerebral cortex and hippocampus. Could EN2 in the brain stem be important for monoamine

neurotransmitter development in the forebrain? Many mental disorders are related to the altered production of monoamines, which determine behavior patterns, mood, and perception, says Dr. DiCicco-Bloom.

Overproduction or underproduction of these monoamines play a role in attention, mood, affect, energy, and response to novelty in one’s environment as well as obsessive disorders and tics — all symptoms of ASD. Indeed, serotonin is found at reduced levels in the brains of children with autism. In a clinical trial in Michigan, children with ASD were given a serotonin-like drug, which improved some of their social symptoms — a promising lead.

In very recent work with the *En2* knock-out mice, monoamine levels were also found at reduced levels in the forebrain. This finding may suggest that changes in EN2 expression due to the A-C haplotype may, in fact, affect forebrain monoamines and the behaviors they influence. Proof of this mechanism could lead to rational pharmacological therapies, based on a person’s EN2 genotype.

Autism researchers will continue discussing their discoveries and merging their conclusions. Collaborative thinking is the only way that science can unravel autism’s mysteries, says Dr. DiCicco-Bloom, and attain the goal of translating scientific findings into therapies that will help people with autism. **M**

Current information on autism is available on the Web sites of the CDC (<http://www.cdc.gov/ncbddd/autism/index.html>) and the National Institute of Mental Health (<http://www.nimh.nih.gov/health/topic>). In addition, the Simons Foundation Autism Research Initiative is an excellent resource for better understanding the science of autism: <https://sfari.org/>.



RWJMS Launches New Jersey's First Residency Program for Medical Physicists

In 2008, UMDNJ-Robert Wood Johnson Medical School and The Cancer Institute of New Jersey (CINJ) advanced their already-extensive program offerings for cancer patients by launching the state's first residency program for radiation oncology physicists — experts specially trained to work with multi-disciplinary teams to administer meticulously correct doses of radiation to cancer patients undergoing therapy.

Directed by Ning J. Yue, PhD, professor and vice chair, Department of Radiation Oncology, and chief, division of radiation physics, the two-year residency program — still a relatively rare offering at most teaching hospitals — has its first three residents on board and a plan to add one new resident each year.

The school hopes to have the program fully recognized next year by the American Board of Radiologists (ABR), which certifies radiologists, radiation oncologists, and medical physicists. By next year, it will also need accreditation from the Commission on the Accreditation of Medical Physics Educational Programs (CAMPEP), which accredits medical physicist residency programs.

Once those accreditations are in place, says Dr. Yue, “anyone who trains here will be recognized by other schools and hospitals around the country.”

Bold New Initiative by Certifying Agency

Until now, oncology physicists have been certified by the ABR following a broad array of training paths, such as through post-doctoral, research, or clinical training programs. But beginning in 2014, the ABR will require that all radiation oncology physicists complete a CAMPEP-accredited residency program, such as the one offered by RWJMS, before they are allowed to take the board certification exam.

The ABR requirement reflects the increasing complexity of the field, as well as the growing sophistication of the

Ning J. Yue, PhD (center), professor and vice chair, Department of Radiation Oncology, and chief, division of radiation physics, is director of the state's first residency program for radiation oncology physicists. The program has its first three residents on board, with a plan to add one new resident per year. With Dr. Yue are Lydia Levinson, MS (left), and Jinghao Zhou, PhD, medical physicist residents in the program.

BY JONI SCANLON
PHOTOS BY JOHN EMERSON

equipment used, according to Dr. Yue. By initiating a program now, the medical school will be a bit ahead of the trend, although other programs around the country do already have up-and-running residency programs, he noted.

Yet there is an inadequate number of programs, and with a 2014 deadline, many teaching programs will be scrambling to put them in place. For this reason, as well as the reputation of the radiation oncology program at RWJMS, entry to the school's new residency program is expected to be highly competitive, says Bruce Haffty, MD, professor and chair, Department of Radiation Oncology, and associate director, CINJ.

The oncology physicists in the program will serve on a multi-disciplinary team that treats patients on a case-by-case basis, depending on their type of cancer, says Dr. Haffty. He describes their role with this analogy: "They are to the radiation oncologist what a pharmacist is to the prescribing doctor. If we prescribe 200 radiation units, we are relying on the physicists — working closely with the dosimetrists who deliver the planning — to make sure the machine is calibrated to deliver exactly what's needed and assure quality control."

Enhanced quality control has been a major initiative for the program in the past several years, according to Molly Gabel, MD, associate professor of radiation oncology and chair, Radiation Oncology Performance Improvement Committee. "The physicist's role is critical to many of our quality initiatives, ranging from timeliness of care to the prevention of treatment errors," she says. "Exposure to an aggressive quality assurance program is important for physicists-in-training and complements the physics division's outstanding research and clinical expertise."

Putting the Program on the Map

It is this cross-functional team of professionals, which will now include the new residents, that has really put the program on the map, says Dr. Haffty.

"We're offering patients the care of a team that includes the radiation oncologist as well as advanced practice nurses, therapists, physicists, and dosimetrists," he says. In addition, the nurses and therapists are involved in seeing patients in consultation and discussing their treatment. "Our patients get the benefits of all these individuals involved in their care. If they're having any difficulty at all, whether it's related to nutrition or pain, this team is there to help them."

The school's radiation oncology program is well regarded nationally. This is perhaps reflected by the program's renowned, multi-disciplinary approach to patient care, as well as the sheer number of oncology specialists — currently eight — who are on call to review patient cases, says Dr. Haffty.

"We offer a multi-discipline health-care environment in which each patient's case is presented to a tumor board comprising medical oncologists, surgeons, nurses, radiologists, plastic surgeons, and pathologists, who are all present to discuss the case," he says. This team reviews each case individually throughout the course of treatment to

determine whether the patient needs surgery, radiation, or chemotherapy. "We discuss the overall treatment of the patient, not just the radiation treatment."

The program also is unusual in that it has an array of separate tumor boards staffed by experts on many types of cancers. Indeed, the program's oncologists specialize in everything from cancers of the lung, gastrointestinal tract, and prostate to pediatric, gynecologic, breast, and uterine cancers, he said. This is unlike many hospitals, Dr. Haffty says, where there may be just one tumor board reviewing a wide range of cancer cases.

Another aspect that distinguishes the radiation program is the quality of its state-of-the-art radiation equipment. "We really have the full spectrum of all the most advanced radiation equipment that's currently available," says Dr. Haffty.

The new medical physicist residency program will be funded in part by residency training grants from the American Society for Therapeutic Radiology and Oncology Education and Development Fund, together with the American Association of Physicists in Medicine.

With the addition of the residency program, RWJMS and CINJ are doing all they can to provide high-quality training to the next generation of medical physicists, helping not only to improve cure rates, but also to ease some of the pain and worry that cancer patients feel, says Dr. Yue.

"That's why we started a clinical medical physicist residency program here — to ensure the quality of treatment our patients receive is the best and to improve the patient's comfort level and treatment advocacy," he says. **M**



"We really have the full spectrum of all the most advanced radiation equipment that's currently available," says Bruce Haffty, MD, professor and chair, Department of Radiation Oncology, and associate director, CINJ.

L E T T E R F R O M T H E
A L U M N I A S S O C I A T I O N
P R E S I D E N T

Dear Alumni and Friends:

Welcome to the spring issue of *Robert Wood Johnson Medicine*!

I would like to personally thank everyone who attended the Alumni Reunion Dinner Dance in October. It was a wonderful celebration, filled with great school spirit. Alumni were delighted to return to RWJMS to reminisce and enjoy the festivities with fellow classmates, faculty members, and students.

Congratulations to Alfred F. Tallia, MD '78, MPH, the recipient of the Distinguished Alumni Award. A great turnout from the Class of 1978 was present to honor Al. Our best wishes to Honorary Alumni Award recipients Nancy Stevenson, PhD, and William Sharrar, MD. We hope you enjoy the collection of Alumni Reunion Weekend photos on pages 64–66.

Our 22nd Annual Career Night in January was another terrific event. The Great Hall was filled to capacity with physicians and students, interacting and discussing career specialties. Career Night has become a bigger and better event each year thanks to your participation. It also serves as a “mini-reunion” for alumni. If you reside in the area, please join us next year.

The Alumni Association contributes in a very real and tangible way to the success and future of RWJMS by providing financial aid to our students. Thanks to your generous support, our Board of Trustees awarded \$152,500 in scholarships and loans to RWJMS students during the 2009–2010 academic year.

Financial support from alumni serves two purposes. We support outstanding young people who represent the future of medicine, and we also provide a vehicle that allows classmates to reunite, work together, and remain active in the RWJMS community. We look forward to your generous contribution to the 2010 Annual Fund.

I would like to invite all RWJMS alumni to become active members of the Alumni Association. You may get involved by participating in an event, making a contribution to support student scholarships and loans, or becoming a member of the board. Please join us at www.facebook.com by searching for Robert Wood Johnson Medical School Alumni Association.

We look forward to working together to support RWJMS as it continues its pursuit of excellence throughout this new decade.



Best regards,

Nancy Sierra, MD '89
President, RWJMS Alumni Association

P.S. Please visit our Web site at <http://rwjms.umdj.edu/alumni> and click on *Make a Gift* to contribute to the 2010 Alumni Association Annual Fund.

R W J M S • A L U M N I

NEWS

ALUMNI REUNION WEEKEND 2009

The 2009 **Alumni Reunion Weekend**, on October 10–11, was a great success! Alumni from across the country gathered to celebrate the anniversaries of their graduation from RWJMS. Faculty members and students joined in the festivities.

The Dinner Dance, held at the Hilton East Brunswick, honored the following anniversary classes: 1968, 1969, 1973, 1974, 1978, 1979, 1983, 1984, 1988, 1989, 1993, 1994, 1998, 1999, 2003, and 2004.

The Alumni Association presented the Distinguished Alumni Award to **Alfred F. Tallia, MD '78, MPH**, professor and chair, Department of Family Medicine and Community Health. There was a large and enthusiastic turnout from the members of the Class of 1978 to honor Dr. Tallia.

Honorary Alumni Awards were presented to **Nancy Stevenson, PhD**, professor of physiology and biophysics, and **William Sharrar, MD**, professor of pediatrics.

A Meritorious Service Award was given posthumously to **Parvin Saidi, MD**, professor of medicine and chief of hematology and oncology. The award was presented to her daughter, **Lara Terry, MD '95**.

Upon her retirement, **Stephanie Meister** received an Alumni Service

Award in recognition of her selfless dedication, humanistic spirit, and tireless commitment to RWJMS students and alumni.

Sunday brunch concluded the festivities. It gave alumni another opportunity to get together in a casual setting and catch up on what is happening in their lives.



1. Alumni reminisce and share photos.
2. Left to right: Alan Schwartzstein, MD '78, and Sonia Garcia Laumbach, MD '99, assistant dean for student affairs, present the Distinguished Alumni Award to Alfred F. Tallia, MD '78, MPH, professor and chair, Department of Family Medicine and Community Health.
3. Tamara LaCouture, MD '94, vice president/president-elect, Alumni Association, presents an Honorary Alumni Award to William Sharrar, MD, professor of pediatrics.



4. Left to right: Peter S. Amenta, MD, PhD, dean; Edna Amenta; Geza Kiss, MD '95, co-chair, Alumni Reunion Committee; Denise Kiss.
5. Nancy Sierra, MD '89, president, Alumni Association, and her husband, Calvin Sierra.
6. Members of the Class of 1978 celebrate the 30th anniversary of their graduation.
7. Hank Lubin, MD '83, treasurer, Alumni Association, and his wife, Sandi-Byer Lubin.
8. Geza Kiss, MD '95, presents an Honorary Alumni Award to Nancy Stevenson, PhD, professor of physiology and biophysics.
9. Geza Kiss, MD '95, presents the Meritorious Service Award given posthumously to Parvin Saidi, MD, professor of medicine and chief of hematology and oncology, to Lara Terry, MD '95, Dr. Saidi's daughter.
10. Sonia Garcia Laumbach, MD '99 (right), presents an Alumni Service Award to Stephanie Meister.
11. Ernie Biczak, MD '77 (center), and his wife, Cathy Biczak, renew acquaintance with Alan Schwartzstein, MD '78.
12. Left to right: Michael Spedick, MD '78, and David Barad, MD '78, show yearbook photos to another guest.

PHOTOS BY T.A. SUNNISTROM

A L U M N I NEWS

ALUMNI REUNION WEEKEND 2009



13. Deborah Camiscoli, MD '79 (left), chats with Francine Sinofsky, MD '81, co-chair, Alumni Reunion Committee.

14. Eduardo Fernandez, former president, Alumni Association, and his wife, Brenda Fernandez.

15. Left to right: Members of the Class of 1984: Elyse Rubenstein, MD; Ann-Lee Yuan, MD; Paul Figlia, MD; and Mary Holowsinsky, MD.

16. Peter S. Amenta, MD, PhD, dean, and students enjoy the festivities.

17. Left to right: Members of the Class of 1978 — Philip Zazove, MD; Wally Avello, MD; and

Dennis Parenti, MD — are delighted to get together at the reunion.

18. Students enjoy looking at photos in anniversary class yearbooks.

19. Left to right: John Kostis, MD, John G. Detwiler Professor of Cardiology and professor and chair, Department of Medicine; Michael Spedick, MD '78; and his wife, Deborah Camiscoli, MD '79.

PHOTOS BY A.J. SUNDBLUM

By Kate O'Neill

MANUEL JIMENEZ, MD '06, SELECTED FOR CAPITOL HILL HEALTH FELLOWSHIP

The Joseph P. Kennedy Foundation selected **Manuel E. Jimenez, MD '06**, for a one-year fellowship on Capitol Hill. Dr. Jimenez is working on health and disability policy issues in the office of Senator Jeanne Shaheen, Democrat from New Hampshire.

In 2008, Dr. Jimenez was the lead author among students, alumni, and faculty of an article published in the *Journal of Healthcare for the Poor and Underserved*. The article, "The Promise Clinic: A Service-Learning Approach to Increasing Access to



COURTESY OF MANUEL JIMENEZ, MD '06

Health Care," discussed the success of a project created in 2004 and operated

by RWJMS medical students, including Dr. Jimenez. The goal of the clinic, which continues to thrive, is to increase access to primary care for an underserved population, while strengthening the cultural competence of medical students.

"This is a great story about the success of a student with a community health and policy focus," says Alfred F. Tallia, MD '78, MPH, professor and chair, Department of Family Medicine and Community Health. Dr. Tallia, who mentored Dr. Jimenez at RWJMS, adds, "This highlights the importance of our community health mission and demonstrates how our students learn and prosper from it."

Dr. Jimenez recently completed a residency in pediatrics at Children's National Medical Center in Washington, D.C. He will join the Robert Wood Johnson Foundation Clinical Scholars Program at the University of Pennsylvania in 2010, when his wife, Jennifer Endres Jimenez, MD '07, begins a pediatrics fellowship in gastroenterology at the Alfred I. duPont Hospital for Children in Wilmington, Delaware. — K.O'N.

Mahalia Desruisseaux, MD '00

Fighting Malaria with Head and Heart

Every 30 seconds, malaria takes the life of a child. Cerebral malaria (CM) is part of the spectrum of severe malaria, which is caused for the most part by infection with *Plasmodium falciparum* and results in 30 percent mortality. In children, the mortality rate is much higher, particularly in Africa, where children less than five years old account for 8 percent of malaria-related deaths worldwide. Death comes quickly, and while survivors may be afflicted with profound lifelong neurological complications, including ataxia, hemiplegia, learning disabilities, and memory impairment, long after their malaria has been successfully treated.

Mahalia Desruisseaux, MD '00, instructor of medicine, Albert Einstein School of Medicine of Yeshiva University, is committed to identifying the pathogenesis of this devastating disease. After a clinical fellowship in infectious diseases at Einstein, Dr. Desruisseaux decided to pursue her interest in CM.

"She brought the topic to our lab. It was her own initiative," says her mentor Herbert Tanowitz, MD, professor of pathology and laboratory medicine at Einstein. "She developed the project to study CM in a mouse model. She made interesting observations about the possible role of endothelin in the pathogenesis of CM and how its expression may contribute to an array of related neurological dysfunctions. She is an excellent scientist, a wonderful human being, and we are delighted to have her here."

— Continued on Page 68

MARK YOUR Calendar:

May 20, 2010

Graduation Banquet
Westin Hotel, Princeton

May 24, 2010

Convocation

May 26, 2010

Commencement

For additional information,
Contact Roberta Ribner at
732-235-6310 or
email: ribnerrs@umdnj.edu.

Continuing Medical Education

For information about
RWJMS Continuing
Medical Education
Opportunities, please visit
our Web site:
www.umdnj.edu/ccoe/rjwms.

YOUNG ALUMNI

— Continued from Page 67



COURTESY OF ALBERT EINSTEIN COLLEGE OF MEDICINE

In addition to pursuing her research, Dr. Desruisseaux sees patients in the HIV/AIDS clinic at Montefiore Medical Center. Her warm personality and her fluency in French, her first language, have made her popular with the clinic's many patients from West Africa and the Caribbean, says Dr. Tanowitz, adding, "Everyone wants to see Dr. Mahalia."

In humans, CM develops when sporozoites of mosquito-borne *Plasmodium falciparum* invade and destroy red blood cells, which mass in the endothelial lining of cerebral capillaries. Mechanical blockage ensues when white blood cells and platelets respond to the mayhem, further obstructing cir-

ulation in the brain, leading to a vasculopathy and resulting in the encephalopathy that occurs during CM. Untreated, the disease often leads to death within days.

By studying the host response, as well as the alterations in the expression of endothelin mRNA in the brains of CM-infected mice, Dr. Desruisseaux analyzes the mechanisms that can lead to injury of cerebral vasculature and to downstream nerve damage in survivors. Someday, she hopes, her findings will

Mahalia Desruisseaux, MD '00, instructor of medicine, Albert Einstein School of Medicine of Yeshiva University, is committed to identifying the pathogenesis of malaria.

help lead to adjunctive therapies to mitigate the neurological sequelae of the disease.

In 2007, Dr. Desruisseaux won a five-year Burroughs-Wellcome Fund Career Award for Medical Scientists, established to increase the number of physician-scientists conducting biomedical research. It was her first award from Burroughs-Wellcome and the latest in a series of grants that began during her residency at North Shore University Hospital and continued dur-

ing her fellowship in infectious diseases at Einstein and Montefiore. Other awards have included the Colin L. Powell Minority Post-Doctoral Fellowship in Tropical Disease Research, from the Infectious Diseases Society of America's Education Research Foundation and the National Foundation for Infectious Diseases.

Ronny Drapkin, MD '98, PhD Shifting the Paradigm of Ovarian Cancer Research

Early detection of ovarian cancer — a common, treatment-resistant, and often fatal disease — is the research focus of Ronny Drapkin, MD '98, PhD, assistant professor of pathology, Harvard Medical School. Dr. Drapkin is an associate member of the Center for Molecular Oncologic Pathology, a joint venture between the Dana Farber Cancer Institute (DFCI) and Brigham and Women's Hospital (BWH), where he is a principal investigator/scientist. His laboratory is funded by grants from the National Cancer Institute of the National Institutes of Health as well as the Ovarian Cancer Research Fund, Novartis Pharmaceuticals, and private foundations.

Dr. Drapkin was a leading participant in a multi-institutional project that identified HE4, a new biomarker for ovarian cancer. In October 2008, the U.S. Food and Drug Administration (FDA) approved an HE4 blood test for ovarian cancer. This was the first new biomarker approved by the FDA since



NR030 AWS

His laboratory continues the work on the genetics of ovarian cancer that he began as a post-doctoral researcher at the DFCI at Harvard, with David Livingston, MD. Later, in collaboration with a former clinical mentor, Christopher Crum, MD, at BWH, Dr. Drapkin focused on the pathogenesis of the disease. “Dr. Drapkin was one of the few investigators involved in a paradigm shift in ovarian cancer research,” says Dr. Crum.

Dr. Drapkin initiated an analysis of the P53 sig-

Early detection of ovarian cancer is the research focus of

Ronny Drapkin, MD '98, PhD, assistant professor of pathology, Harvard Medical School.

CA125 was approved more than 20 years ago. Ongoing translational and clinical studies are aimed at defining the efficacy of HE4 in predicting ovarian malignancies early, while they are still localized and potentially treatable.

“Blood tests for HE4 are now available and could be performed in the community setting, by a gynecologist. These patients could then be referred to the proper center for further treatment and testing,” says Dr. Drapkin. HE4 testing may well supplement the widely used serum biomarker CA125, a cancer antigen that produces frequent false-positive results. “Unlike CA125, HE4 does not seem to be triggered by benign conditions,” adds Dr. Drapkin.

nature gene for evidence of DNA damage and created a cell culture model to study early DNA damage in the epithelium of the fallopian tubes — not the ovaries, where these cancers had been thought to arise. “This is proving to be an important pathway in the genesis of this common and lethal form of ovarian cancer,” adds Dr. Crum.

Located at the DFCI, Dr. Drapkin’s lab integrates genomic studies of human ovarian cancer, new culture model systems, and rigorous protein biochemistry and molecular biology to explore three complementary approaches — pathogen-

esis, genetics, and tumor markers — in the quest to understand ovarian cancer. Assisted by six post-doctoral researchers, Dr. Drapkin also uses mouse models to investigate cancers arising in the fallopian tubes.

Another project focuses on the BRCA 1 and 2 genes and their role in the DNA repair process and carcinogenesis. In addition, his lab is studying Elafin, a biomarker that may help guide efforts in early detection and prognostication of gynecologic cancers.

Dr. Drapkin ensures that everyone in his lab feels invested in the work, moves forward with his or her own work, and gets published. He also teaches at Harvard Medical School, where he stimulates students’ interest in research, and enjoys helping them choose among career options.

“My mentors were a highlight of my experience at RWJMS,” he says. “All of my professors were inspired teachers, genuinely interested in our growth as young doctors. Dr. Robert Trelstad and Dr. Danny Reinberg, not only influenced my career path, but also shaped the way I now approach science and mentorship of my own students and fellows.”

The UMDNJ-Graduate School of Biomedical Sciences (GSBS) at RWJMS awarded its 2008 Distinguished Alumnus Award to Dr. Drapkin. “Ronny distinguished himself as a graduate student at GSBS at RWJMS and has continued to do excellent work as an independent scientist and mentor to the next generation of young scientists,” says Terri Goss Kinzy, PhD, professor of molecular genetics, microbiology, and immunology and senior associate dean, GSBS. **M**

ALUMNI ASSOCIATION AWARDS HIPPOCRATES SCHOLARSHIP TO MONICA CHOW

by Kate O'Neill

Monica Chow of Whippany, a member of the Class of 2013, is the Alumni Association's eighth Hippocrates Scholar. The association awards the Hippocrates Scholarship annually to an incoming first-year student, based on academic excellence. Hippocrates Scholars receive \$20,000 toward tuition each year.

Monica's fascination with the intricate, finely balanced workings of the brain led her to major in cell biology and neuroscience major at Rutgers, The State University of New Jersey. During college, she volunteered in the

Child Life Program at The Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital and in Rutgers' Big Buddy Program, a mentoring initiative in New Brunswick.

Throughout her senior year at Rutgers, Monica worked in the Clinical Research Center in the RWJMS Department of Pediatrics. Monica worked on an ongoing quality improvement project that aims to assess and improve the quality of care provided to patients with HIV/AIDS. "It was new to me," she says, "and included the kind of human interaction I miss in a basic



science lab."

Monica enjoyed getting to know RWJMS students during the application process.

"They are open and generous, always willing to share information with others," she says. When she was awarded the Hippocrates Scholarship, Monica wrote to **Nancy Sierra, MD '89**, president, Alumni Association, thanking her for the financial help that Monica regards as proof the association stands behind

RWJMS Alumni Association President, Nancy Sierra, MD '89, with Monica Chow, Class of 2013, recipient of the 2009 Hippocrates Scholarship.

current students.

"I was drawn to the school by its excellent academics coupled with outstanding clinical exposure," Monica says. "Being a doctor is more than a science; it requires compassion and empathy, which are not learned from a textbook but, rather, acquired through interaction with patients."

RWJMS NEWS AND EVENTS NOW AVAILABLE ON SOCIAL MEDIA SITES

RWJMS news and events and an opportunity to participate in conversations with peers are now available on facebook.com, linkedin.com, and twitter.com. On Facebook and LinkedIn, search for "UMDNJ-Robert Wood Johnson Medical School" and "Robert Wood Johnson Medical School Alumni Association." On Twitter, search for "UMDNJ_RWJMS." Participation on Facebook and LinkedIn is by approval of the site administrator, but all can register.

twitter

facebook

ALUMNI ASSOCIATION APPROVES NEW SCHOLARSHIPS AND LOANS

The Alumni Association Board of Trustees approved \$152,500 in scholarships and loans to be awarded to RWJMS students during the 2009–2010 academic year. The scholarships included a \$20,000 award to each of the four current Hippocrates Scholars — one in each class. The association contributed an additional \$72,500 to named scholarships and loans.

— K.O'N

Steven J. Kravet, MD '92

A LEADING ADVOCATE FOR PRIMARY CARE AND PATIENT-CENTERED MEDICINE

“P

atient-centered, community-based health care is in my blood,” says Steven J. Kravet, MD '92, assis-

tant professor of medicine, Johns Hopkins Medical School. In January, Dr. Kravet was appointed president of the Johns Hopkins Community Physicians (JHCP), and his community expanded.

“Steve Kravet is that exceptional physician who understands the importance of a good bedside manner and safe health care systems,” says David Hellmann, MD, chair of medicine, Johns Hopkins Bayview Medical Center, and vice dean, the Johns Hopkins School of Medicine, Bayview campus. “Because he is effective at both, he was chosen by Johns Hopkins Medicine to serve as president of Johns Hopkins Community Physicians, the largest group of primary care physicians in Maryland.”

JHCP is part of the Johns Hopkins Health System. It includes 150 primary care physicians, working in 18 practices throughout Maryland, bringing Hopkins-level primary care to more than 450,000 people in the state’s urban, suburban, and rural communities.

Dr. Kravet’s patient-centered bloodline includes



COURTESY OF STEVEN J. KRAVET, MD '92

three generations of New Jersey family pharmacists, all known as “Doc” to their customers and neighbors. The evolution of Dr. Kravet’s sense of community and his interest in medicine began early, as he worked alongside his father and uncle in the family pharmacy.

He chose to follow a less-traveled route to medical school, first earning a bachelor of science degree at the School of Pharmacy at

Rutgers, The State University of New Jersey. “Medical school fit my career goal of returning to the community to serve the people who use our family pharmacy,” says Dr. Kravet. “This was — and is — a logical extension of the family tradition.” As a medical student, he worked as a pharmacist at Robert Wood Johnson University Hospi-

— *Continued on Page 72*

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tal (RWJUH). “I saw health care from a different perspective than my classmates,” he says. “I learned to appreciate everybody: not just physicians, but the whole staff. Everyone’s on a team that supports the patient. Maybe having that appreciation helps explain my good fortune at Johns Hopkins.”

Dr. Kravet says that the patient-centered approach taught by the RWJMS Department of Family Medicine and Community Health and the generalist philosophy of the Department of Medicine reinforced his interest in primary care. “I was also particularly impressed with my experiences at Princeton Hospital and other RWJMS affiliates that were very much entrenched in their communities,” he adds.

While completing his internal medicine residency at Johns Hopkins Bayview Medical Center, Dr. Kravet still believed he would return home to treat the families he had known all his life. Then, at the end of his residency, Hopkins offered him an opportunity to join the faculty. “It was too good to turn my back on, but it was a hard choice,” he recalls. “I’d always imagined myself as a community physician.”

Within a few years of his faculty appointment in 1998, Dr. Kravet was appointed medical director of the ambulatory care center at Bayview. For the next decade, he would focus on the hospital side of health care, combining the practice of internal medicine with leadership positions in hospital-based ambulatory care services and the development of on-the-job expertise in hospital business practices. He would later serve both as chief medical officer for quality and patient safety and as deputy director for clinical activity in the Department of Medicine.

“Some of the most exciting learning I’ve ever done took place in the master’s in business administration (MBA) program,” says Dr. Kravet, who earned his MBA from Johns Hopkins University in 2006. As a hospital administrator, he was immediately able to apply concepts covered in the program and was pleased to discover close analogies between his interests in health care teams and health care systems. Some of the concepts found their way into his teaching. “Students and residents are eager to learn about the business of medicine,” he says. “It’s the type of information they need to understand their place in the medical world.”

Dr. Kravet’s considerable published work reflects his broad interests in health care. Topics range from business-side issues — such as efficiencies that benefit both the practice income and patient outcomes — to reforms in academic medicine that would focus the curriculum on patient-centered

medicine and support the training of primary care physicians.

In early 2009, he received the Samuel P. Asper Award from the American College of Physicians (ACP), presented by the Maryland chapter to the ACP member who is viewed by fellow members as, quite simply, the “Best Doctor.”

When the presidency of Johns Hopkins Community Physicians opened up, Dr. Kravet hesitated before deciding to become a candidate. Despite his long-held plans, he had by then spent ten years on the hospital side of health care. “‘Community physician’ no longer felt like a good fit,” he recalls. “But others sat me down and helped me to see that the position was definitely in my comfort zone. I realized that the job could allow me to act, among other things, on my belief in the need for good ambulatory care — helping patients from the

outpatient side and encouraging hospitals to see the ambulatory care perspective.”

“Steve Kravet is a very special person, with an interdisciplinary view of the world,” says Jo Walrath, PhD, RN, director, Baccalaureate Program, Johns Hopkins School of Nursing. For four years, Dr. Walrath and Dr. Kravet were team mentors, co-researchers, and co-authors of a report on Achieving Competency Today II, a program funded by the Robert Wood Johnson Foundation. The ongoing study focuses on the experiences of interdisciplinary teams, composed of one volunteer each from the faculties of

the medical school and the nursing school, a hospital administrator, and a resident researching a specific problem in quality improvement.

As a member, and now a fellow, of the ACP, Dr. Kravet has actively lobbied for a better appreciation of the role of primary care in American health care. Now serving on the Governor’s Council of the ACP, Maryland Chapter, he has advanced the organization’s active involvement in health policy advocacy and medical student mentorship.

“Ambulatory care is the focus in health care and the future of medicine,” he says. “In the Hopkins system, nearly 90 percent of patients never touch a hospital bed. The job of the primary care physician is to keep people out of the hospital and make sure that the only patients in hospitals are those who really need to be there.

“Every other developed country in the world has better health outcomes and a higher commitment to primary care,” he adds. “Legislators are beginning to value primary care as a specialty and realize that it is the only way to save the American health care system.” **M**

Dr. Kravet says that the patient-centered approach taught by the RWJMS Department of Family Medicine and Community Health and the generalist philosophy of the Department of Medicine reinforced his interest in primary care.

NINETEEN
SIXTY-NINE

Alan Compton writes: “I retired on 12/31/09 from the VA Clinic in Santa Rosa, Calif., where I was a staff psychiatrist. I plan to divide my time between Oregon (my son is an electrical engineer in Portland) and Juniper Hills, Calif. (my daughter is a science teacher in San Diego).”

NINETEEN
SEVENTY-THREE

Neil Calman, president and CEO, New York’s Institute for Family Health, has been appointed by the Obama administration to the new Health Information Technology Policy Panel. The panel will make policy recommendations on the development of a nationwide health information technology infrastructure. He will serve a two-year term on the new panel, which was established by the American Recovery and Reinvestment Act.

NINETEEN
SEVENTY-FOUR

Michael Rushnak is a senior medical consultant for the National Association for Managed Care Physicians in Virginia. He published a

novel, *Terminal Neglect*, which focuses on an idealistic physician who battles against a group of power brokers interested in advancing a drug found to have serious problems in clinical trials.

NINETEEN
SEVENTY-SIX

Robert Chvala writes: “Frances and I welcomed a grandson, Jonah, on July 11, 2009.”

NINETEEN
SEVENTY-EIGHT

Paula Krauser writes: “I was thrilled to see classmates who remember me when I was 30 years younger. Thank all of you for coming and celebrating. We made it!”

NINETEEN
SEVENTY-NINE

Gary Balady is director, Preventive Cardiology Program at Boston Medical Center, and professor of medicine at the Boston University School of Medicine.

NINETEEN
EIGHTY

Richard Liebowitz is vice president, medical affairs, at New York-Presbyterian Hospital.

NINETEEN
EIGHTY-ONE

Andrew Rosenberg is chief of staff at Mills-Peninsula Health Services in Burlingame, Calif. He is also in private practice in urology.

Melanie Teasley is medical director, Princeton House Behavioral Services, North Brunswick. She also has a private practice in psychiatry in Princeton.

NINETEEN
EIGHTY-TWO

Rick Segal writes: “After being widowed in 2006, I remarried two weeks after running the Boston Marathon.”

NINETEEN
EIGHTY-THREE

John Gallagher is chair, Pennsylvania Medical Society Political Action Committee, assistant chair, Department of Surgery, Sharon Regional Health System, and chief, Department of Ob/Gyn, Sharon Regional Health System.

Linda Fortunato Sieglén was appointed senior vice president of medical affairs for Princeton HealthCare System.

NINETEEN
EIGHTY-FOUR

Kathy Rosen Kerr writes: “Our son, Geoff, whom a lot of our class helped care for during our second year of medical school, was married on the 4th of July. He lives in Tucson, Ariz., and works for Raytheon

as a computer engineer. Our daughter, Jeramie, graduated from Franklin and Marshall. I am still in solo practice of internal medicine and pediatrics in Morristown.”

NINETEEN
EIGHTY-FIVE

Edward Niewiadomski is senior vice president and chief medical officer, Southern Ocean County Hospital in Manahawkin.

NINETEEN
EIGHTY-SIX

Joseph Costabile is president of the Vascular Society of New Jersey.

NINETEEN
EIGHTY-SEVEN

Mark Fesen has been practicing medical oncology in Hutchinson, Kan., since 1993. He is a clinical assistant professor at the University of Kansas Medical School. In June, he published *Surviving the Cancer System*, which helps patients understand the importance of fostering a bond with their medical oncologist.

NINETEEN
EIGHTY-EIGHT

Brian McLeod joined Windham Urology Group at Windham Hospital in Norwich, Conn.

NINETEEN
NINETY-ONE

Cathy Angell writes: “I am starting my tenth year as a neonatologist at Santa Clara Valley Medical Center in San Jose, Calif., and my seventh
— Continued on Page 74

WHAT'S NEW? Please send your professional and personal news for **CLASS NOTES** to: Roberta Ribner Editor, *Robert Wood Johnson Medicine*, Coordinator, Alumni Affairs, UMDNJ-Robert Wood Johnson Medical School Alumni Association • 335 George Street • Suite 2300 New Brunswick, NJ 08903 • Phone: 732-235-6310 Fax: 732-235-9570 • Email: ribnerr@umdnj.edu • Or log on to our Web site: <http://rwjms.umdnj.edu/alumni>.

NOTES

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year as director of the O'Connor Hospital NICU. My son, Bryce, started college at UCLA. **Bob Wallerstein '91** and his wife, Donna, have moved to California to start the genetics program at Santa Clara Valley Medical Center in San Jose."

Britt Borden is a neurosurgeon in Chicago, specializing in complex spine surgery, brain tumor surgery, and pain relief surgery.

Debra Friedman was named interim director, division of pediatric hematology/oncology, at the Monroe Carell Jr. Children's Hospital at Vanderbilt Medical Center in Nashville, Tenn.

**NINETEEN
NINETY-TWO**

Ion Chuang practices with the AtlantiCare Regional Medical Center Satellite Emergency Department, Kessler campus, in Hammonton.

Victor Gorloff practices pulmonary and critical care medicine in Englewood.

Anne Riordan practices dermatology in St. Louis, Mo.

**NINETEEN
NINETY-THREE**

Lois Ramondetta is an associate professor in the Department of Gynecologic Oncology at the University of Texas M. D. Anderson Cancer Center. She is the recipient of the 2009 Julie and Ben Rogers Award for Excellence in Patient Care.

**NINETEEN
NINETY-FOUR**

Tamara LaCouture was named vice chair, Department of Radiation Oncology, at RWJMS and chief, Department of Radiation Oncology, at Cooper University Hospital.

Owen O'Connor is a professor of medicine and pharmacology at NYU School of Medicine. He was appointed deputy director, clinical research and cancer treatment, at The Cancer Institute and chief of the new division of hematologic malignancies and medical oncology at the Department of Medicine.

**NINETEEN
NINETY-FIVE**

Aalpen Patel joined the Department of Radiology at Doylestown Hospital in association with Doylestown Radiology.

Jenny Romero writes: "I wanted to announce that my son, Alejandro Mateo Romero-Kiser, came in at 4 lbs. 8 oz. on April 15, 2009. We are all doing well."

**NINETEEN
NINETY-SEVEN**

Ravi Goel is president, New Jersey Academy of Ophthalmology, and a member of the AMA-Young Physicians Section Governing Council.

Aruriwo Obob-Weilke writes: "Married with two kids, a son (3) and a daughter (1)."

**NINETEEN
NINETY-EIGHT**

Brijendra Kumar is a hospitalist who recently joined the Bayhealth Medical Center Department of Medicine in Dover, Del.

**NINETEEN
NINETY-NINE**

Janine Kyrillos and **Eduardo Careaga '02** were married on December 21, 2008. Dr. Careaga is medical director, Kennedy Comprehensive Breast Center, at the Kennedy Cancer Center in Washington Township.

TWO THOUSAND

Prayag Barot writes: "Hello to the Class of 2000. For the last three years, I have been a general surgeon in private practice right here in Piscataway. I finished my residency in 2005 from St. Barnabas Medical Center, and a laparoscopic fellowship from North Shore University Hospital. My wife, Jinal, and I welcomed the birth of our first child, Neil, in April 2009."

Jonathan Dunham is an assistant professor of medicine in the division of rheumatology at the University of Pennsylvania School of Medicine.

Priya Gor specializes in hematology/oncology at the Lourdes Health System. She resides in Moorestown.

Emilio Mazza reports: "I am a full partner with Allergy and Pulmonary Associates, practicing pulmonary care and sleep medicine. I am married to Denise Mazza, and we have two boys: Emilio (6) and Christian (4)."

**TWO THOUSAND
ONE**

Yibong Cheng is an internist in Denville.

Gerald Ciocco is a general cardiologist in Morristown and Newton.

**TWO THOUSAND
TWO**

Sathya Bhandari writes: "Shiv Bhandari was born in Dubai, UAE, on February 9, 2009. We are all doing well!"

**TWO THOUSAND
THREE**

Joe Tsung-Yi Huang married Patricia Lai Wu, MD, in May 2009. He is doing a surgery fellowship at UMDNJ-New Jersey Medical School.

**TWO THOUSAND
FOUR**

Rupal Patel Panghaal and **Viskash Panghaal '05** are pleased to announce the birth of their daughter, Anika Panghaal, on March 28, 2009.

Adam Rosh is assistant residency director, Department of Emergency Medicine, at Detroit Receiving Hospital.

Mark Yoa has joined the Department of Anesthesiology and Perioperative Medicine at AtlantiCare Regional Medical Center.

TWO THOUSAND FIVE

Christopher Gentle was appointed to the position of PEER review chair for the Washington County Hospital Emergency Department.

TWO THOUSAND SIX

Alex Kulczycki is in practice with Ocean County Family Care in Brick.

FORMER RESIDENTS

Rosemarie Boehm practices at the Center for Pediatrics, Adolescent and Adult Medicine in Berlin.

Suzette Ettienne is owner and medical director, Ettienne's Premier Pediatric Care, LLC, in Bowie, Md.

Kris Guerrier is a radiation oncologist at Lakeland Regional Cancer Center in Lakeland, Fla.

Timothy Lin is a pulmonary and critical care physician with Respiratory Consultants of Georgia.


Neeraj Mehra is a family physician with Little Silver Medicine in Little Silver.

Marc Westle is president and CEO, Mission Medical Associates, a not-for-profit physician-led subsidiary of Mission Health System.

Speaking of our students—what a wonderful group they are! I never cease to be amazed at their curiosity and capacity to make the intellectual and interpersonal connections that are vital to doctoring. I'm certainly not alone in this impression. The Class of 2009 had an outstanding match this past year. These graduates are going to some of the world's best institutions, including our own, for the next phase of their careers. Clearly the word is out that RWJMS has great students! The feedback we receive from residency program directors around the country is very laudatory, and more than once it has been remarked to a recent graduate: "Wow — you learned that there! . . . I wish I'd gone to RWJMS!" Now, maybe I'm just an old fogey who is very proud of his younger colleagues, but I consider that high praise indeed.

Our younger (at least in my case) colleagues also learn differently these days. My marketing professor in business school outlined the Generation X, Y, and Z concepts for us, but it didn't hit home for me until I saw our RWJMS students in action. We need to deliver content in a different context and through alternative channels — and that's precisely what we're implementing today. You have read earlier about our technology initiative. It was launched originally as an iTunesU program that provided access to lectures and course materials anywhere the student needed it. We have near-term plans to move virtually all digital content online as our students prepare for even more active ownership and engagement with their educational experiences.

These technology capabilities will promote real-time group- and evidence-based learning and encourage exploration beyond the bounds of the classroom and direct patient experiences. This important strategic initiative places RWJMS at the forefront of medical education and comes at the same time that our faculty practice, The Robert Wood Johnson Medical Group, is in the final stages of fully implementing the electronic health record in our practices. All of us will have the opportunity to explore the many advantages of this technology for the betterment of patient care.

The success of our educational efforts enriches everyone, and, in turn, the excellence of our academic health center provides unique opportunities for all. Our mission benefits from the provocative discoveries of outstanding scientists as well as insights from new translational projects and the application of technologies in our hospitals and offices. You have read about many of these projects in this and previous editions of *Robert Wood Johnson Medicine*. Our students and trainees are not only witness to this progress, they are actively contributing to it and becoming imbued with the spirit of inquiry. Whether that spirit sustains a lifelong passion for self-improvement and learning or broadens the palate of understanding for a wider community — or both — we will have succeeded in our mission. These are, indeed, "interesting times," and it's exciting to participate in them at RWJMS. 

— *Stephen F. Lowry, MD, MBA
Professor and Chair, Department
of Surgery, and Senior Associate
Dean for Education*

P L A S T E

Interesting Times

Most of us are experiencing the age-old adage to “live in interesting times.” Established norms of activity and outcomes are under constant revision, and the philosophy of “stay the course” is subject to challenge from many quarters. When we mix in the uncertainties wrought of the vigorous debates over future macroeconomic and health policies, we have the nearly perfect brew for “interesting times.”

Challenge and change are the constant companions and, indeed, close friends of educators. The pace of biomedical research and clinical investigation underscores the importance of our mission and places it squarely at the intersection of the discovery, dissemination, and application of knowledge. Other externalities aside, these are interesting times for sure! Rather than view these times as obstacles, we choose, instead, to consider them opportunities.

In previous pages, you have read about many of the exciting and creative approaches that are under way to transform the philosophy, methods, and technologies for health care education at UMDNJ-Robert Wood Johnson Medical School. Current times have also reinforced for us that proactive strategic initiatives are needed to stay ahead of the curve. There have been many such initiatives, including the faculty-led decision in 2007 to change the pre-clinical evaluation system to a Pass/Fail basis. Another strategic step was taken in 2008, when the

school adopted the Accreditation Council for Graduate Medical Education competencies for post-graduate medical education as a basis of the learning objectives for the medical degree. Aligning learning objectives, content, and support capabilities across the full spectrum of training and continuing medical education is an important strategic direction for RWJMS.



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None of this would be possible without the support of an engaged faculty, staff, and the outstanding students, residents, and fellows at this great institution. We are fortunate to have a cadre of accomplished and farsighted teachers who recognize the opportunities at hand and are creatively engaging the talents of our students and post-graduate trainees more effectively than ever. Many are participating in the Curriculum 2010 program, which was initiated by Peter S. Amenta, MD, PhD, dean, and is being led by our Curriculum Committee.

This exciting project will transform our pre-clinical curriculum from the current subject-based structure to one that promotes a systems-based/clinical correlations approach that emphasizes the adult learning styles of our students. Our current “Patient-Centered Medicine” courses and “Integrated Cases” sessions during the first two years clearly indicate that students are ready and eager for this content and experiential integration.

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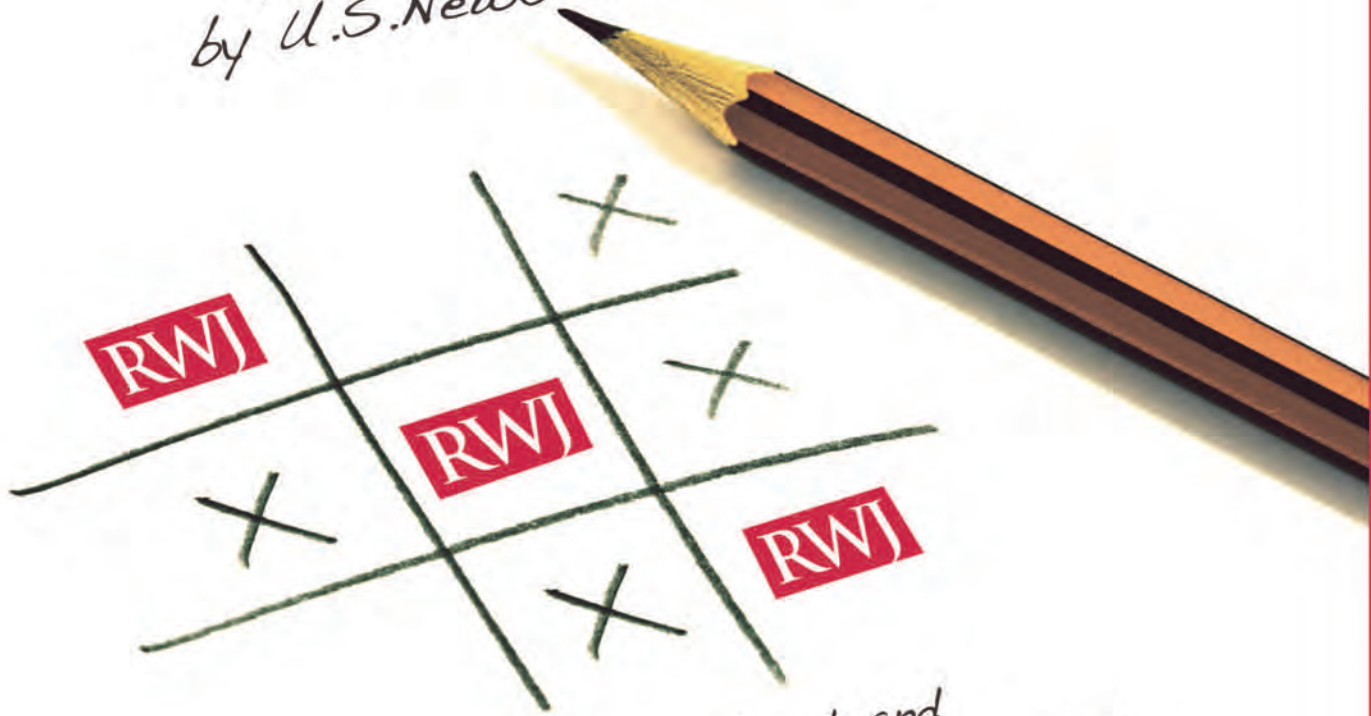
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