

New Jersey Medical School

Volume 7 Number 1 Winter 2009

pulse

University of Medicine and Dentistry of New Jersey

To Catch A Killer

Marila Gennaro's
New TB Test

Message from the Dean

“Perfect storm,” “smoldering fire,” “oncoming freight train” are just some of the terms used to describe the looming physician shortage. The Association of American Medical Colleges predicts that in less than 20 years, our nation will face a major doctor deficit. In fact, the AAMC reports, “the demand for doctors will outstrip the supply...” and “the United States will experience a shortage of 124,000 full-time physicians by 2025.”

UMDNJ–New Jersey Medical School is doing its part to help mitigate the effects of this shortage. In August, we welcomed 194 matriculating medical students, our largest class ever. We also announced a new partnership with Saint Joseph’s Regional Medical Center that expands clinical instruction opportunities for our medical students and residents. While we recognize the need to boost our overall numbers, we also see the value in producing a diverse pool of doctors to serve an increasingly diverse population. Toward that end, we teamed with Mount Sinai School of Medicine; Columbia University College of Physicians and Surgeons; and the Manhattan Staten Island Area Health Education Center to implement a new Northeast Regional Health Career Opportunity Program to expose minority and disadvantaged youth to careers in medicine and science.

These are challenging times, but by taking clear and decisive steps today we can weather the “perfect storm” and ensure that our students—and society—continue to benefit from our long tradition of providing quality medical education that’s defined by a high-level of competency and compassion.

In health,



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



pulse

VOLUME 7 NUMBER 1 WINTER 2009 UNIVERSITY OF MEDICINE & DENTISTRY OF NEW JERSEY

Interim Dean
UMDNJ–New Jersey Medical School
Robert L. Johnson, MD

Director
University Marketing Communications
Barbara Hurley

Executive Director for Administration
Walter L. Douglas, Jr.

Director
NJMS Marketing Communications
Genene Morris

Senior Editor, NJMS Pulse
Maryann Brinley

Contributing Writers
Kaylyn Kendall Dines
Jennifer S. Doktorski
Mary Ann D’Urso
Eve Jacobs
Lisa Jacobs
Mary Ann Littell
Sarah Rahman
Mary Anne Ross
Joni Scanlon
Jill Spotz

President
NJMS Alumni Association
and *AlumniFocus* Editor
James M. Oleske, MD’71, MPH

***AlumniFocus* Coordinator**
Dianne Mink

Design
Sherer Graphic Design

Keep In Touch...
NJMS Pulse is published twice each year by the UMDNJ–Department of University Affairs for New Jersey Medical School (NJMS). We welcome letters to the editor and suggestions for future articles.

Send all correspondence to:
Pulse Editor
Office of University Marketing Communications
University Heights–P.O. Box 1709, Room 1328
65 Bergen Street
Newark, NJ 07101–1709
or via email to njmspulse@umdnj.edu

Winter 2009

INSIDE INFORMATION

- 2 On the Extracurricular Scene
- 3 Our Experts Speak Out
Pompeo's Passion
- 4 Calendar of Events
Altschuler's Amazing Antibody Study
- 5 NJMS News by the Numbers
Making Kids Futures Brighter
- 6 In Pavlov's Footsteps
Images of AIDS
Doctors for a Day
- 7 Dirty Dancing with Chromosomes
Kudos

A CLOSER LOOK...

- 8 ...Inside Technology Support Services
- 10 ...At Summers of Science
- 11 ...Exploring Yeast, Bacteria, Parasites & Viruses at PHRI

NJMS PEOPLE: DO YOU KNOW?

- 12 *On our cover:* Marila Gennaro
- 14 Peter Tolia, Making Medicine Personal
- 17 Tamir Bloom, The Olympic Fencer Who Fixes Kids

FEATURES

- 18 **Had Any D Lately?**
Why sunlight and vitamin D are making a medical comeback
- 22 **From Dragons to a Vitamin D Mouthwash: It's All in a Day's Work**
- 24 **A Day in the Life of Neil Kothari, MD**
What does it take to be an award-winning educator
- 26 **Learning Bedside Manners**
When students are all EARS for Dying Patients
- 27 **Four-Legged Friends in the Hospital**
- 28 **Understanding Injured Brains Better**
Neuroscientist John DeLuca took his first virtual steps into the human mind through a window called fatigue.
- 32 **Caracci's Search for What Makes Cities Tick**
A new city-by-city research project could one day predict how neighborhoods affect health.

ALUMNI FOCUS

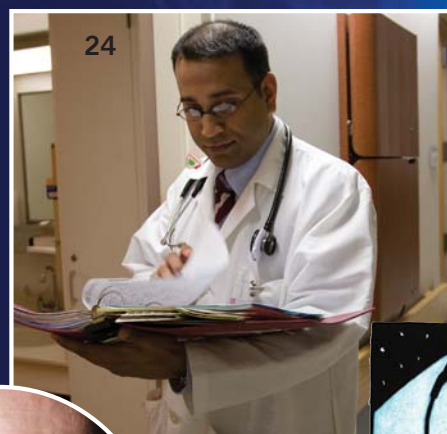
- 34 News of Special Interest to NJMS Grads
Scholarships: \$3 Million and Counting...
- 35 Meet Author Lauren LaPorta
Going First Class
- 36 Alumni Profile: Gilbert Irwin, Scrounging to Save Lives
- 38 Class Notes
- 39 The *Goodbye Columbus* Question

FOCUS ON PHILANTHROPY

- 40 A Lions' Share for Cinotti's Legacy



18



On The Extracurricular Scene

It goes without saying that the life of a medical student is busy. Between lectures, labs, clinical rotations, and studying, it's hard to imagine how any future doctor finds time for extramural pursuits. But that's exactly what many NJMS students are doing.

Take Sam Chu. A founder of Vocal Chords, a co-ed a cappella group, this humanism scholar says it takes passion and time management skills to squeeze extracurricular activities into an already bloated schedule. "If your interest is strong enough, you'll find the time," says Chu, a Basking Ridge native and Yale University graduate. His group initially included fellow founders, fourth-year student David Seto and second-year students Arjun Iyengar and Gerard Pregoner, but has since expanded. Vocal Chords is just one of several new clubs established this past year. There's a crew team, hockey team, rugby team and the Mountaineering, Trekking and Expedition Club.

Formed in 2007, Vocal Chords rehearses weekly, performs regularly and made its debut during the first-year Anatomy Memorial Ceremony, a service to pay homage to the people who bequeath their bodies to further science. The group also performed at a memorial service for Conor Michael Moran, singing a moving rendition of "Steal Away," a fitting tribute to the second-year NJMS student who died unexpectedly in December 2007.

Vocal Chords, above, left to right: Samuel Chu, Krishna Patel, Timothy Kreider, Janet Lee, Virginia Hu and Arjun Iyengar. Right, the crew team in a boat, front to back: Jason Ackrivo, Joseph Weiner, Christopher Mecoli and David Crawley.

Section compiled and written by Maryann Brinley, Genene Morris and Eve Jacobs

Since then, they've become regulars on the performance circuit, making appearances at such events as Humanism Day and Follies, treating audiences to an eclectic mix of songs ranging from Christopher Tye's "Laudate" and Billy Joel's "For the Longest Time" to a Renaissance piece called "If Ye Love Me," by Tallis and "Seasons of Love" from the Broadway musical "Rent." They also sang at White Coat Ceremony for the Class of 2012.

Thanks to an NJMS Alumni Association grant, they're able to afford music and outfits. "We want to increase our repertoire," says Chu, and "to branch out from school-oriented events into the hospital, community and greater Newark area."

Like Chu, crew team members find it's passion that allows them to take on an extramural. "It's a nice break from studying," says Jason Ackrivo, a second-year stu-

dent and graduate of The College of New Jersey. "I guess you could say when you row, it's one of those sports that gets into your blood. It is really gratifying and almost meditative. I don't want to get too Zen on you, but if you're not focused, you're not going to row well."

Until November, Ackrivo and his four teammates, David Crawley, Michael Gross, Christopher Mecoli and Joseph Weiner worked out with members of the Passaic River Rowing Association. The association provides the boats, oars and coxswain, a person who commands and steers the boat. On a balmy autumn day in October, they took part in the team's first—and only—regatta, or race, of the season on the Passaic River. While they didn't win, "Rowing was so much of our lives in college, it was nice to have a piece of it back," says Gross, a University of Maryland graduate. Weiner, a Tufts University alumnus, agrees, "I just wish we didn't have that major exam the next day." ●



Our Experts Speak Out



BACK in November 2004, George Wallace, DPM, director of the podiatry service at UMDNJ-University Hospital, lectured to about 30 hospital employees to commemorate National Diabetes Awareness Month. Who knew this kind of employee-to-employee address would grow into a once-a-month event?

Through UH's popular employee lecture series, the wide-ranging NJMS expertise is shared. "Some healthcare professionals are so focused on taking care of others that they forget about themselves," says Tiffany Smith, the hospital's community marketing coordinator who organizes the lectures.

In any given month, 30 to 40 faculty, staff and students attend. According to Smith, one of the most popular was "Bouncing Back from Adversity" by Robin Eubanks, PhD, associate professor, interdisciplinary studies, UMDNJ-School of Health Related Professions. That drew a standing-room-only crowd of 94 people. Other recent topics were: "Violence Prevention: New Law, New Initiatives—What is Your Role?" presented by Cheryl Kennedy, MD, NJMS associate professor and vice chair, psychiatry; "Current Trends in Cosmetic Surgery" featuring Frank Ciminello, MD, Director of Craniofacial Surgery, Division of Plastic Surgery; and "Go Red 2008: A Day to Wear Red to Raise Awareness about Heart Disease Among Women," with Marc Klapholz, MD, NJMS professor, and Christine Gerula, MD, assistant professor, medicine.

Pompeo's Passion



The new Master Educator really cares about her students and sees her own future in their lives as physicians. "These are the doctors who will take care of me."

"TEACHING is the most important thing we do," explains Lisa Pompeo, MD, one of the newest members of the Stuart D. Cook, MD, Master Educators' Guild. The 20th NJMS professor to receive this honor in the award's eight-year history, Pompeo believes, "It's our legacy. Just think: a doctor who educates future doctors touches the lives of her own patients and all of the patients down the line whom those future physicians take care of. And looking at it from a very selfish standpoint, these are the future doctors who will take care of me when I get old and sick."

Pompeo came to NJMS in July 1994 as a resident after graduating from SUNY Stony Brook's School of Medicine and is now an associate professor in the Department of Obstetrics, Gynecology and Women's Health. After her first year as an attending physician back in 1998, Gerard Hansen, MD, associate professor in her department then, asked her "to keep an eye on the med-

ical students." She's been doing this and more ever since. "I really care. I want them to have a good experience and I want them to learn. Students also say I'm very fair. I don't see the benefit to making things more difficult than they have to be. There's no value in tripping someone up. If you need to know something as a doctor, then you need to learn it."

This commitment was key to her being chosen by peers, students, faculty, administrators and department chairs to become a Master Educator last September.

Established in 2000 by former UMDNJ President Stuart D. Cook, MD, the Guild recognizes faculty "who set the highest standards of academic excellence and have a true gift for teaching, whether they are in the classroom, in the research laboratory, or in a patient care setting." Cook, now an NJMS professor of neurology and neurosciences, served as University president from 1998 to 2004. ●

NJMS CALENDAR OF EVENTS

Winter/Spring 2009

February 5

Alumni Association Board of Trustees Executive Committee and Chairpersons Meeting

6:00 p.m., MSB C-654

February 17 and 19

Career Nights

6:15 p.m., MSB-Grand Foyer

For information or to volunteer to share professional experiences with students, please contact the Alumni Office at 973-972-6864.

March 19

Match Day

12 noon, Grand Foyer, MSB

March 26

Alumni Association Board of Trustees General Meeting

6:00 p.m., MSB B-515

April 4

Alumni Reunion and Golden Apple Awards Dinner Dance

Sheraton Parsippany Hotel

7:00 p.m. Cocktails • 8:00 p.m. Dinner

May 15

Alumni Lectures (speakers to be announced)

- 21st Annual Stuart S. Stevenson Memorial Lecture
- The 14th Annual Benjamin F. Rush, Jr. Surgical Society Lecture
- The 41st Annual Harold J. Jeghers Memorial Lecture

May 18

NJMS Convocation

May 20

UMDNJ Commencement

June 18

Alumni Association Board of Trustees Annual Meeting

6:00 p.m., MSB B-515

Altschuler's Amazing Antibody Study

“It was a slow night,” says NJMS Assistant Professor Eric Altschuler, MD, PhD, recalling the “aha” moment which sent him in search of antibodies in the bloodstreams of survivors of the 1918 flu pandemic—people who had lived nearly a century after exposure to this virulent bug that killed 50 million. Altschuler was just a resident on call watching “Medical Investigation,” a TV show which featured actor-scientists probing the causes of puzzling disease clusters. But the writers had been realistically clever. This particular episode was about a lethal modern virus that spared only the life of the elderly butler, a guy who had lived through the great influenza epidemic.

Why had the butler been able to fight off the newer scourge so easily? The television script writers had fictionalized that antibody-

An “aha” moment sent this researcher in search of blood samples from survivors of the infamous 1918 flu pandemic that killed 50 million.

ies in the butler’s blood left over from the 1918 variety had protected him from the new invader. And as the plot thickened, the old man’s blood turned out to be so potent that it helped save the life of the dying heroine. Altschuler, who is now a physical medicine and rehabilitation specialist and researcher, was so intrigued that he set out on his own course of investigation. On TV, he says, “Everything worked out in about an



Eric Altschuler, MD, PhD

hour.” In real life, it took almost four years and entailed detailed analyses of blood taken from 32 people ages 91 to 101.

Teaming up with Chris Basler, PhD, from the Mount Sinai School of Medicine in New York (who worked on the reconstruction of the 1918 flu virus) and James Crowe Jr., MD, from Vanderbilt University Medical Center in Nashville, Altschuler proved that antibodies, which attach to viral proteins and have the power to neutralize them, can survive many decades in your blood. “We met people who had multiple relatives die on the same day,” he says. Unfortunately, many participants could remember what a horrible time it was.

The research showed that the antibody-producing cells in these living individuals could be grown in a lab. Mice, injected with the 1918 strain and then treated with the elderly antibodies, survived. Their findings, published as “Neutralizing antibodies derived from the B cells of 1918 influenza pandemic survivors,” appeared last September in the prestigious journal *Nature*. News about this remarkable study of the staying power of the human immune system spread virally last fall, eventually hitting 270 media outlets including National Public Radio and the Associated Press. ●

NJMS News by the Numbers

93

Faculty named to *New Jersey Monthly's* annual "Top Doctors" list.

\$1,507

Raised during a bowling outing organized by 13-year-old asthma sufferer Michael Chundak, Jr. of Woodbridge, NJ, to support the NJMS RESPIRA program.



\$1,702,680

Five-year grant from the National Institute on Alcohol Abuse and Alcoholism to Natalia Shirokova, PhD, assistant professor of pharmacology and physiology, for "Mitochondria & Calcium Signaling in Skeletal Muscle."

\$397,000

Grant awarded to the Teens Networking Today (TNT) School-Based Youth Services Program by the Robert Wood Johnson Foundation for the implementation of the "Safe Dates" curriculum, a national initiative to prevent dating abuse.



\$20,000

Donation from National Multiple Sclerosis Society, Greater New Jersey Metro Chapter, to the Multiple Sclerosis Diagnosis and Treatment Center, run by Stuart D. Cook, MD, professor, neurology and neurosciences, and former UMDNJ president. Funding for the center was generated by Musical Moments, the fund-raiser chaired by Lee and Murray Kushner.

\$25,000

Endowed scholarship in honor of Shou-Cheng Joseph Fu, PhD, former assistant dean and acting dean of the Graduate School of Biomedical Sciences (GSBS), to Kenneth M. Wannemacher, a student in the Department of Biochemistry and Molecular Biology. Donors were his widow, Susan Fu; B.J. Wagner, PhD, interim associate dean of GSBS; the Department of Biochemistry and Molecular Biology; and friends, family and colleagues.

\$100,000 x 2

Grand Challenges Exploration grants each to Xilin Zhao, PhD, and Abraham Pinter, PhD, both researchers at the Public Health Research Institute of NJMS, from the Bill & Melinda Gates Foundation. Zhao is developing a novel treatment for tuberculosis, while Pinter's research is aimed at eradicating HIV.

194

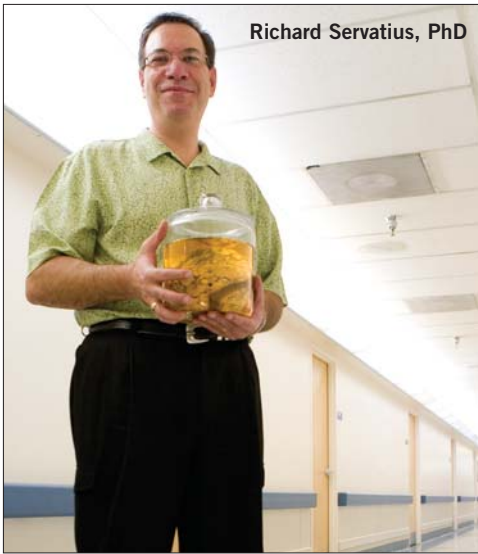
New students welcomed as members of the Class of 2012 at the White Coat Ceremony.



Making Kids' Futures Brighter

NJMS has joined forces with Mount Sinai School of Medicine's Center for Multicultural and Community Affairs (CMCA), and two other centers, to implement a new Northeast Regional Health Career Opportunity Program to expose disadvantaged students to healthcare professions. The unique partnership, made possible through a three-year, \$2.3 million grant to CMCA from the Health Career Opportunity Program (HCOP), also includes Columbia University College of Physicians and Surgeons and the Manhattan Staten Island Area Health Education Center.

The program kicked off in September with the recruitment of 200 children in grades seven to 12. By year three, 600 students will be taking enrichment courses during the school year and exploring healthcare careers in hospital and research settings during the summer. Each year, 80 medical-school-bound college students will take an intensive four-week course to prepare for the Medical College Admission Test. And another 80 college students will spend six weeks studying science to improve their chances of getting into medical school. ●



Richard Servatius, PhD

In Pavlov's Footsteps

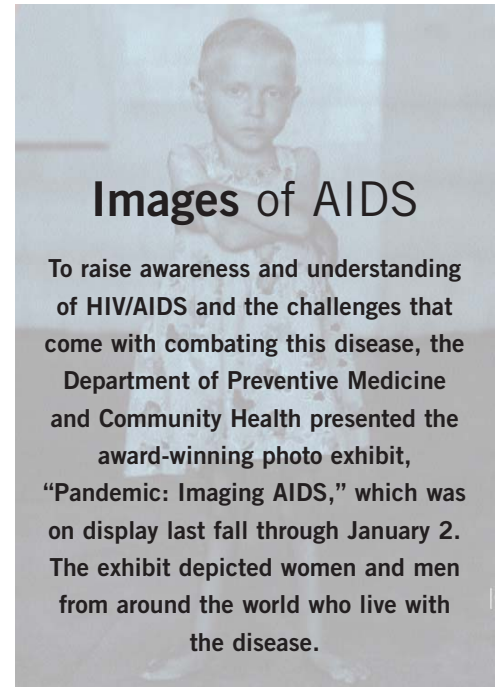
SAY “Pavlov” and the next word that comes to mind is probably “dog.” That knee-jerk verbal response is actually a conditioned reflex. Winner of the Nobel Prize for Physiology and Medicine in 1904 for his pioneering research in understanding how the digestive system works, Ivan Petrovich Pavlov was the Russian scientist who became interested in studying reflexes when he noticed dogs in his lab drooling whenever they encountered food, or simply a signal that indicated food was on the way—like the sight of a lab coat.

Ingenious Pavlov is still the inspiration behind the Pavlovian Society, an international organization founded in the middle of the last century, according to its current president, Richard Servatius, PhD, NJMS professor of neurology and neurosciences, and director of the Stress and Motivated Behavior Institute, co-sponsored by NJMS and the Department of Veterans Affairs-New Jersey Health Care System. “It seems intuitively obvious when you describe Pavlov’s dog and classical conditioning now. The signal for food produces the salivation, which is clear evidence of learning.”

Although simple, it’s very powerful learn-

ing. We all learn this way, not just dogs. “Pavlov’s admonition was always: observation, observation, observation,” Servatius explains. “The Society’s members focus on the neurobiology of learning, memory and integrative physiology.”

The annual meeting of the Pavlovian Society, held last September, brought more than 125 researchers—basic scientists as well as translational researchers—to symposia on everything from the survival of new neurons in the brain to sex differences in learning across the lifespan, and the connections between Pavlovian learning and the development of mental illness, specifically post traumatic stress disorder (PTSD) and anxiety disorders. Invited speakers included Rutgers neuroscientists Gyorgy Buzsaki, PhD, Joan Morrell, PhD, and Tracey Shors, PhD. Pavlov would have been proud. ●



Images of AIDS

To raise awareness and understanding of HIV/AIDS and the challenges that come with combating this disease, the Department of Preventive Medicine and Community Health presented the award-winning photo exhibit, “Pandemic: Imaging AIDS,” which was on display last fall through January 2. The exhibit depicted women and men from around the world who live with the disease.

Doctors for a Day

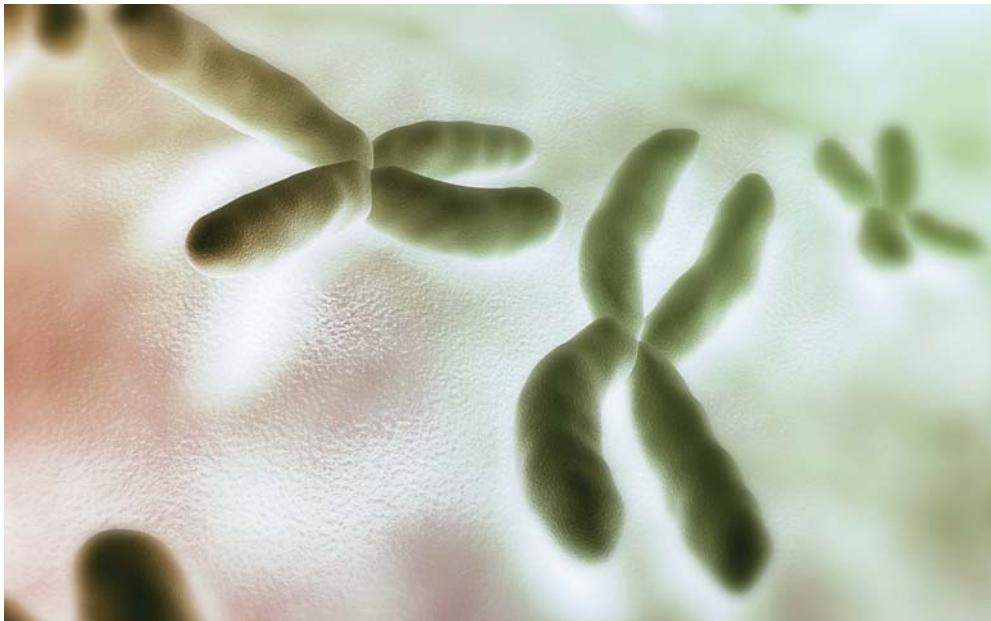
To celebrate National Make a Difference Day, dozens of UMDNJ students from Newark, New Brunswick and Stratford spent October 26 at the Liberty Science Center in Jersey City participating in a “Student Doctor for a Day” program.

Organized by second-year student Leila Mady and MD/PhD/MPH student Dare Ajibade, the event drew more than 2,000 school-aged children and their families for a taste of what life is like as a doctor-in-training. Because the aim is to provide early access and exposure to medical education to underserved populations, Diana Palmeria, MD, adjunct assistant professor of microbiology and molecular genetics, coordinated the involvement of the Abbott School Districts, which represent 31 poor urban communities.

Participants learned about different organ systems during simulated clinical rotations. Children were outfitted in soft casts, made dental impressions, dissected animal organs and examined radiographic films. Volunteers, corporate sponsors and attendees donated healthcare items and patriotic gifts for Operation Jersey Cares, a locally based organization that sends care packages to U.S. troops abroad.

Sponsors included NJMS, UMDNJ–Robert Wood Johnson Medical School, UMDNJ–New Jersey Dental School, UMDNJ–School of Osteopathic Medicine, the Healthcare Foundation Center for Humanism and Medicine, FGI Finance, The Association of UNCF–Merck Fellows, and UNCF/Merck Science Initiative, Momentum Worldwide, Atlantic Ambulance, A+ Products, and Operation Jersey Cares.





“Dirty Dancing” with Chromosomes

If you're one of the more than 20 million viewers hooked on “Dancing with the Stars,” you might just want to be among the first to see the science world's take on that blockbuster. “Dirty Dancing: The Mating Rites of Homologous Chromosomes” is what David Kaback calls the pairing ritual that goes on in his laboratory at NJMS in Newark, where chromosomes, dyed a garish fluorescent green, dance to a rhythm never witnessed before.

Even for those not inclined to look through a microscope, these dancing bakers' yeast chromosomes might prove to be “eye candy.” Kabeck says they move during the process of pairing—in search of each other. But this long-term researcher was surprised to find that chromosomes move in ways never before observed and the movements do not stop until long after pairing between chromosome sets appears complete. He calls the movements “rapid and spectacular, propelling paired chromosomes around the nucleus of the cell in a few seconds.”

Even more stunning, he says, is viewing whole chromosome pairs moving in and out

of the large pack of chromosomes. The movements depend upon the attachment of the chromosomes to the periphery of each nucleus and may be propelled by muscle-like fibers attached to the outside of each nucleus. Kabeck believes that the movement is essential to completing the process.

Why is this scientist fascinated by the dance of the chromosomes? A better understanding of these processes could lead to strategies to prevent the chromosomal errors thought to be a major cause of human disorders like Klinefelters, Turner and Down syndromes, he explains.

For those who've been away from science for awhile, here's a quick review. During meiosis each chromosome pairs-up with its identical partner. This pairing enables the two sets of chromosomes to divide properly into the progeny cells that will each receive a complete set. By some estimates, errors in chromosome partitioning occur in as many as one-third of all cells that undergo meiosis. In humans, these errors may well be the major cause of abnormal chromosomal syndromes as well as a very high percentage of first-trimester miscarriages.

So, a more detailed viewing of these dancing pairs might well lead to a science blockbuster that could touch many millions of lives. ●



JAMES M. OLESKE, MD, MPH, professor, pediatrics, president of the NJMS Alumni Association and medical director of the School of Nursing's Francois-Xavier Bagnoud Center (FXB), was honored with the Robert A. Milch Award by Children's Hospice International for his work with terminally ill children. He also received the Frances Black Humanitarian Award in Health Care from the Friends Health Connection, for his commitment to improving the health of vulnerable women, children, and families affected by HIV/AIDS.

WILFREDO TOMAS C. CRUZ, MD, clinical assistant professor, family medicine, received the 2008 Pfizer Teacher Development Award from the American Academy of Family Physicians Foundation for scholastic achievement, leadership qualities and dedication to family medicine.

JOEL DELISA, MD, professor and chair, Department of Physical Medicine and Rehabilitation, was a 2008 Gold Humanism Honor Society National Honoree, making him one of six doctors in the nation to receive this distinction.

ANNIE BEUVE, PHD, associate professor, and **WALTER DURAN, PHD**, professor, both in pharmacology and physiology, solved a 100-year-old mystery about why nitroglycerin stops working after 24 hours of continuous treatment in cardiovascular patients. Their discovery was published in the prestigious journal *Circulation Research*.

PAUL LANGER, MD, assistant professor, Institute of Ophthalmology and Visual Science, won the 2008 Straatsma Award for Excellence in Resident Education from the American Academy of Ophthalmology and the Association of University Professors of Ophthalmology.

A CLOSER LOOK INSIDE TECHNOLOGY SUPPORT SERVICES



The TSS team, from left to right: Courtney Terry, Arnaldo Rodriguez, Audrey McNeil and James Boyce.

From techno gadgets to software gizmos, this team makes it all happen.

By Jill Spotz

JAMES Boyce is on a mission to advance technology at NJMS. As director of the school's Technology Support Services (TSS), Boyce and his team of business analysts, programmers, audiovisual technicians, Web designers, and desktop and server support technicians seek new ways to bring technology into the classroom. "Technology is a central component of teaching," Boyce explains. "It impacts the design and delivery of our curriculum, the way we teach and the way our students learn."

Most first-year medical students start their educational journey with three items: a lab coat, laptop and smartphone or PDA. The past few years have seen rapid advances in communication and this vision of today's medical student reflects that change. NJMS is tapping into the new technologies to streamline and improve medical education.

In fact, TSS expects to roll out one new education-enhancing tool each year. Boyce says, "These innovative programs change the classroom experience from a lecture-driven atmosphere to an active exchange between student and teacher. New technology also aids the learning process by streamlining the way students acquire and store information."

TSS supports 1,200 to 1,500 computer users at NJMS and UMDNJ-Graduate School of Biomedical Sciences in Newark. Among its many responsibilities, the department manages faculty, staff, and student PCs and laptops. TSS provides audiovisual services, applications and Web designs. For programming, academic systems support, or user and network services for the areas sustaining UMDNJ's mission, TSS is also the place to go.

Medical students are familiar with technology. Their knowledge of new gadgets, software and Web services makes it easy to test new learning applications.

One new program, the Audience Response System, was introduced in September and has become popular with both students and faculty. Multiple choice questions are entered into Microsoft PowerPoint by the professor. Students are assigned a "clicker" or response card keypad that they use to select the correct answer when prompted. The format resembles the audience lifeline on the hit television show "Who Wants to be a Millionaire?" and engages the students during class, turning a passive exchange of information into an interactive one.

Michael Lea, PhD, professor of biochemistry and molecular biology at NJMS, has found benefit in using the Audience Response System. Students in his Molecular and Genetic Medicine course like the idea of being able to respond to questions anonymously, and appreciate the quantitative assessment of their responses. "The program is simple to use, and students enjoy comparing their answers with their peers without fear of embarrassment," he says.

Second-year medical student Ian Hoppe is also thrilled with the new study aid. As a CALM (Collaborative Approach to Learning Medicine) reviewer, Hoppe is part of a student-run mentoring program that helps first-year medical students review course material. "The system has livened up the review sessions," he says. "I base all my reviews around questions that require an explanation. This way, students are prompted to interact every few minutes, which makes the sessions more interesting." The Audience Response System is currently being tested with first-year students and will be rolled out to the rest of the school based on the success of this pilot.

On any random day, students pack lecture

halls for class. They take notes, listen and participate. And then they leave. But what happens to all these lectures at the end of the day? Are they a distant memory? In the past, students would have to rely on just that—their memory, along with notes and voice recordings. This is no longer the case, thanks to a program called Camtasia Studio, used in conjunction with iTunes. Class presentations are recorded through Camtasia, which is pre-loaded on the lecture hall computers. The professor presses “record” in Microsoft PowerPoint during class and the lecture is taped for later use. TSS downloads the files to a thumb drive and posts them on iTunes for students to reference. With the use of video iPods, students can bring up a presentation even if they are not near a computer. “Medical students actively use Web sites such as iTunes,” says Boyce. “We may as well tap into a resource already familiar to them.”

TSS entered into an agreement with Apple two years ago to post presentations on its site, which includes both public and private sections. Students log in with passwords to access lectures. The NJMS public site is accessible from the home page (<http://njms.umdnj.edu/>), where viewers can access radio broadcasts and videos of events held at the school, such as Match Day. “Our students

their courses and clerkships. One such program—the Education Management System (EMS)—was custom-made for NJMS and launched in 2006. This course management system contains several components to handle lotteries, evaluations and grades, and also includes a student directory. Lotteries coordinate the random assignment of students to their clinical sites. Based on students’ preferences, the EMS assigns clinical rotations.

“We continue to make enhancements and seek ways to improve this program to benefit students and faculty,” says Courtney Terry, manager of academic systems. “EMS also serves as a repository for student grades and evaluations. Students must complete evaluations on both the course and faculty. They cannot access their exam grades until they complete the evaluation, a benefit that many programs do not offer.”

The student directory included in the program is widely used by students, professors, course directors and deans. An additional component helps deans write letters of recommendation for fourth-year students applying for residencies. “The program enables the

Angel Learning. The school is currently evaluating the product in several first- and second-year classes. TSS will train faculty, staff and students to use the new software.

Meditrek – This program enables students to log patient encounters during clerkships.

Prior to 2004, medical students kept a long paper trail of procedure logs during training and had to take written notes, including history, diagnosis and discussion points, during patient visits. With Meditrek, they can log the information into the system, which then generates a report for the course director. Meditrek can be accessed through a student’s desktop, PDA or smartphone.

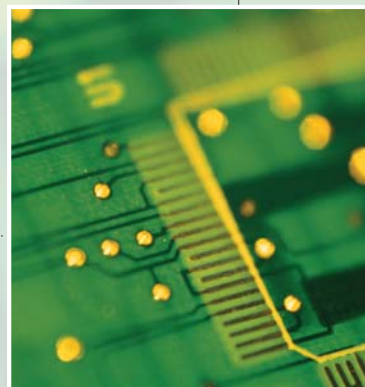
Boyce, no stranger to higher education, worked at New York University School of Law before coming to UMDNJ. He and his team are not only rising to the challenge of today’s technology needs but raising the bar themselves. McNeil’s “to-do list” includes management of application and Web services

as well as NJMS’s audiovisual center. “Our goal is to make the school’s Web site and programs more robust and user-friendly,” she says. Terry maintains the internal programs that keep NJMS on track, including Meditrek and the Audience Response System. Arnaldo Rodriguez, manager of user and network services, is the “go-to guy” for computer equipment, software, desktop

and network services, and server data storage and backup. He recently expanded NJMS’s research storage space from four to 40 terabytes. Rodriguez also oversees the student lab, which is equipped with 14 workstations, a scanner station, LCD projector, white board and printer. Located on the A level of the Medical Science Building, the lab is used by faculty and students and serves as a training center. ●

For more information about TSS, please visit the Web site: <http://njms.umdnj.edu/tss/index.htm>.

With video iPods, students can bring up a presentation even if they aren’t near a computer...iTunes allows them “to relive the classroom experience while studying.”



have benefitted the most,” explains application and Web services manager Audrey McNeil, who manages the iTunes site. “It allows them to relive the classroom experience while studying. And that’s very important, considering they have exams every two weeks.”

Other computer programs streamline day-to-day activities of the school, making it easier and more efficient for faculty to manage

deans to view student profiles, which are helpful in writing the letters,” explains Terry.

Boyce’s team also manages and updates various other programs to streamline medical education:

WebCT – This program enables course materials—including syllabus, practice exams and PowerPoint presentations—to be posted on the Web. In June 2009, WebCT will be replaced by a new system called

A CLOSER LOOK AT SUMMERS OF SCIENCE

How NJMS turns students into researchers

By Sarah Rahman

FOR approximately 70 undergraduate and medical students enrolled last summer in one of several programs at NJMS, the season offered more than sunshine. On their to-do lists were topics like: the psychophysics of visual perception, lupus erythematosus, post-stroke spatial

neglect, the pathogenesis of autism, anthrax toxins, cancer, end-of-life pain assessment and treatment, the neurological outcomes of patients with head injuries, the regeneration of adult retinal neurons and much more. Obviously, they were very busy.

Hosted by the Office of Research and Sponsored Programs (ORSP), the NJMS-University Hospital (UH) Cancer Center, and the Cardiovascular Research Institute with funding from the Foundation of UMDNJ, the NJMS Alumni Association, the National Institutes of Health (NIH) and the National Heart Lung and Blood

Institutes (NHLBI), these sessions were created to expose students to careers in academic medical research. Some, like the one now administered by the NJMS-UH Cancer Center, are more than 30 years old.

“They aren’t just about learning science. The students also form teams and begin to appreciate the fact that one person cannot know everything,” explains ORSP mentor Pranela Rameshwar, PhD, NJMS professor, medicine. Rameshwar believes that she is training “the next generation to become critical thinkers, educators and scientists.” For her, the relationship she builds with a student is a longstanding commitment: “A mentor is a mentor for life,” she says.

From a list of approved research projects submitted by faculty members, students apply for particular projects and are interviewed by their prospective mentors, who choose the candidates. Entrée is not easy and can be very competitive. First- or second-year med students and undergraduates in joint BS/MD programs vie for this chance to live a researcher’s life.

Gwendolyn Mahon, PhD, associate professor, co-director of the cancer summer program and assistant dean for research administration, explains that her 34 winners spent eight weeks working in their own labs. They also participated in weekly seminars that included faculty presentations on a range of basic, translational, clinical and preventative topics. Mahon knows the students gained understanding about cancer research and hopes they were inspired to pursue careers in oncology.

Under ORSP program administrator Letitia Dean’s guidance, 18 participants studied, and did hands-on behavioral, clinical or laboratory research. Some created posters and wrote abstracts about their discoveries. Presentations and posters were judged by mentors and faculty with the first-place winner receiving a travel stipend to a scientific conference of his or her choice. Dean, who publishes a book each year of their research results, saw the students’ passion for research grow, a reward in its own. “Some said this was their first real research experience work-



ing independently,” she explains. “And we gave them the opportunity, which is always a great pleasure.” She’s been coordinating this effort for six years. Copies of the Annual Summer Student Research Abstract Booklet are available by sending a request to deanle@umdnj.edu.

Bobby Reddy, a second-year medical student, jumped at his chance to do cancer research. Reddy is working on a transcription factor called REST, a tumor suppressor in breast cancer, and envisions himself as a physician scientist in his own university lab one day. Harvey L. Ozer, MD, NJMS professor and director, NJMS–UH Cancer Center, is pleased to hear goals like Reddy’s because his own ultimate goal is for students to continue down these research paths.

Look at Marianne Castillo, this year’s recipient of the NIH’s Howard Hughes Medical Institute (HHMI) fellowship, a highly prized grant awarded to medical and dental students who want to take time off from school for research. Castillo believes that her experience in the cancer program in 2006, coupled with the ORSP summer she spent in 2007, definitely played a role in her winning the coveted HHMI scholarship.

“Both summer programs allowed me to do basic research that was translational, directly applicable to patients,” she explains. “With the help of my mentor, Dr. Pranela Rameshwar, I was able to start a project, troubleshoot through it, and experience true hypothesis-driven research—all valuable aspects useful in my transition into an NIH lab.” Back in 2006, she won third place for her poster and Castillo remembers how challenging it was to present her research formally, to think critically and to gain confidence—attributes students must master before entering a competitive science field.

For Eric Altschuler, PhD, MD, an ORSP mentor for three years, helping his students get published has become his own personal goal. “I see the students come into the program unsure of themselves and by the time they leave, they’re discovering things on their own,” he explains.

One of Altschuler’s protégés, Qasim

Husain, a third-year undergrad at The College of New Jersey in the joint BS/MD program, completed a cognitive neuroscience project dealing with visual illusions.

Katherine Liu, a second-year med student and ORSP participant, explored the effect of anthrax proteins on adult and fetal hematopoietic systems and describes her summer as “invaluable. Under my mentor’s supervision, my interest in research has bloomed,” says Liu. “And by maintaining contact with my mentor, Dr. Rameshwar, I’m able to understand the topics taught in medical school better and with more depth.”

Perhaps the most unique of all the summer offerings is the NHLBI agenda because of its specific role of serving minorities. For 10 weeks, 18 students researched but also

updated fellow participants with a weekly PowerPoint presentation they created. Coordinator Norma Brown explains that the program provides support to underrepresented minority undergraduates, graduates and students in health professional schools who have completed at least one year of college. “This grant originated to help minorities who were underrepresented in the cardiovascular, hematologic and sleep disorders research field, and we have accomplished that,” adds the director Maha Abdellatif, MD, PhD.

What’s one of the best rewards for these summer sessions after all is said and done? Rameshwar, who has been mentoring for 15 years at NJMS, says proudly, “Seeing these students become mentors themselves.” ●

...Exploring Yeast, Bacteria, Parasites & Viruses at PHRI

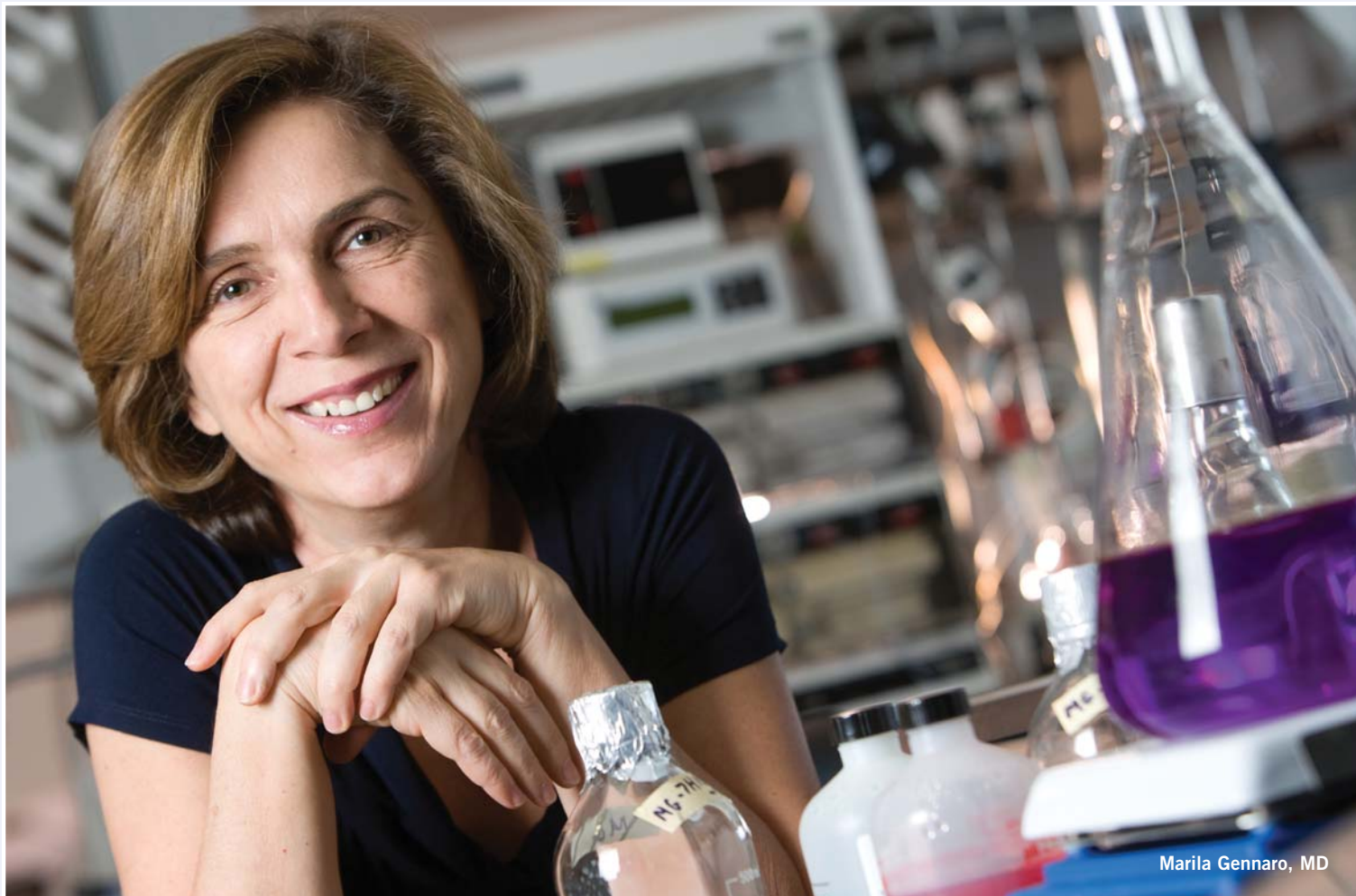
RIAZ Mohammed’s last year of high school not only entailed rigorous SAT preparation, studying for Advanced Placement tests, and practicing for his driver’s license, but he also dedicated his summer to studying a gene product of the African trypanosome, the parasite that causes African sleeping sickness.

Mohammed and seven other high school students from Newark took part in the Public Health Research Institute’s Summer High School Research Internship Program funded by PSEG, Prudential and Victoria Foundations. From July 1 to August 25, minority students and two teachers (who sign up for a two-year commitment), work in a lab alongside a mentor and principal investigator (PI).

Yaakov Saturen, a high school science teacher from the Bronx and program director for the past 16 years, explains that the first two weeks are spent in a workshop learning scientific terms, laboratory equipment and techniques. After that, students begin assigned research and meet once a week to update Saturen and each other on their progress. Along with a monetary stipend, Saturen believes, “They develop analytical, critical thinking and writing skills. You don’t have to be an aspiring scientist or doctor to gain from this PHRI program.”

The students, recommended by their high school science teachers and interviewed by Saturen, are given the opportunity to explore a range of microorganisms, including yeast, bacteria, and parasites, as well as the HIV/AIDS virus. Today’s technology makes it possible for them to experiment with “dangerous” specimens, even cutting and pasting genes safely and securely.

In the eighth week, participants complete a research paper, submit a PowerPoint presentation and create a poster to present at Seton Hall University in a contest sponsored by the American Chemical Society-Project SEED.



Marila Gennaro, MD

MARILA GENNARO

Spoken Like A True Italian Woman

Scientist, wife, mother, she juggles life on two continents and her new TB test could revolutionize diagnosis of a 100-year-old scourge.

By Mary Ann D'Urso

“NEVER say never,” laughs Marila Gennaro, MD, associate professor of medicine at NJMS. The echo of southern Italy textures her voice, at once rich and warm, but still a bit shy. “Twenty-four years ago, I was coming to America for a year.”

Leaving behind her siblings, parents, extended family and country, Gennaro also left a tenured position at the Italian version of the National Institutes of Health in Rome. It would only be a year in New York, a small compromise to be with her husband, who was studying journalism at Columbia University. She would work with Richard Novick, the former director of the Public Health Research Institute (PHRI), which at the time was located in New York, studying microbiology and DNA replication.

Today, Gennaro, 55, runs the laboratory bearing her name at PHRI, which became

an affiliate of NJMS and moved to Newark in 2002. She is a principal investigator studying tuberculosis and developing diagnostics for a disease that kills two million people a year and will sicken another eight million people by year end. The recent international conference she organized, which was three years in the making and received funding from the NIH, the Bill and Melinda Gates Foundation, the TDR/World Health Organization and the Foundation for Innovative and New Diagnostics, brought

TB is “a human scourge. It’s a disaster... one of the great killers...but if it’s diagnosed early, you’re able to help...My husband jokes that I’m not excited about something unless it has implications for thousands of people.”

together about 200 cutting-edge scientists, engineers and clinicians from 26 countries. Not bad for a woman who, as a girl, dreamed of being a ballerina or journalist.

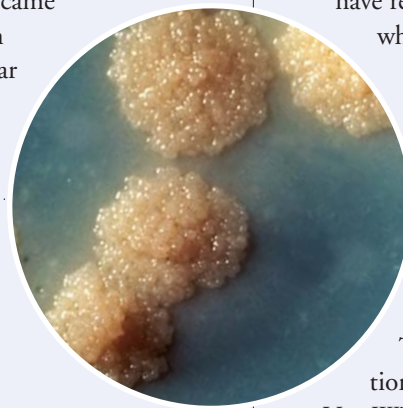
By the time she was ready to attend a university, her interest turned toward science. Ultimately, Gennaro, a Palermo native, went to the University of Palermo Medical School. Afterwards, she earned her Master’s degree at the London School of Hygiene and Tropical Medicine.

Gennaro wonders if her 13-year-old daughter, Anita, will fall for science or something else. “She always says she wants to be a marine biologist,” Gennaro says, smiling in the way people do when the best laid plans take on a will of their own. “I thought I was going to be an epidemiologist. Then I started working in Rome in microbiology.”

Last year, Gennaro’s husband, journalist Gianni Riotta, had the opportunity to take a position as a producer-editor for an Italian broadcast news program, so now they are living life on two continents, as they did for a brief time earlier in their marriage. This year,

Anita is doing what she calls a one-year sabbatical in Rome with her father, who is a star in Italian journalism circles. When asked about his quasi-celebrity, Gennaro says of her husband of 31 years, “Yep. He is a cool guy.”

Those many years back, though, when Riotta was at Columbia, Gennaro’s career opportunities became the reason to remain in the U.S. So the one-year plan evaporated, and on New York’s Upper



West Side, they forged a life and family, which also includes son Michele, 19, a sophomore in college who is drawn to political science and humanities. While her husband worked as a journalist in New York, writing for the Italian newspaper *Corriere della Sera*, Gennaro settled in at PHRI.

These days, Gennaro’s work is focused on identifying markers of TB, which she came to during her early days at PHRI in the mid-1980s. By then, TB was experiencing a resurgence in New York City, in part spurred by HIV, which compromises the immune system. With strong funding initiatives from the NIH, Gennaro says, there was encouragement at the institutional level to be working in TB, once thought to have gone the way of illnesses like polio.

“At that time, there were only a handful of labs across the country working on mycobacteria,” she says. Her Warren Street office is just outside her lab, where about half a dozen post-graduate fellows and doctoral candidate scientists are investigating how tubercle bacteria survive a person’s immune response and how this interaction between

the bacteria and the host leaves “footprints” that can be used to develop new diagnostics.

To that end Gennaro is, colleagues say, helping to change the face of TB testing. She has identified some key antigens that are now used to diagnose TB infection in people who have suppressed immune systems or who

have received the BCG vaccine. BCG, which causes a positive result to the TB skin test, is used in countries with a high prevalence of TB to prevent sudden and severe disease in young children.

Unlike the 100-year-old skin test, new tests could revolutionize TB diagnosis, identifying both sides of the TB infection: the sleeping infection, which lives in a kind of Rip

Van Winkle latency until the immune system is distracted by changes, including HIV, diabetes, drug use or pregnancy; and the active killer, which is more and more often multi-drug resistant and difficult to cure. Either way, once tested and identified, people can be treated with potent antibiotics to counter spreading the infection to others.

Though Gennaro is understated about her contribution to the test – “I’m from southern Italy. We’re taught not to brag” – her work is very significant, says her boss and long-time colleague, PHRI director David Perlin, PhD.

“The technology is a huge leap forward for patients, physicians and public health professionals,” Perlin wrote in an e-mail. “Marila has worked for more than a decade to understand the body’s response to TB infection. In my view, this new test will phase out the tuberculin skin test, which has been around for more than 100 years, because it specifically identifies TB and can be used in BCG vaccinated and immunosuppressed individuals, such as those with HIV/AIDS. If the new test does replace skin testing, it will be used to screen tens of millions of people each year.”

Gennaro resists talking about the financial royalties expected to result from the new test, which has begun being mandated by the

NJMS PEOPLE DO YOU KNOW?

CDC and the World Health Organization. Instead, she focuses on what is for her the poetry of investigating TB—the science and the people it will help. Describing TB as “a human scourge,” Gennaro rattles off its realities and implications. One-third of the people in the world are infected. “It’s a disaster. It’s one of the great killers of people,” says Gennaro. “But if it’s diagnosed early, you’re able to help. What greater gratification can there be for a scientist than to do something good for someone?”

“My husband jokes that I’m not excited about something unless it has implications for thousands of people,” she says of Riotta.

Gennaro’s lab is also dedicated to developing a TB blood test which will distinguish the active disease from the infection.

Gennaro expects it will be ready for use in the next two years—a relatively short span on a scientist’s clock.

In lay terms, the trail goes like this: when something foreign enters the body—like the TB infection—the immune system makes antibodies. The antibodies cling to certain proteins. With TB, the proteins number 4,000.

First, her lab pursued the antibodies that are present in people who have TB versus those who don’t. Then, using a microarray technology, her lab tested 1,000 blood samples from people worldwide who have TB. To date, drops of blood on these chips—picture something the size of about three thumbnails—have clung to 50 of the 4,000 proteins. At the end of the research day, they will develop a blood test that uses only the essential few of the 50 proteins to determine if someone has the active disease.

Like a nightmare infection, TB is the gift that keeps on giving. In addition to HIV/AIDS, it has spread as the result of immigration, increased global travel, and economic and social problems like poor housing, homelessness, malnutrition and drug and alcohol problems, Gennaro says. In poorer countries like India or sub-Saharan Africa, virtually entire populations are infected.

As Gennaro and others learn from fellow

scientists from developing countries, pediatric TB is a serious problem—the end result of the reality that the disease is a major killer of mothers. Teachers—people in their 20s, 30s and 40s and the backbone of a country’s population—are routinely exposed to the illness and also account for a significant number of deaths in a country like South Africa, where one out of every four adults has HIV.

“What’s left are people who can’t provide for themselves,” Gennaro says, her empathy evident as she talks about families being destroyed and children being abandoned.

One senses that despite being on another continent, her own family, including her mother, with whom she speaks daily, is always with her. She misses her husband’s cooking. “He’s the everyday cook—very creative in cooking quick things,” says Gennaro, who describes herself as the Sunday-dinner and holiday cook. This year, she was in her New York kitchen for Thanksgiving and her Rome kitchen for Christmas.

E-mail is an absolute necessity in their bi-continental life. After her conference, Gennaro received a congratulatory e-mail from Perlin. A proud moment, she forwarded the message to her husband. Her face lit when she relayed his reply, saying he was not at all surprised by her success. “It was so sweet...so sweet,” she says.

Her face also lights at references to her children—raised as Americans who speak Italian at home and continue traditions of both cultures. She misses her daughter, who recently returned home to New York for a visit. “When she’s here, we enjoy spending time together, shopping and seeing movies,” says Gennaro.

She recalls a phone call from her son, who learned to read Italian from the sports pages of the international newspapers. He asked her to be on a science committee at his former high school, where they no longer have a connection. Despite the obviousness of her packed life, will she do it?

“Of course,” she says, smiling broadly. “My son asked me.” Spoken like a true Italian mother. ●

PETER TOLIAS

Making Medicine Personal

One size doesn’t fit all when it comes to the future of medicine. In fact, genetic variations hold the secrets to clinical success.

By Mary Ann Littell

PETER Tolia’s ability to ‘think outside the box’ has propelled him to the top ranks of science and industry. But his love of music almost led him to choose a totally different career. An accomplished musician, he was lead guitarist in a progressive rock band called Cement Pillow in the mid 1970s. “We played at high school dances and cafes,” he recalls. “The band members wanted to tour instead of going to college, but when I asked my parents if I could take a year off to go on tour, they said, ‘Absolutely not!’ So I guess that makes me a failed musician.”

He’s achieved great success, however, in the newly emerging field of personalized medicine. As executive director of the Institute of Genomic Medicine (IGM) at NJMS, he leads a unique entity that’s making a name for itself. “Personalized medicine is tailored to individual patients rather than populations,” says Tolia. “It offers the potential to improve the prevention, diagnosis and treatment of disease, based on a person’s genetic background.”

Tolia has been interested in biology since childhood and knew early on that he wanted a career in science. He graduated from high school in 1976, “around the time that scientists learned how to splice genes together-

er using restriction enzymes. Being able to splice genes and study them in an isolated system gave us for the first time a molecular tool to start assessing gene function and launched the field of molecular genetics.”

Genetics determines our susceptibility to certain diseases and also affects how we respond to medicines. For example, two people with a similar form of cancer who take the same medicine may have completely different outcomes. The drug may shrink a tumor in one person, but not the other. The two patients may also experience different levels of side effects. Genetic variations are a major reason for these different reactions. Molecules called biomarkers, found in blood, other body fluids or tissues, enable scientists to tailor treatments to patients. Biomarkers can be used to identify disease risk, make a diagnosis and guide treatment.

“Personalized medicine will revolutionize the process of drug development,” says Toliás. “In the old days, drugs were developed, tested and then given to everyone with the hope that they would be safe. That has given rise to problems and situations like Vioxx, where a small percentage of people taking the drug had serious side effects. In the new world of drug development, biomarkers are used to identify better medicines. For example, a drug company may develop a drug that’s effective, but only for 30 percent of the population. If they don’t know how to identify that 30 percent, the clinical trial will fail and the FDA won’t approve it. But if a biomarker helped identify patients who respond to treatment they could recruit only the 30 percent for the clinical trial that respond positively to the drug. This biomarker would then be used in the marketplace within a diagnostic test to direct the drug specifically to only the people who will benefit from it.”

Toliás, a native of Canada, received his undergraduate degree from McGill University in Montreal and stayed there, earning his PhD in 1987. His early work focused on viruses and how they infect and propagate in bacteria. From there, he grew interested in how genes are regulated in



Peter Toliás, PhD

higher organisms. He did postdoctoral work at Harvard, where he studied the fruit fly to understand how life forms develop. His mentor at Harvard was also head of a molecular biology institute at the University of Crete. Under him, Toliás studied the Mediterranean fruit fly in Crete for two summers in 1987 and 1988. “We were looking for clues on how to control the this fruit fly, a major agricultural pest,” says Toliás. There, he met his wife, Mary Konsolaki, a native of Athens, a research associate professor of genetics at Rutgers.

After spending an additional year at Harvard while Konsolaki finished her doctoral studies, Toliás went to work at the Public Health Research Institute (PHRI),

which is now a UMDNJ affiliate but was then an independent research facility based in New York City. At the time, PHRI was forming the partnership with UMDNJ, and Toliás notes that he was the first PHRI colleague to move to New Jersey and to receive an academic appointment at NJMS.

At PHRI, Toliás focused on understanding how proteins that bind to nucleic acids affect gene expression in the developing fruit fly. “My work involved using molecular techniques to understand the function of many genes at the same time. This was what got me interested in putting together the Center for Applied Genomics.” He explains that DNA chip technology invented in the mid-90s was becoming mainstream but

NJMS PEOPLE DO YOU KNOW?

didn't exist in New Jersey. "My research needed this technology and my collaborators needed it. So in 2000, PHRI, NJMS and NJIT jointly developed the Center for Applied Genomics with a state grant for \$1.2 million to bring the chip technology here."

Tolias became director of the new Center, but left this position in 2003 for a detour in industry. As worldwide vice president of advanced research and technology assessment at Johnson & Johnson's (J&J) Ortho-Clinical Diagnostics, he worked to develop new products. To hone his business skills, he enrolled in a leadership program at the

position. Of course I was interested. It was a great opportunity." After conducting a national search to fill the position, NJMS hired Tolias in May 2007.

Fast-forward to the present, as the scientist is happily building his empire. "The IGM's function is to facilitate the transition from treating diseases to treating individuals," he says. "It combines research, development, clinical labs and clinical care. The clinical labs offer four types of testing: molecular diagnostics, cytogenetics, clinical genomics and biochemical diagnos-



diagnose sporadic autism—autism that is present in a child but not the parents."

He is also pursuing several entrepreneurial initiatives. He and NJIT professor Timothy Chang

invented a liquid dispensing/aspirating system capable of producing tiny droplets of a substance for research and analysis. Their patent, "Delivery of Metered Amounts of Liquid Materials," won New Jersey's Thomas Alva Edison Patent Award for Emerging Technologies last year. It will have an application in microarray technology, which uses a robotic system to deposit tiny droplets of liquid containing DNA to glass slides which are then scanned microscopically to measure genetic activity. The invention, called SmartPin, offers an improvement over the current system, using fiber optics rather than a metal pin to apply the liquid to the slide.

SmartPin, still in prototype, is co-owned by UMDNJ and NJIT. Tolias and a partner are negotiating for the license to commercialize it. Researchers would be able to use SmartPin to prepare customized medicines, so that each dose of each pill is made specifically for one particular patient. "We're also seeking financing from the UMDNJ Foundation Venture Capital Group."

It's hard to imagine this scientist having any leisure time, yet he has several hobbies. An 11-year member of the Over the Hill Ice Hockey Club, he skates in a friendly "gentleman's game" at Elizabeth's Warinanco Ice Rink every Friday night. He, his wife and their two children—a daughter in college and a high-school age son—are also avid skiers.

Tolias continues to pursue his interest in music and has a home recording studio and a music Web site. Over the years he has taught himself to play other instruments, including the bass, drums, synthesizer and bouzouki, a Greek string instrument. He's also produced three CDs of original music.

Despite his love of music, he's glad he didn't make a career of it. He says he's exactly where he wants to be: "I'm committed to doing whatever I have to do to bring personalized medicine into clinical practice." ●

"I'm committed to doing whatever I have to do to bring personalized medicine into clinical practice."

University of Pennsylvania's Wharton School.

Tolias describes his four years in industry as "like a long sabbatical. I felt I was there to acquire skill sets I didn't have, which were on the clinical and executive management end." He enjoyed the challenges of pharmaceuticals and managed three teams of colleagues in New Jersey, Rochester, NY, and La Jolla, CA. However, the position required a great deal of travel. He suffers from severe motion sickness and had always controlled it with scopolamine, administered by a skin patch. "I was traveling so much that I developed a serious skin allergy and could no longer use the patches," he says. "There is no other medication that helps me. So I had to change my lifestyle and look for a different career."

In 2006, he accepted an executive position at a New Brunswick-based biotech company, Rosetta Genomics. However, just six months into this job, he received the call that would bring him back to UMDNJ. It was from an old friend and colleague: Marvin Schwalb, PhD, who was then the director of the Center of Human and Molecular Genetics at NJMS. "Marvin was retiring, and he said NJMS was upgrading the Center into a larger Institute and would initiate a search for a new executive director. He asked me to consider applying for this

tics. There is also a genetic counseling clinic, located in the Doctors Office Center, with satellite clinics across the state."

Tolias says the IGM is totally self-supporting, with one-third of its budget coming from grants and two-thirds from the clinical services it provides. To continue its growth, it is developing ties with pharmaceutical companies and actively seeking other grants, corporate contracts and joint business ventures. "We're committed to sharing knowledge about personalized medicine and its implications for drug development and clinical practice," says the scientist.

To this end, the Institute sponsored a "Symposium on Human Variation: A Driver of Personalized Medicine" in January 2009. The first symposium of its kind to be held at UMDNJ as well as the first in New Jersey, it featured lectures, panel discussions and presentations by scientists and policymakers.

Tolias wears other hats at the medical school. He is a professor of pediatrics and was recently named research director of the Autism Center at NJMS. "The Autism Center fits nicely into our model of translational medicine," he says. "We're offering testing services to the center, and one of our investigators has filed a provisional patent for a new chip technology that will help

TAMIR BLOOM

The Olympic Fencer Who Fixes Kids

He dueled his way to Australia but now tackles life-changing challenges. **By Mary Anne Ross**

TAMIR Bloom, MD, is not afraid of challenges. In fact, the newest member of the NJMS Department of Orthopaedic Pediatric Surgery seems particularly adept at handling multiple challenges at one time. Bloom is a two-time Olympian who managed to win two U.S. National Fencing championships while attending medical school and keeping up his grades.

Bloom became interested in fencing almost accidentally. His family had just moved from California to Milburn, NJ. "I was in junior high. A friend saw a flier about joining the fencing team and asked if I wanted to come along. At first it was just something for us to do," he recalls. But in high school and college he stuck with this sport and after watching a video of Olympic fencers, he was truly inspired.

"I was amazed at how well they performed and thought, 'I want to do that,'" he recalls. So Bloom intensified his training and began competing nationally and internationally. Modern fencing is broken down into three categories according to weapon: epee, foil and saber. The epee, Bloom's specialty, is the descendent of 19th century dueling swords.

Meanwhile, "I always knew I wanted to be a doctor," he says. He started medical

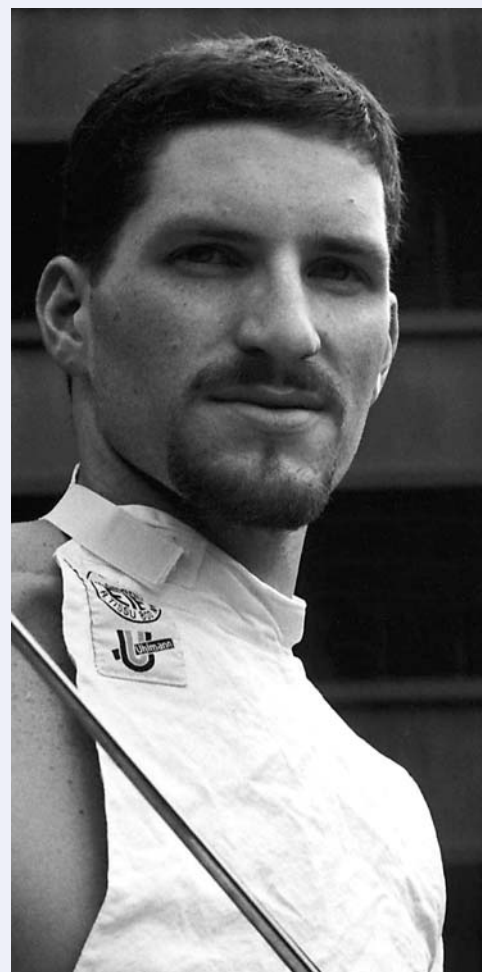
school at Mount Sinai in New York City after the 1996 Olympics. Then, in 1998 and 1999, he won U.S. National Individual Epee Championships and decided to take a break from his studies to get ready for the 2000 Olympics.

"I couldn't give up that opportunity," he explains.

Although he had taken time to prepare, Bloom almost didn't make it to the games because he tore his anterior cruciate ligament (ACL), not in a fencing match, but while playing basketball. Undeterred, he put off a knee operation, wore a brace and continued to compete in fencing in order to qualify. Bloom got to Sydney, Australia, for the games but was defeated in a match against the top-rated fencer in the world.

"There's nothing like being part of the Olympics. There is something very pure about that level of dedication. All the training by Olympic athletes is done because they love their sport. As a result, every year athletes break records and go beyond what we think the human body can do," says Bloom.

He remembers what it was like: "Before you perform, you just want to be alone. You practice, stay in your room and keep focused. Afterwards you're free to hang out

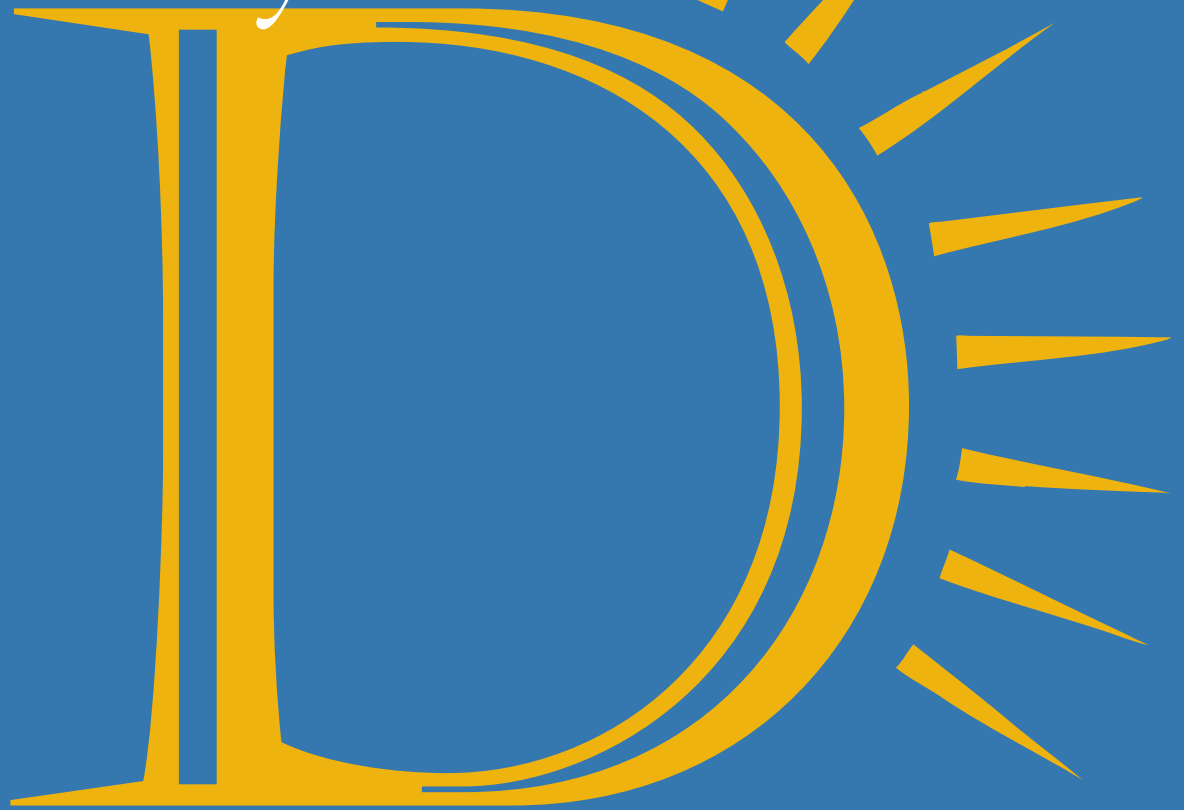


Tamir Bloom, MD, and below: Competing in Atlanta in 1996, he's on the left.

in the village and meet people from all over the world. There are receptions and all kinds of gatherings."

Bloom no longer fences competitively but has a career that still offers multiple challenges. In pediatric orthopaedics, he sees children with a variety of conditions. "My patients may have tumors, cerebral palsy, injuries or congenital abnormalities. Every one and every day is different," he explains. "There is always the complexity of choosing the best intervention. Children are not just miniature adults. Their skeletal systems are growing. Surgery has to be done at the right time and treatment has to be appropriate for their age," he says. "Kids are great. They are optimistic, motivated and want to get better. The results of my work can last a lifetime." ●

Had Any



Lately?



By Eve Jacobs

As the hours of daylight wane, and the strength of sunlight reaching the northern hemisphere weakens, sun worshippers and non-worshippers alike often feel energy lag, fatigue take hold and health start to ebb away. According to the folk wisdom of our grandmothers, the sun could deliver more than warmth—its healing properties were called upon to fight everything from the common cold to tuberculosis, from the bone pain of rickets to the joint pain of arthritis. The sun was a definite player in the more limited medicinal arsenal of even 50 years ago, before antibiotics and other pills of many hues and sizes took center stage.



The history of medicine is anything but a straight line from ignorance to knowledge; it's filled with twists and turn-arounds that mimic an exotic dance pattern. It looks like the status of sunlight—and vitamin D—in our lives might well be coming out of the shadows, where it's been relegated for years with the promotion of sunscreens and sun-blocks to protect skin from cancer-causing radiation, and zinging back into center stage. But this time around, researchers are deciphering the biochemical processes that explain why sunlight is necessary and vitamin D is so important, not only to skeletal health, but most likely to all organ systems of the body.

Sylvia Christakos, PhD, a professor of biochemistry at NJMS, is one researcher who has never been dissuaded from the importance of this vitamin. Awarded continuous funding from the NIH for more than 25 years to support her lab's basic research into the how's and

why's of vitamin D's functions in the body, she is convinced that deficiency of this vitamin can have serious health consequences. Her most recent published article on the link between vitamin D deficiency and multiple sclerosis (published in the *Journal of Cellular Biochemistry*) as well as other findings from her lab were highlighted on the front page of *The Star-Ledger*—an unusual spot for any but the most groundbreaking science stories.

Vitamin D deficiency is far more prevalent than you might imagine. While the sun was once a glorious friend, it became something of an enemy as the rate of skin cancers produced by UV radiation started rising precipitously. With grave warnings about the potential hazards of soaking up the sun's rays, most Americans reacted by promptly slathering sunscreens on all exposed areas of skin all of the time—and they did the same to protect their children. While no one is saying

that we should return to sunbathing in the “unprotected” state, many of those in the know are advocating some sun exposure minus the screens and blocks. The reason is that exposing skin to sunlight, specifically the strong rays that we get primarily in spring and summer in the northern hemisphere, starts a chain of biochemical processes that result in our bodies producing adequate amounts of vitamin D to promote optimal health. It's extremely hard to get enough of the vitamin from our diets, since only oily fish and cod liver oil contain any but the most meager amounts. Vitamin D has been added to milk and some cereals to head off rickets in children, but the levels of deficiency in both adults and children, and the havoc it seems to be causing in our bodies, is staggering.

Recent statistics indicate that in the U.S., about 40 percent of all children and adults are deficient. Some groups are particularly affected, including infants and toddlers; those with darkly pigmented skin; pregnant women, who, in turn, give birth to newborns with low levels of the vitamin in their blood; and the elderly, including up to 80 percent of nursing home residents and 60 percent of hospital patients. Experts in the field are warning that children whose levels are low may suffer immediate consequences such as fragile bones and muscle weakness, but the dangers can also be far-reach-

The research team in the Christakos lab includes: (clockwise from top left) Sneha Joshi, PhD student, Sylvia Christakos, PhD, Leila Mady, MD student, Dare Ajibade, MD/PhD/MPH student, and Yan Zhong, PhD student.





With grave warnings about the potential hazards of soaking up the sun's rays, most Americans reacted by promptly slathering sunscreens on all exposed areas of skin all of the time—and they did the same to protect their children.

ing and devastating, with young and middle-aged adults more at risk for autoimmune conditions such as type 1 diabetes, rheumatoid arthritis and multiple sclerosis, and older adults more prone to breast, prostate and colon cancers, as well as infections such as tuberculosis and influenza, and long-term, insidious stalkers such as hypertension and heart disease.

On October 13, 2008, the American Academy of Pediatrics released new guidelines on vitamin D for infants, children and adolescents—raising the daily intake from 200 to 400 international units—to prevent rickets, a childhood bone-weakening disorder that, oddly enough, seems to be making a comeback in this country and is highest among infants who are exclusively breastfed. Doubling the intake during the growing years may also provide some defense against osteoporosis in adulthood, but experts now say that all adults need to pump up their vitamin D, both by getting out in the sun for short periods minus cover-ups and sunscreens, and probably also through supplements, particularly from November through March when the sun is not strong enough to provoke the necessary reaction in the skin. Many think that doubling the recommended amount of D is not going nearly far enough.

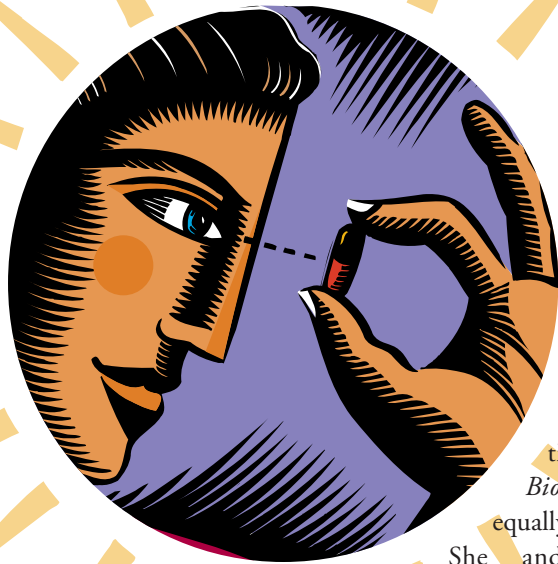
Although D takes its place in the line-up of vitamins, its action in the body places it in the steroid hormone category. Christakos, who began her investigations of this vitamin in the late '70s, says that at that time, receptors for the vitamin had been found in only bone, intestine and kidney, and that she made a splash as a post-doctoral fellow when she discovered vitamin D receptors in the pancreas in 1978, earning her and fellow-investigators an invitation to present their findings at an international conference in Berlin. After that, "the field exploded," she says, with vitamin D receptors being discovered in the brain, skin, placenta and in breast and prostate cancer cells. It was in the early to mid-'80s that researchers discovered that the active form of D [calcitriol or 1,25(OH)₂D₃ (1,25D₃)] can inhibit cancer cell growth, and also

cytokine production, resulting in an immunosuppressive effect. (Cytokines are a category of signaling proteins that are critical to the development and functioning of the immune response. They are often secreted by immune cells when they've encountered a pathogen.)

While all of this sounds like the discovery of a magic potion, most of the vitamin D research has been confined to laboratory research on cells or animals. In one notable experiment of this type, young mice genetically predisposed to get type 1 diabetes were given injections of the active form of vitamin D three times weekly and consequently did not develop the disease. In another experiment, leukemic cells treated with 1,25D₃ in the laboratory became normal. And in mice with breast and prostate tumors, treatment with 1,25D₃ inhibited the growth of existing tumors, as well as prevented breast cancer in those prone to the disease because of environmental exposures.

"Rats fed diets low in vitamin D and calcium develop significantly more breast tumors when treated with a chemical carcinogen than rats fed adequate vitamin D and calcium," Christakos explains. "When rats are treated with the active form of vitamin D prior to treatment with chemicals known to induce breast cancer, the breast tumor incidence is reduced or tumor formation is entirely prevented. Low levels of the active form of the vitamin are linked not only to increased incidence of breast cancer, but also to increased progression of breast cancer, in humans."

With deficiencies linked to such a wide array of serious medical conditions, Christakos continues to pursue an understanding of the mechanisms by which vitamin D works in the body. Just this past summer, she and a team led by Lawrence Steinman, PhD, from Stanford University pinpointed how treating mice with multiple sclerosis with 1,25D₃ decreased the induction of interleukin 17 (IL17), a cytokine that has been reported to play a critical role in inflammation in multiple sclerosis and other autoimmune diseases. Even more surprising, they found they could actually reverse front and hind limb



paralysis in these mice while the 1,25D3 therapy continued. “This is hot stuff,” she says.

More recent findings that have been accepted for publication in the *Journal of Biological Chemistry*, are equally “hot,” says Christakos.

She and researcher Puneet Dhawan, PhD, have pinpointed a mechanism by which 1,25D3 inhibits the growth of breast cancer estrogen-receptor-positive cells. “We’ve found that 1,25D3 induces a tumor suppressor gene in the breast cancer cells,” she states. “If you get to the mechanism and understand why, you can develop new targets for treatment.”

This past September, Christakos organized a symposium on vitamin D at the American Society of Bone and Mineral meeting, which attracted 3,000 participants. This is a pivotal time for vitamin D research, when years of basic laboratory investigations are yielding results that can finally be translated into new medical therapies. “We need adjuncts for breast cancer treatments. After two rounds of chemotherapy, the standard drugs often lose their effectiveness,” she says. Unfortunately, treatment with the active form of vitamin D, 1,25D3 (or calcitriol), which is most effective, does have a downside. Since 1,25D3 works together with calcium, a balance must be maintained. Hypercalcemia, a sometimes dangerous elevation of calcium levels, can result from too much calcitriol. (1,000 IU of vitamin D daily is recommended. Some studies have shown that as much as 10,000 IU of vitamin D daily will not cause toxicity). The NJMS researcher explains that current clinical trials testing the effectiveness of calcitriol to battle breast cancer, in tandem with standard chemotherapy, closely monitor calcium levels, and patients are taken off the active form of vitamin D if calcium levels start rising.

Christakos is definitely a proponent of this little-celebrated vitamin, as are many experts who figure prominently in the health and nutrition world. In mid-November, CNN.com posted an article entitled, “Experts Weigh in on Which Vitamins to Toss Back or Toss Out.” Andrew Weil, MD, Director of the Arizona Center for Integrative Medicine, Christine Northrup, MD, a widely read author specializing in medical issues, and Walter Willett, MD, Chairman, Department of Nutrition at Harvard School of Public Health, all take Vitamin D supplements and gave this vitamin a resounding endorsement.

“We’re believers,” Christakos states. And in her laboratory, tucked away on E level of the Medical Science Building, the beat goes on—or shall we say the research continues—to unlock the secrets of how to use the power of the “sunshine vitamin” to fight off some of our most potent medical adversaries. ●

From Dragons to a Vitamin D Mouthwash: It’s All in a Day’s Work

KOMODO dragon blood. The skin of African clawed frogs. Mice that express human genes to fight periodontitis. Flounder skin. Aerosolized vitamin D to fight cystic fibrosis.

Welcome to the world of Gill Diamond, PhD, associate professor, oral biology, UMDNJ-New Jersey Dental School, whose quiet battle against some mighty fierce bacteria has led him down highly creative scientific pathways. You’d never guess that in this very ordinary-looking lab, tissue samples from the world’s largest lizard, garnered with some risk to life and limb and shipped across the world from Indonesia, were analyzed and put to the test.

Diamond, who is also an NJMS associate professor, cell biology and molecular medicine, is fascinated with how the human body fights infection and he has looked for active molecules to aid that fight in some pretty offbeat places. It all started with his postdoctoral advisor, Mike Zasloff, who identified antimicrobial peptides (small proteins with antibiotic properties) in the skin of African clawed frogs while working at the NIH. The tip-off was that these frogs heal from wounds without ever incurring inflammation or infection, even when they’re returned to bacteria-laden waters.

When Zasloff moved on to The Children’s Hospital of Philadelphia, Diamond followed. His research focused on looking for the mammalian “equivalent” to the molecule in frog skin, and led to the discovery of a molecule with infection-fighting properties in the airways of cows, which he named TAP (tracheal antimicrobial peptide). He then identified similarly active peptides in the skin of winter flounder. This research attacks one of the world’s most unrelenting and deadly medical problems—infection—and asks a crucial question: Is it possible to bolster the body’s immune defenses so humans are better equipped to fight off potentially lethal germs? As many of our workhorse antibiotics fail us, finding answers becomes more urgent.

Diamond’s work with cows and flounder laid the foundation for his collaboration in a study of the saliva, blood and tissue of the Komodo dragon, which can top 10 feet in length. The dragons kill their prey or maim them with bites that inject saliva housing many different strains of bacteria.



Gill Diamond, PhD

The creatures also fight with, and bite, each other, but they never fall victim to infection. The researcher and his team identified several molecules in the dragon's blood that have antibiotic properties, earning him quite a bit of media attention, including a role in a documentary by the BBC, although the group has not yet published its findings.

Of course, the process of developing such molecules into useful drugs is generally long and expensive. The ultimate question is: Does it work against real infections and is it more effective than drugs that already exist? The development process can take 10 years or more.

His current venture may yield usable results far more quickly. Joining forces with Sylvia Christakos and researchers from her lab, Diamond demonstrated that vitamin D in concentrated doses will induce genes in mucosal cells lining the lung and trachea to produce a greater quantity of anti-microbial peptides than usual, thereby enhancing the cells' own disease fighting capabilities. Cystic fibrosis (CF) is a genetic condition that results in repeated serious infections of the lungs and trachea, which can be life-threatening. Those with CF tend to be vitamin D deficient.

Although human trials have not been done yet, Diamond feels confident that the vitamin can be aerosolized and deliv-

ered directly into the lungs of those with CF; and that FDA approval will not be difficult since "the research results are good and this is a vitamin, not a drug, and is not a particularly toxic compound."

He is equally hopeful about using vitamin D to pump up expression of anti-microbial peptides in the mouth, curbing the production of gingival plaque and thereby halting periodontitis. "We will move into the mouse model next," he says. The investigators are awaiting a special mouse that expresses the human gene for the vitamin D responsive anti-microbial, which is currently in development and will soon be shipped to Newark from California. Diamond envisions a vitamin D mouth rinse to use once or twice daily for 30 seconds. "Since it's not absorbed systemically, we can use high doses of this vitamin to fight periodontitis," he explains.

So, while Diamond has never wrestled dragons in Indonesia, nor is likely to, his imagination roams the globe in search of powerful agents that will pump up our own innate ability to slay the killer bacteria lurking within us and everywhere in our world.

Current research is funded by the Cystic Fibrosis Foundation and the NIH, and was published in the Journal of Cystic Fibrosis in 2007.

A Day in the Life of Neil Kothari, MD

What does it really take to be an
award-winning medical educator?

By Lisa Jacobs



7:45 a.m. I arrive at the office of Neil Kothari, MD, NJMS assistant professor of medicine, unsure what to expect. Reviewing his CV the previous evening, I was struck by the sheer volume of accumulated awards for excellence in teaching and community service. In only four years as a faculty member, Kothari has been a four-time nominee and two-time winner of the Golden Apple Award for Teaching Excellence. One of NJMS's "Top 20 Teaching Faculty," he also won the UMDNJ Foundation's "Excellence in Teaching" award, the Division of Academic Medicine's "Excellence in Education" award, and the internal medicine residency program's "Faculty Teaching Award." This short selection from a much longer list makes me wonder what remarkable gifts, traits, or skills Kothari possesses.

8:15 a.m. I already understand that the secrets to his success are in his demeanor, approach and attitude. I watch as his warmth and interest are extended to residents during their morning report. It's clear by virtue of his mild, yet pointed, informed, and often humorous questioning, that he is teaching them intellectual and analytical skills as much as treatment techniques. Kothari asks residents to support their reasoning for each conjectured diagnosis, and to weigh the options for every treatment plan. "Over-treating upfront is always okay," he advises. "You can take patients off treatments later, but you can never go back in time." Kothari takes opinions seriously and observes quietly as the residents run the meeting. He interjects, praises and criticizes only when necessary. The approach seems successful: the conversation is vibrant, important conclusions are reached, crowds form around this doctor before and after the meeting.

9:15 a.m. I watch as this same approach works with patients. "It's quiet in here today," Kothari says without a hint of irony, as we walk into the bustling emergency room at University Hospital (UH). Patients wait on beds in the hallway. He questions each about symptoms, medical histories, and their opinions on what's wrong and possible treatments. When a long-term patient with sickle cell anemia who generally avoids hospital admission clutches Kothari's arm telling him, "It's real bad, doc. I need to be admitted," the doctor quickly complies, telling the resident that he trusts this patient's judgment. The man is wincing in pain.



the full sexual history has been obtained, the class, Kothari, and the “patient” discuss what each examiner could have done better and the probable diagnoses.

5:00 p.m. I have my first opportunity to sit still and talk with Kothari. I am exhausted but he is as energized as he was nine hours earlier. We are in his medical school office (he also has one in the hospital) and he elaborates on his thoughts about medicine and education. “I want to teach

students about the sanctity of the physician-patient relationship—it’s paramount to everything we do.” Kothari believes that physicians are responsible not only for the welfare of patients, but for the community: the most important message he delivers during the Core course. “We have a commitment to the underserved, and to this community,” he insists.

Community activism is what made him pursue medicine, attend NJMS, and then return as



a faculty member. “Medicine always seemed to fit with my values and what I wanted to do with my life,” he explains. “It’s what I was born to do.” Soon after matriculating to NJMS, Kothari stepped up to lead the SHARE Center, an umbrella organization which centralizes, supervises, and funds several service organizations.

After graduating in 2000, Kothari completed an internship and residency in internal medicine at NYU Medical Center. “In internal medicine, every patient is a different puzzle. You have to put the pieces together. It’s always something new. You use your mind, intellect, and the skills you’ve developed—it’s very powerful,” he explains. In 2003-2004, Kothari was chief resident in internal medicine at Memorial Sloan-Kettering Cancer Center, where the experience of being in charge of a team, as a self-described “control freak,” suited him well. “It was the aha moment. I knew it was what I wanted to do for the rest of my life.”

Afterward, Kothari returned to NJMS looking for a job that would enable him to help grow a community-oriented, morally situated medical school, even though no openings were posted. After knocking on doors and handing out resumes, he landed a position as a UH hospitalist in November 2004. By February 2005, he had also become the associate director of the Internal Medicine Residency Program.

6:00 p.m. I wrap up the interview and head out. I’m almost out the door. Kothari stays behind. Most nights he’s there in the office until 6:30 or 7:00 pm. Then, he may go back to check on his patients. He stops me to reiterate his enthusiasm about NJMS, and his projects. “If it was easy for me, I wouldn’t be doing it. I love New Jersey. I love it here. I never want to leave.” ●

10:00 a.m. Kothari attends a faculty development session on team-based learning. Working as an SAT tutor during college and medical school, he became fascinated with the goals as well as the means of getting an education. Analyzing ways to help students learn effectively fascinates him. “Everyone is a sum of their experiences,” he explains. “When I graduated from NJMS, the school had a lecture-based environment and I wasn’t sure if I had learned as much as I could have.” Now, he is continuing the work of modernizing the curriculum, which stresses compassion, personal commitment, and community involvement. A goal is to take more advantage of technology, like podcasts. “We’re in academia because we always want to do better,” he says.

1:30 p.m. Physician’s Core II is a basic class that deals with ethics, cultural competencies, advanced communications, history taking, diagnosis, and physical exams. Kothari is the director. While waiting for Lisa Pompeo’s lecture on sexual history-taking to begin, Kothari fidgets and scours the room before taking the microphone to answer questions. Pompeo is an associate professor in obstetrics, gynecology and women’s health. (See page 3 for “Pompeo’s Passion.”)

3:00 p.m. The large class breaks into small discussion groups and Kothari leads one. A fourth-year female medical student visits the group to play the part of a patient infected with a sexually transmitted disease. Students take turns asking this “patient” questions to obtain her sexual health history. There are intermittent giggles while Kothari pushes students to be thoughtful and comforting. He critiques, compliments, and jokes. Some are more successful, calm and thorough than others. One student asks the “patient” about her hobbies. When she answers, “Dance,” and the student doctor replies that she looks like she “really enjoys it,” Kothari quickly stops the line of conversation, saying, “Okay, you’re done.” There are hysterical bouts of laughter. “Any other volunteers?” The group is fully engaged. After

IN the last two months of his life, Nick Macioci suffered the ravages of cancer while grappling with the heartache of not being able to attend a funeral for his mother, also a victim of the insidious disease. Now, Barbara Ciricillo holds onto memories of the compassionate care her brother received at University Hospital (UH) in Newark during his last days and credits a student-inspired initiative at NJMS with encouraging him when she could not be there herself.

"I am Nick Macioci's sister Barbara," she wrote to third-year medical student Ronald Zviti. "We met a few weeks ago at the hospital when you were visiting my brother. I understand you were with Nicky when he passed away and I was so comforted to know that he was not alone."

Zviti was there at Nick's bedside when he died because of a pilot program called All E.A.R.S. (Encouraging Active Reception and Self-Reflection). Compassion, basic human interaction and support are core components of this initiative implemented about a year ago by five student scholars at the Healthcare Foundation Center for Humanism and Medicine at NJMS. Jason Alexander, the organizer, Zviti, Nakul Raykar, Marisa Earley, and Shriji Patel are in the class of 2010.

This program was developed under the direction of their advisors, Lillian Pliner, MD, a medical oncologist and assistant professor of medicine, and Patricia Murphy, PhD, an advance practice nurse for ethics and bereavement at UH. Part of Murphy's job is to find patients who wouldn't mind visits from students.

Through the All E.A.R.S. program, aspiring physicians get to know patients better and learn how to provide emotional support. Their responsibilities vary from serving water, getting extra blankets, adjusting beds, listening to music, engaging in conversation, getting a nurse for someone who might be in pain or simply sitting in silence.

Participation in All E.A.R.S. not only helps students fulfill an altruistic desire to comfort chronically ill patients, it also helps them prepare



LEARNING BEDSIDE MANNERS

When Students Are All EARS for Dying Patients

By Kaylyn Kendall Dines

patient. It turned out to be Macioci. "The hardest part is walking in the hospital room door because you don't know what's on the other side," says Alexander, describing the first time the pair entered Macioci's UH room. "One of the best things Dr. Murphy taught us is, 'Don't be afraid of silence.'"

Instantly, they formed a bond with Macioci. His sister recalls, "Nicky started to tell us about Ronald and Jason and said they were wonderful. The three had great talks."

Macioci, who was hospitalized for months, enjoyed those visits immensely. A former gas station manager who once sang in a quartet, he spoke about mistakes, regrets, as well as the people and things he loved most in life. "He needed to talk and I loved hearing what he had to say," recalls Zviti, who even met Macioci's children and grandchildren.

"We can't change fate, but we can make patients worse by leaving

for the United States Medical Licensing Examination® (USMLE), particularly the section that assesses competencies like medical knowledge, clinical skills, and patient interaction. Since 2004, third-year students have been required to take this national test, sponsored by the Federation of State Medical Boards of the United States, Inc. and the National Board of Medical Examiners®. This exam must be passed in order to become licensed.

Clinical rotations within the clerkship for third-year students also help students develop proficiencies needed to understand patient care, to treat disease, and to promote wellness. For first and second-year students, the All E.A.R.S. non-credit elective gives them a chance to gain bedside experience, especially the value of listening. "We have two ears and one mouth and we should use them proportionately," says Murphy, who is also clinical associate professor at NJMS and the UMDNJ-School of Nursing. Some patients are eager to talk. She tells her students, "Ask them to tell you their life stories and they usually will."

Last year as a team, co-founders and third-year medical students, Alexander and Zviti mustered up the courage to visit their first

them alone and in pain. Those are their biggest fears,” explains Murphy, who has more than 30 years of experience in bereavement and ethics. She is proud of the students and acknowledges, “Dealing with death and dying is a skill they can learn.”

Pliner agrees, “I think it is an expertise that needs to be validated. Having this skill and being called upon to use it, shouldn’t be seen as someone else’s job.” Pliner and Murphy want students to identify emotional cues and broach all the difficult topics including fear, sadness, anger, and disappointment.

A conversation with a terminally ill patient is similar to having a “heart-to-heart with your girlfriend, boyfriend or spouse,” says Pliner. Remaining attentive is essential because “people, especially patients, know when you are tuned into them.”

Students who feel overwhelmed when visiting a dying patient are told to excuse themselves and step out of the room to gain composure. The All E.A.R.S. program teaches coping strategies and how to engage patients in conversations about physical or emotional pain. When a patient cries, students suggest that they “put those tears into words,”

says Murphy. Rephrasing questions also helps turn emotions into words. And, students learn that a physician’s carefully crafted bedside manner should actually extend to all their patient interactions and go beyond the actual hospital setting.

Ciricillo agrees, “I think bedside manner is extremely important especially when someone is going through a really painful illness. I’ve encountered healthcare professionals who seem to have no personality, who give quick answers, and then rush off. I understand they are busy and may have other families to deal with, but it is really important to show a little humanity. It helps you get through the situation.”

Meanwhile, life without her mother and brother “was and still is tough,” this sister says. Everyone in the Ciricillo family was working full-time jobs at the time of their deaths, she recalls. “It was so hard to get to the hospital during the day. One of the things I am extremely grateful for is knowing that Ronald was there for extended periods and that my brother opened up emotionally with him. It was so comforting to know someone who was inspiring and uplifting would be there popping in to see him.” ●

Four-Legged Friends in the Hospital

BUDDY Mandel’s four-legged stride is swift when he and his owner, Les Mandel, enter the University Hospital’s Department of Volunteer Services every Wednesday. Buddy, a mixed Spaniel, glances at the volunteer check-in counter, immediately faces the door he just entered and fidgets from left to right in anticipation of his visit with patients. In the hallway, his paws set the pace leading Mandel to the elevators. This duo is one of three certified pet partners who routinely greet children and adults as part of the UH Pet Visiting Program.

Like a superstar on the red carpet, the energetic 11-year-old canine attracts smiles, stares, compliments and adoration. When an admirer stops to stroke Buddy’s white and brown fur, Mandel says, “Hi, his name is Buddy. He’s not bashful.” On the way to the pediatric unit in this NJMS teaching hospital, Mandel explains, “Yeah, he’s everybody’s buddy. He’s like a visiting celebrity. I know patients feel better because of Buddy.”

According to Deirdre Watley, manager of the UH Volunteer Services Department, pet-owner teams have provided comfort and fun to patients, family members and even staff members since the program was established in 2006. They visit select hospital areas including pediatrics, intensive care and psychiatry.

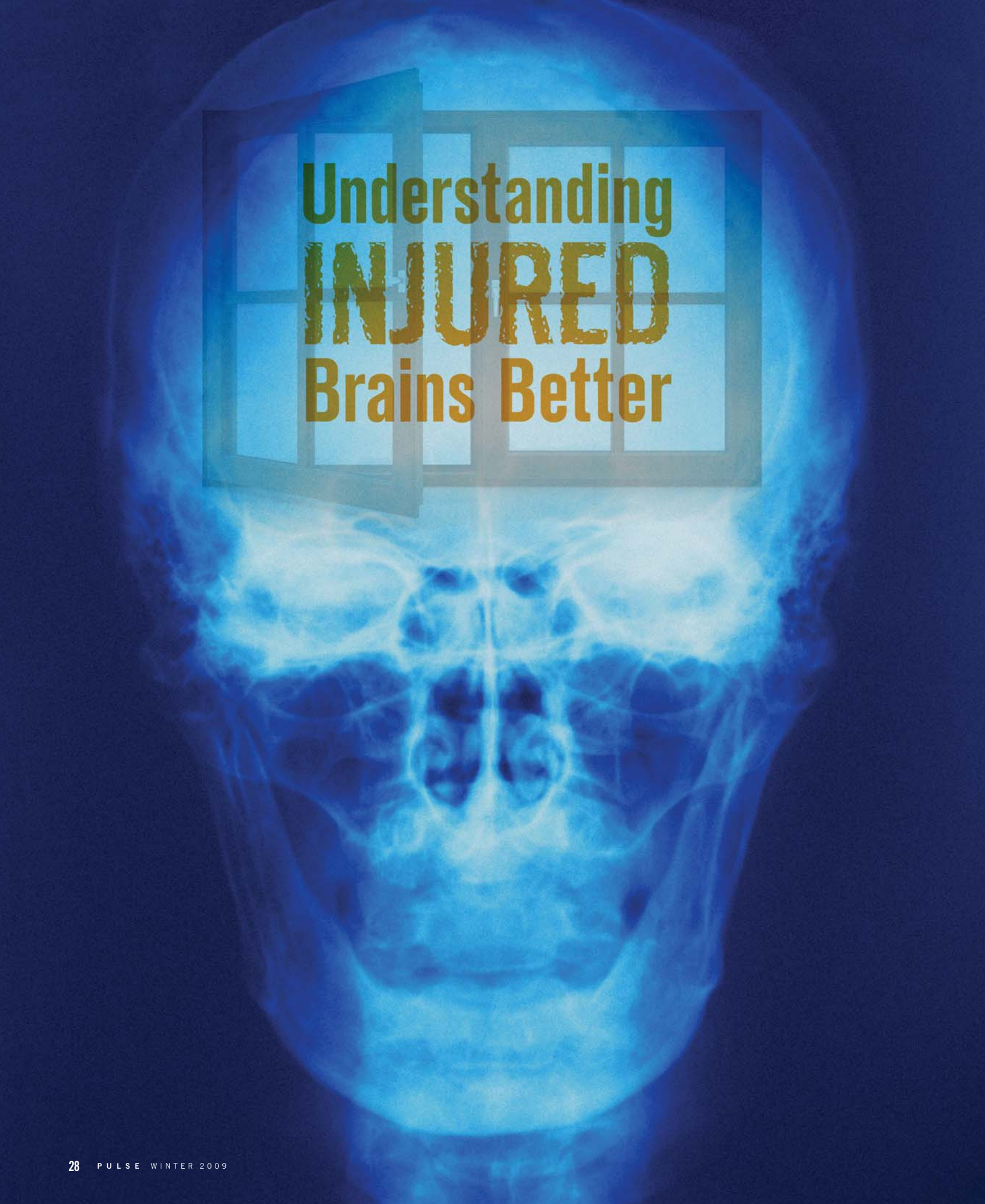
To qualify, pets and owners must first be certified at St. Hubert’s Animal Welfare Center in Madison, a comprehensive dog training program. Animals also meet certain medical requirements before enrolling in orientation at UH.

Carolyn Currey, director of community service at St. Hubert’s, says her certification includes an evaluation of the dog’s temperament as well as an assessment of the relationship between the pet and owner. Aggressive dogs don’t qualify. Currey explains, “The pets we accept are calming, comforting, friendly, clean, have good manners, and behave appropriately in any given situation. We want a dog that won’t react,” startle easily when they hear a screeching fire alarm, or attack when someone bumps into them.

Take AnnieMo, an 11-year-old English Setter, who visits with her owner Donna Cuddeback, program director in the UH Office of Medical Staff Administration. This pet was stretched out on the pediatric playroom floor posing for a picture with a baby girl. Suddenly, a little boy ran to Annie’s side. Gentle at first, he petted Annie’s back before yanking her fur and running away. Remarkably, she never flinched. Cuddeback wasn’t surprised.

Both Cuddeback and Mandel say their dogs tend to linger around people who are sick or stressed. “Annie is almost empathetic,” Cuddeback says. “When I was sick with cancer seven years ago, she never left my side.” —**KAYLYN KENDALL DINES**





**Understanding
INJURED
Brains Better**

BY MARYANN BRINLEY

Like Alice traveling through the looking glass into the topsy-turvy world of Wonderland, John DeLuca, PhD, took some of his first steps into the workings of the human mind through a window into the brain called fatigue. That was 15 years ago. As a neuroscientist, he's conducted research on the nature of memory, information processing, attention deficits and neuropsychological rehabilitation in a variety of clinical populations, including people suffering from amnesia, multiple sclerosis (MS), stroke, aneurysms, traumatic brain injury (TBI) and of course, chronic fatigue syndrome.

This UMDNJ-New Jersey Medical School (NJMS) professor in the Department of Physical Medicine and Rehabilitation always wants to know, “What’s going on inside the brain?”

Take the strange neural landscape of confabulation, for instance. This is a topic on which the researcher has just published a manuscript, “A Cognitive Neuroscience Perspective on Confabulation.” Sometimes, when people say or recall events that are obviously wrong but they believe in all seriousness to be right, it’s confabulation. This person is not crazy, not psychotic. For example, he explains, “I’ll visit a patient who has been in the hospital recovering from a stroke or some acquired brain injury, and he will say, ‘I went into New York City last night to have dinner with my brother, who flew in from LA and we went to a movie afterward.’” When told this couldn’t have happened because he never left the hospital room, the individual will be disbelieving, even astounded because the memory of the night before is so vivid. “The interesting thing about confabulation is that the memory is very real, just misplaced in time, and could have occurred five years before but comes rushing back into the mind. Very intriguing.”

Is this “Twilight Zone” experience rare?

“Oh no,” DeLuca says. “I work with these patients and see it a lot. But this person is not in need of medication for a psychiatric condition. The drug might only make him worse.” What troubles DeLuca is that too often, if physicians can’t find evidence for a disorder, they will automatically label the patient as psychiatric. Just because an injury can’t be seen structurally in the brain using imaging technology doesn’t mean it’s not there functionally. “In science, you start with a hypothesis and if you can’t find support for your hypothesis, it means you didn’t find anything. In medicine, sometimes it seems that if you can’t find something to support your hypothesis, it must be psychiatric, even with no evidence.”

DeLuca, who is also director of the Neuropsychology and Neuroscience Laboratory at Kessler Medical Research Rehabilitation and Education Center (KMRREC), received his BA in psychology from William Paterson University, his MA and PhD in behavioral neuroscience from SUNY–Binghamton and completed a fellowship in clinical neuropsychology at the JFK Johnson Rehabilitation Institute. Over the last two decades, he’s been the recipient of grants from the National Institutes of Health (NIH), the National Institute on Disability and Rehabilitation Research, and the National Multiple Sclerosis Society, and published more than 300 articles, abstracts, books and chapters in his area of expertise, serving as the editor of the book, *Fatigue as a Window to the Brain*. In fact, it was DeLuca and his research team who challenged the old notions of what makes a memory sharp 15 years ago. His most recently edited books are *Functional Neuroimaging in Clinical Populations* (Guilford Press) and *Information Processing Speed in Clinical Populations* (Taylor and Francis).

Right now, along with his associate Nancy Chiaravalloti, PhD, he is in the midst of a major clinical behavioral trial of traumatic brain injury (TBI) which will include 120 subjects and show how injured brains can be retooled for coping better in the world. The number one complaint of people with TBI is memory problems. Yet, he explains, memory is not a single entity but a process which involves acquiring

information, storing it in the brain and then retrieving it. Any brain injury can cause problems with that first phase of memory keeping: acquiring the information in the first place.

It may sound simplistic but as DeLuca says, “You can’t retrieve something if it was never acquired adequately.” If you are listening to a lecture or to your parents or others and getting only 50 percent of what is being said, then you will only be able to recall at best that 50 percent of the information. Some forgetting is normal but “if you aren’t getting all the necessary information, all of a sudden, your recall won’t make any sense.” It was this discovery that upset the accepted notion about what causes memory impairment in MS. While others had suspected that MS patients were encountering recall problems as they tried to retrieve information from long-term storage in the brain, DeLuca proved that it was not a retrieval failure after all. It was the fact that persons with MS had not learned the information adequately to begin with.

In the U.S., “There are about 1.5 million traumatic brain injuries



John DeLuca, PhD

a year. Most are mild,” he explains. But that doesn’t mean the emotional and cognitive consequences are mild in the long run. The individual starts failing at work, at home, with family and friends, becoming frustrated, angry, upset and depressed. “It accumulates,” says DeLuca who believes that this is a widespread predicament, largely undiagnosed. “People don’t often go to the hospital for a mild injury. They are out there in the environment, at work, at home and having trouble. Not only do they have a cognitive problem but they are upset about it.” Outspoken, this neuroscientist believes that a large percentage of the homeless may be on the street as a result of undiagnosed brain injury. And, “there is research showing that a significant percentage of problem kids in school might show evidence of an undiagnosed brain injury.”

So what can be done to improve impairments in learning and memory after brain injury? According to DeLuca, the ability to remember anything is dramatically improved when information can be put into context first and/or when imagery is used. “We call context and imagery the active ingredients in our trial.” In reading a newspaper article, for instance, instead of just plodding passively along through a text, the individual would actively try to relate the words to something more concrete, connect the topic to something else in his or her life, and even link the ideas being presented to an image. “If you create a picture of something in your mind and then relate this picture to the words on the page, your recall is going to be better. That’s what this study is all about: Altering the environment to make sure that people learn. We already have preliminary data from an earlier trial to show that our methods work. Now, we are going to see just how well they work.” DeLuca conducted a trial using similar techniques with people diagnosed with MS, published in the 2005 issue of *Multiple Sclerosis*.

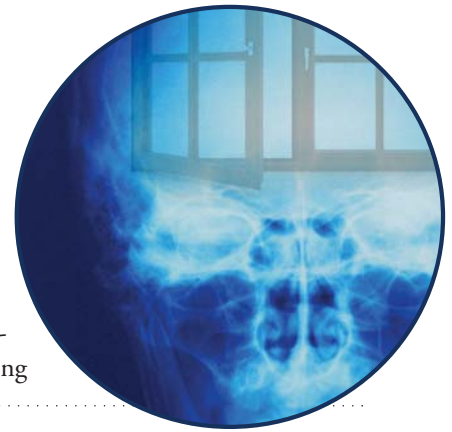
Along with memory issues, “Fatigue is a huge problem in traumatic brain injury,” DeLuca says. “Unfortunately, we have little to no idea how to treat it.”

Way back when, he “liked the idea of studying fatigue because we didn’t know anything about it. That meant there was plenty to learn. When you don’t know anything, whatever you discover is new,” he says laughing. “Unfortunately, the problem with fatigue is that we, as professionals, still know very little about it.

“We think we know how to treat it and try all kinds of medications and other techniques but we don’t know exactly what we are treating. This is because we have no consensus or idea of how to define fatigue.” How do we differentiate between fatigue and sleepiness? A person who reports to feeling fatigued can sleep for 20 hours straight, wake up and still be fatigued. “If you are sleepy, you sleep, wake up and feel refreshed.” Clearly, fatigue and sleepiness are not the same constructs. A brain injury can turn someone into a couch potato and sitting around will compound physical fatigue and perhaps affect mental alertness. In addition, some medications cause fatigue, too. “So when we ask someone, ‘Are you fatigued?’ we really don’t know exactly what we are asking.” Is the fatigue from the brain injury? Is it simply from

being a couch potato or the effects of medication or the environment? Can the patient even differentiate fatigue from sleepiness?

What DeLuca does know is that fatigue is real and it is not something that will show up on traditional MRI scans. However, using

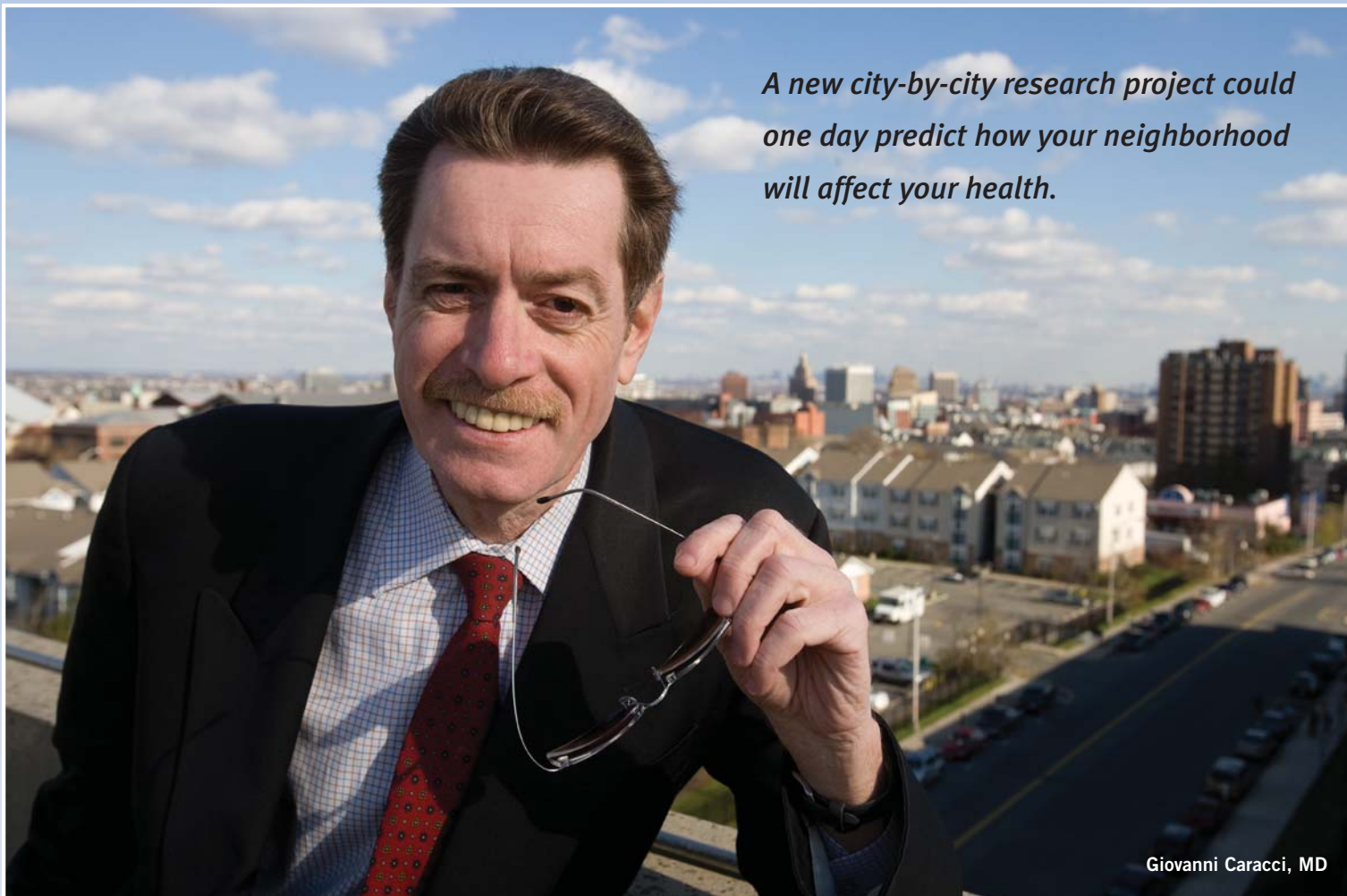


fMRI is “big, loud, noisy and hated by most people.” NIRS is a portable, inexpensive brain scanner that can go anywhere, even into battle.

what is called functional MRI (fMRI), he has seen the functional side of cognitive fatigue in the brain scans of patients trying to perform mentally challenging tasks. “Even in mild head injury, there are networks and thought processes in the brain that are altered when fatigue is induced cognitively. The person being tested will be saying, ‘My God, I’m having such a hard time at this.’ And you can see it there in the brain.”

Using fMRI—“which is big, loud, noisy and hated by most people”—or better yet, Near Infrared Spectroscopy (NIRS)—portable, inexpensive scanners that can even go into battle—this exhaustive cognitive struggle will show up as areas of activation. NIRS, in fact, is a relatively new technique and inexpensive tool that can be used anywhere near a battle field, or on the sidelines of football games and in ice hockey arenas where medically educated guesswork now plays into the diagnosis of athletes’ concussions. DeLuca recommends that potentially NIRS could be very useful to the military. “You wouldn’t even have to ship a soldier off to a hospital in Germany to see problems in the brain, even when the changes are small.” There might be fewer questions about the incidence of PTSD.

Because of the escalating number of war wounded plagued with brain disorders, discoveries this pioneer has made on his professional journey are in vogue. In fact, a reporter from *The Washington Post* had visited him just recently. On this day, his sense of frustration is difficult to ignore. “We’ve known that brain injury causes behavioral and emotional impairment but everybody else is just discovering this now.” And one of the saddest facts about military medicine is that soldiers and war victims are being tested, identified as having mild brain injury, and sent home with their diagnosis with no effective treatment plan. “We have the clinical data based on research on how to improve learning and memory in TBI and post traumatic stress disorder. A combination of cognitive and behavioral treatment is appropriate for these vets. Are we applying this to people coming back from war? As far as I know, we are not.” ●



A new city-by-city research project could one day predict how your neighborhood will affect your health.

Giovanni Caracci, MD

CARACCI'S SEARCH FOR WHAT MAKES CITIES TICK

by Mary Ann D'Urso

BORN in Naples—Italy's third largest city with more than two million residents and a reputation for chaotic and pulsing streets, gregarious and good-humored people, stress, garbage and crime, medieval, baroque and renaissance architecture and laundry matter-of-factly hanging from overhead clotheslines—Giovanni Caracci, MD, has a natural affection for cities.

A resident of New York City for the past 20 years, Caracci, acting chair of the NJMS Department of Psychiatry, really gets city living. But he wants to get it even more.

In upcoming studies both in foreign cities like Rome, London and Berlin, as well as here in Newark, this doctor will be looking for clues, particularities, patterns, diagnoses, psychopathologies—all the pieces that will eventually resemble a complicated city grid offering detailed keys to the mental health of people living urban lives. For the truth is: Your neighborhood is a huge determinant of your physical and psychological well being.

“It is fascinating to me how a city functions, how it works and how it can transform somebody's life. A city can engulf you, suffocate you or foster your abilities and skills. It can work for or against you,” says Caracci, 56.

Lured to NJMS five years ago to become the vice-chair for education in psychiatry, Caracci spent the decade before that as director of residency training at Cabrini Medical Center in Manhattan. Just recently, he took over his NJMS department. “This is a great place to work. Newark is a vibrant, multicultural city. I'm working in an inner city situation and an academic center. I also like the fact that I can speak the languages.” He's fluent in Spanish and Portuguese as well as his native Italian, and of course, English.

Ten years ago, listening to colleagues at a World Psychiatric Association (WPA) meeting who were talking about the range of issues facing city residents, from poor physical health and inadequate housing to overcrowding, substance abuse and violence, Caracci got

hooked on the idea of exploring what makes a city tick and how that tick affects the well-being of its community. Public health researchers call this social epidemiology. He calls it his passion. He inaugurated the WPA's scientific section on urban mental health to study how socioeconomic conditions of city neighborhoods affect the health of its citizens. Today, he is vice-chairman of the group, which counts more than 40 members worldwide who are contributing research, data analysis and combining their efforts with other organizations, including the World Health Organization.

Living in a city like Newark certainly has its disadvantages but it can also have advantages, Caracci believes. There are "opportunities for social and financial advancement, jobs, entertainment and access to healthcare facilities. We call this urban health advantage."

He sees an urgent need to address many socioeconomic issues at all levels from the highest political offices to the lowest local neighborhood levels. But as a believer in cities, Caracci has no doubts about Newark's ability to continue its current comeback. The kind of new amenities the city has provided recently—the New Jersey Performing Arts Center (NJPAC) and the new Prudential Center for examples—being juxtaposed against the poverty of some neighborhoods, is not unique to Newark.

"The fragmentation of society here parallels the dilapidation of the environment." There is gang-related violence, poverty, drug and alcohol abuse, inadequate housing, unemployment, racial and ethnic friction between immigrant groups, mistrust of authority. "But these issues aren't peculiar to Newark." He's seen similar situations all over the world. For him, Newark holds such interesting possibilities. The unique inner worlds of his patients move him. He treats people who are afraid to leave their homes and venture out only at certain times. Getting to a grocery store can be a daunting task. Many suffer from post traumatic stress disorder, anxiety, depression and acute psychopathologies. "I would like to address how the elderly are doing here."

People are unaware of their own tremendous abilities to change their lives. "I believe in the power of transformation through empathy, resilience and hard work. In psychiatry, we work a great deal on transforming our patients' lives by addressing the kind of psychological damage suffered throughout their life cycles—the hurt, the guilt, the anger, the rage. By offering them a different kind of perspective and example, they can do it on their own. To the extent that we are able to convey that message of hope to the citizens of Newark, we will have fulfilled our mission.

"Originally, my idea was to study the environmental and social determinants of mental health," says Caracci, going neighborhood by neighborhood. But quickly he realized that he could not separate the mind from the body. Everything from cardiovascular disease and cancer to depression and anxiety can be city-bred and born. "The kind of patient we see changed my mind. Environment has a major impact on physical and mental health," Caracci says. Living with the chronic illnesses linked to cities like asthma, hypertension or diabetes will increase the chance of developing a mental illness. The reverse is also

true. "If somebody is mentally ill, the odds of their becoming physically ill are much higher, too." A disorganized, dysfunctional community can add to social stress, confusion, frustration, anger and behavioral disorders like promiscuity, smoking, overeating, and inactivity, which can eventually turn into illnesses like HIV-AIDS, cancer, and obesity. Caracci and other public health experts note, "They are all interconnected."

His first data-gathering project, which started overseas in early 2009, is being funded by the European Union (EU) and will be conducted in nine European cities. The city-by-city research will explore mental health problems these urban areas are experiencing and the remedial help and services available for residents.

For Newark, Caracci has an ambitious, three-year road map and there's much to do. "It's a daunting task. I'll be relying on partnerships." He will team up with the UMDNJ–School of Public Health in Newark and the UMDNJ–School of Osteopathic Medicine's Institute for Successful Aging in Stratford. By summer, he hopes to be canvassing city residents who come to University Hospital's emergency department. From there, he'll reach out to primary care physicians in the community. "Those are the people in the trenches who see the damaging impact of environmental and social aspects on mind and body."

Caracci's passion for city life started early. In Italy, his family's moves only made him fall more in love with urban environments. They lived in a small town outside of Rome and also in Eboli, a mid-sized city. "Eboli is famous for the book, *Christ Stopped At Eboli*," Caracci laughs. "It's also known for its mozzarella di bufala."

When his family lived up in Trieste in the north, "The highlight was to go south to Naples. At that time in the 1960s, it was a vibrant city, absolutely spectacular: the beauty of the place, being able to walk everywhere, stopping at restaurants, museums, the waterfront.

"The people in Naples make their city what it is," for better or for worse. "They have a certain philosophy that puts quality of life over work. Singing and music have always been the glue of Naples. Families have a tradition of singing Neapolitan folk songs," he says fondly describing the city where he eventually moved by age 19 to attend medical school. Those early years, "planted the seeds. I knew Naples was a place where I would always belong." Then, of course, he fell for the New York–New Jersey metropolitan area.

In 1977, after graduating from medical school, he decided to train in psychiatry in the U.S. Naples was experiencing a period of major turmoil then. After his residency at New York University Hospital, he returned to Italy for a few years, "but the truth was, I had fallen in love with New York and could not wait to get back." On his return, Caracci did a residency at Metropolitan Hospital in Spanish Harlem and then went to Columbia University to research schizophrenia.

Naples still calls to Caracci, his wife and their children. They return each December to visit his mother, siblings and extended family, but American cities are in his blood and are even more compelling, especially Newark. In his dreams now he can envision a Newark Center for Urban Health and Mental Health. ●

A CALL TO ARMS!

WE want you back! The “we” are the members of your Alumni Association

and this is an appeal, not just for money, but rather for your presence at our medical school and on its campus. There is a lot of good going on at your alma

mater that needs your support, and there are problems that you can help repair. As always, our students, who are our future alumni, are our most important assets.

One of our past alumni presidents, George Heinrich, MD’72, has made the admissions process to NJMS so thorough, so strong and distinctive that each succeeding class carries on the tradition of excellence that is unique to NJMS.

Sometimes missing from the education of our students are the mentoring and role modeling that you could provide. During my presidency, my first goal is to encourage all alumni to come back to campus. In order to make this a reality, I will work to ease your return to campus by providing free and safe parking, and a name tag that will allow you to walk into the medical school, University Hospital and library and be recognized as welcome members of the NJMS family. In addition, I will negotiate to enable all interested alumni to have the privileges necessary to act as mentors, to teach and to conduct rounds at UH. The Humanism Center has offered use of their offices located on C level of the Medical Sciences Building as a place to leave your hat while you are making rounds or to use their conference room to meet with students.

Among other goals that I will share in future letters to you is to relieve the tremendous debt most medical students incur: the “golden handcuffs” which burden them while trying to achieve the hopes expressed in their personal statements written during their admissions process. One simple step to lighten this problem would be for a greater number of alumni to support the scholarship program, and in particular, to consider establishing a named or endowed scholarship. I hope that the following article will encourage you to add your name to the honor roll of those who have supported our students and made the alumni scholarship program a possibility. —**JAMES M. OLESKE, MD’71, MPH**

A Message from the President



Scholarships: \$3 Million and Counting...

NEARLY 90 percent of today’s medical school graduates carry an average debt load of more than \$130,000, according to the Association of American Medical Colleges. That’s a daunting figure for a newly minted doctor. Enter the Alumni Association of NJMS. For 26 years, its scholarship fund has provided more than \$3 million to deserving students.

In October, nearly 300 guests attended the Scholarship Awards Dinner to recognize 133 students who received more than \$175,000 in support.

Scholarships do more than lessen the financial burden of worthy students. They also impact the lives of donors and honor the memories of lost loved ones. The Conor Moran’10 Memorial Endowed Scholarship is one example. Described as a “dear son, brother and a loyal friend,” Conor passed away unexpectedly in December 2007. A year later, friends and family raised more than \$25,000 to create an endowed scholarship in his memory. To contribute to Conor’s fund, create a scholarship, or donate to any alumni cause, contact Dianne Mink at 973-972-6864 or minkda@umdnj.edu. ●



Emily Yee, class of ’09, Urszula Wierciszewska, class of ’09, and Joseph V. DiTrolino, MD’79.

Meet Author Lauren LaPorta

NJMS '88

“No one is untouched by stress,” according to Lauren D. LaPorta, MD, chair, psychiatry, St. Joseph’s Regional Medical Center. So she wrote *The United Stressed of America* to give readers tools and strategies for identifying and handling stress better. “One cannot treat illness in isolation. Bodies come with minds and minds in bodies. What affects one affects the other.”

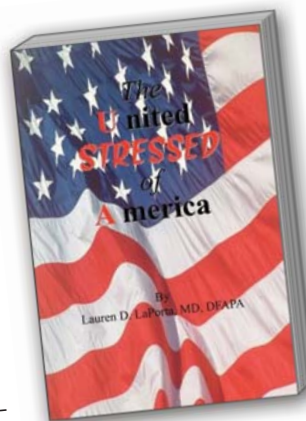


Stress is fast becoming a public health crisis, LaPorta believes. “When as many as 90% of illnesses can be attributed to or made worse by stress, we all need to start taking notice.”

Modern life is filled with stress, including commuting, high noise levels, the uncertain financial future, and even the gadgets and gizmos to which we are attached. “We are so busy staying ‘in touch,’ we may be losing touch with ourselves.”

In her own life, LaPorta, who is board-certified in general psychiatry as well as psychosomatic medicine (a specialty that focuses on the overlap between the mental and physical health of patients), found the idea of taking money from patients in a private practice personally stressful. Her hospital-based position allows her to treat patients, to teach students from NJMS and St. George’s Medical School in Grenada, to write and to consult. “My alter ego is Lucy Van Pelt, as in Lucy from the Peanuts cartoon strip. Psychiatric help: 5 cents. Briefly, I had a small private practice but after one patient, a lovely African immigrant, who was working as a housekeeper and sending money to her children overseas, took out little crumpled up dollar bills to pay me, I decided that it was no way to make a living.”

St. Joseph’s is her dream job and before that, she worked her way up to chief psychiatrist at Bergen Regional Medical Center. Born and raised by a single mother (“when that wasn’t the norm”) in New Jersey, LaPorta remembers completing her third year of med school while suffering with mononucleosis. “I certainly learned how much strength and determination I had.” Her memories of NJMS include “some of the best times of my life and many



adventures. I always knew I wanted to be a doctor,” she says. “It irked me beyond words when people would correct me as a child by saying, ‘Don’t you mean a nurse?’ Look at us now: women are outnumbering men in medical school.”

All proceeds from the sale of her book go to benefit the St. Joseph’s Hospital

Foundation. For more information, go to www.unitedstressedofamerica.com. The book is also available online at Amazon, Borders and Barnes & Noble. ●

Going First Class

IN 2010, the charter members of the medical school class of 1960—Seton Hall,



which would be renamed New Jersey Medical School—will celebrate their fiftieth anniversary. The alumni office can find 54 of those 71 doctors (only seven women), who are living in 14 different states, from here in New Jersey to California, Texas, Tennessee, New Mexico, Vermont and Virginia. Some are still practicing medicine, others are volunteering and cruising. John J. Siliquini, class vice-president and editor-in-chief of their yearbook, mentioned the importance of this milestone reunion in a recent email update. And speaking of that yearbook, anyone who happens to have one on a shelf somewhere should dig it out. Yes, the familiar faces are fun to find but what are hilariously and politically incorrect are the captions and casual shots. This was an “anything goes” era where editorial writers were free to comment on absolutely everything. Yes, they were good at making fun of themselves and their med school experiences, but there was also a serious side. As Roger Cracco, MD, class member and the first president of the Alumni Association, recalled as recently as 2001, “We knew we were special because we were the first class.”

GILBERT IRWIN '68

Scrounging to Save Lives

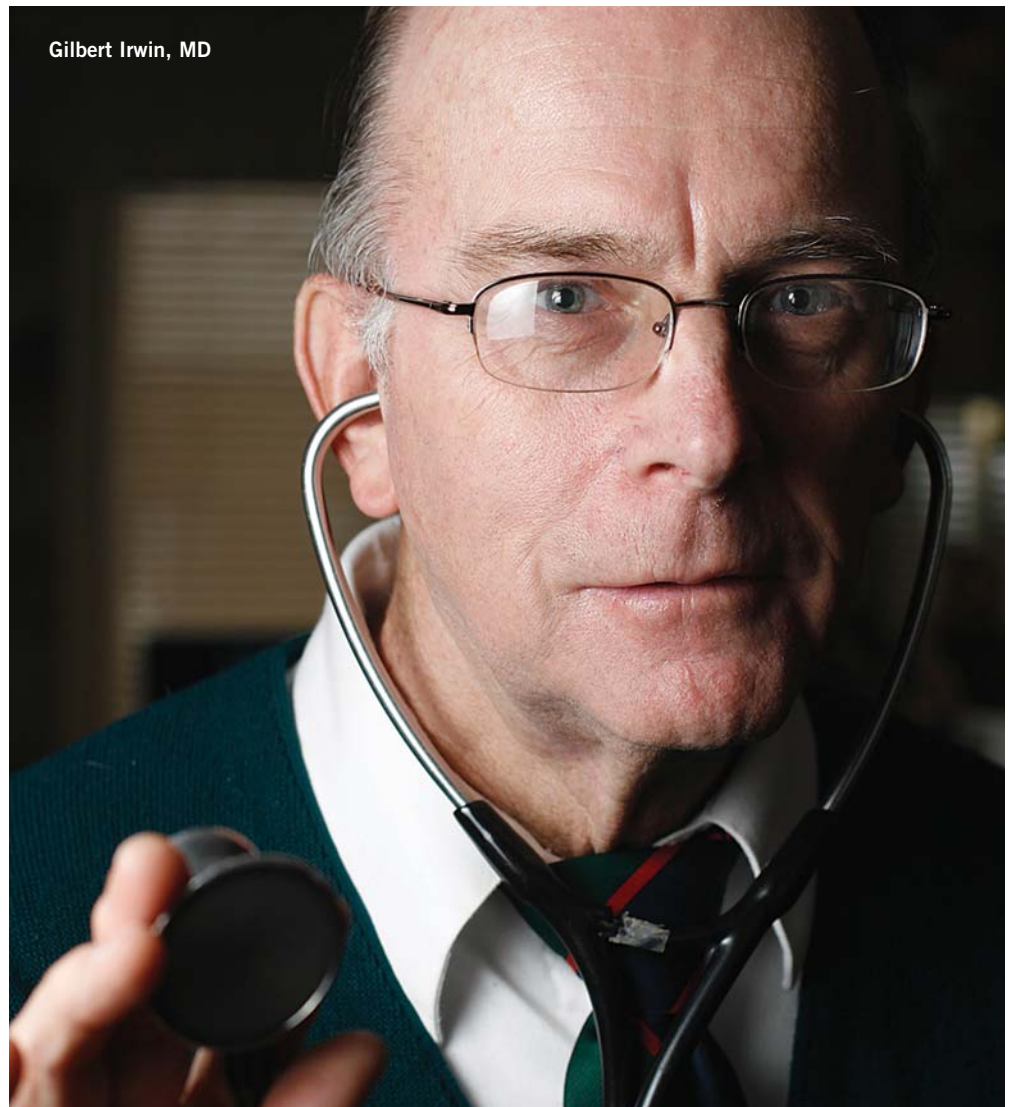
by Jennifer S. Doktorski

WALL Street and Washington could both stand to learn a thing or two about fiscal responsibility from a man like Gilbert Irwin, MD, '68. This alum, who graduated from the medical school when it was still Seton Hall, is someone who knows how to accomplish big things on a small budget.

Irwin is the founder of Medical Missionaries. Since 1997, this non-profit has dispersed more than \$65 million in medical supplies and equipment worldwide—all on an annual operating budget of approximately \$175,000. That figure doesn't even include the free medical care and support Irwin and his group of 200 volunteers have provided to tens of thousands of people in third world countries.

"We've got something really good going here. I don't know of any organization that's doing what we're doing as efficiently," Irwin says. A dollar donated to his Medical Missionaries translates into a \$500 value overseas. The group collects everything from gauze to hospital beds and sends the items where they are desperately needed. Without a doubt, the organization can stretch its financial resources to the outer limits, bringing the phrase "Reduce, Reuse, Recycle" to a new level. Ninety-nine percent of the goods and equipment donated to Medical Missionaries were going to be thrown out.

"If you really want to get the most out of your donated dollar, give it to us," Irwin says. "You can see it, touch it, feel it. And if you're really interested, we'll send you where the dollars are going," Irwin explains. Based



Gilbert Irwin, MD

in Manassas, VA, Medical Missionaries' health professionals and lay volunteers supply medicines, vaccines, medical aid, clothing, and educational materials to needy people. This year alone, it has shipped off 14 sea containers of supplies to countries including Haiti, the Dominican Republic, Ghana, Congo, Ivory Coast and Ukraine. The group also strives "to train and educate local people about health maintenance, proper sanitation, and preventive medicine."

For Irwin, 66, the notion of helping "the poorest of the poor" began while he was a fourth-year medical student in Newark. Irwin had been working with students and faculty to launch a community-based clinic. "Dr. Leon Smith was my mentor. He was and

still is my hero." Irwin credits Smith, who is still practicing as an infectious diseases specialist, with pointing him in the direction of his life's work. Irwin has never lost sight of the tremendous need among the poor for medical assistance. In his private practice in Manassas, he always reaches out to people who have fallen through the cracks of the healthcare system. "I've been doing this kind of stuff for years," says this internist, who also does consulting in infectious diseases.

Medical Missionaries "got started at the request of a minister who asked me to go down to the Dominican Republic to help people who had never seen a doctor," he recalls. His team of doctors and nurses spent two weeks in a remote mountain region,

treated 2,500 people, and immunized 3,000 children. What saddened him on leaving back then was the thought that people in that region would go right back to being trapped in a medical care vacuum.

Ron Burrell, a retired electrical engineer, met Irwin in the fall of 1997 shortly after that first trip. “He was giving a slide show about the trip at a Knights of Columbus breakfast. I asked questions about his experiences and indicated that I might be interested in helping,” Burrell remembers.

Irwin didn’t waste any time enlisting Burrell’s support. When he noticed that Burrell drove a pick-up truck, he contacted him about retrieving medical items from hospitals and nursing homes to send to the Dominican Republic. Burrell has been helping ever since. “Gil’s unending dedication and drive inspires volunteers to keep up with him,” Burrell says. “He sees value in things that American hospitals and nursing homes are throwing away and will take anything that they do not want. We only trash what we can’t fix. He used to rummage through the Prince William County Hospital dumpsters every morning to find usable items for poor countries. He has also used his contacts to get millions of dollars worth of vaccines and drugs. Our costs are primarily shipping.”

Medical Missionaries has a vast donor network collecting everything from medical equipment to school supplies and household appliances. Volunteers like Burrell travel from New York to Tennessee to pick up items and bring them to the group’s storage facility at Linton Hall in Bristow, VA. The space, donated by the Benedictine sisters who live there, is also a processing center where cargo is organized for shipment abroad and to other collaborating teams like Partners in Health.

In 1998, Irwin traveled to Haiti and realized that the situation there was even worse than the Dominican Republic. “If you ask a Haitian if they’re afraid to die, they say, ‘No. I’m not afraid of death. What will I miss?’” Irwin says. “We live like kings and queens in this country. Haiti is a country that has been overlooked since the 1800s.” Irwin didn’t see a choice. He had to do more. “The world is

in such a mess.”

Medical Missionaries has expanded to Africa, Central America, the Middle East, Asia and Eastern Europe. Thousands of adults and children have received much-needed surgical procedures, and more than 1 million Haitian and Dominican children have been vaccinated against deadly childhood diseases. A fully-staffed permanent clinic, built with funding from Medical Missionaries, now exists in Thomassique, Haiti, in a mountainous border region.

Clinique de St. Joseph, staffed by Haitians and funded by Medical Missionaries, opened its doors full-time in June 2007. It is the lone healthcare provider for 100,000 people in the area surrounding Thomassique. Each day, people begin forming lines at 5 a.m. to await the clinic’s 8 a.m. opening.

Irwin wonders what patients in his private practice would say if they had to wait

don’t build an infrastructure, you’re never going to solve problems,” Irwin says.

In Haiti, volunteers like Burrell tend to this infrastructure, keeping the physical plant—solar system, generator, electric components, diesel and propane fuel systems, water conditioning and purification—running properly for the medical teams. The town of Thomassique has no electricity. Teams build storage sheds and patient shelters, install communications systems and repair vehicles and fix medical equipment. On trips, Burrell says, “I also try to make sure visitors get fed.”

Needs greatly outweigh what Medical Missionaries has been able to do. For instance, “We’d really like to build an addition to the hospital in Haiti for more inpatient care and overnight bed space,” Irwin explains. Fundraisers like golf tournaments and dinner dances are held. They also host

Poor sick people in Haiti, the Dominican Republic, Africa, Asia and the Middle East don’t care if their desperately needed medical supplies started out as American trash: a truth this Virginia hero knows very well.

two or three hours outside on a wooden bench to be seen. Most of the Haitians and Dominicans in those regions are subsistence farmers who live in dirt-floor huts focused on day-to-day survival. Yet, he marvels at their spirit. “People walk for days to our clinic and wait to be seen,” Irwin reports. “It makes you cry to meet a woman who has walked for two days carrying a sick child. She’s so thankful to you for treating that child—and for that child’s survival. They’re some of the nicest and most wonderful people I’ve ever met.”

In 2000, to support the clinic, Medical Missionaries built solar powered radio systems in the Haitian and Dominican villages they serve, which has made rapid communication during emergencies possible. “If you

paid seminars for similar mission groups, to share their fieldwork techniques in everything from pulling teeth to childbirth.

“It’s been challenging to say the least,” he says. “We’re trying desperately to get a few big name donors,” a sports or movie star.

Locally, Medical Missionaries is well-known. Last January, the *Gainesville-Times* named Irwin the “Citizen of the Year” for 2007. But he shies away from the spotlight and doesn’t really like talking about himself. His passion is Medical Missionaries.

“This is not about me. It’s about poor people,” he says. “The attention should be directed toward their problems.” ●

Medical Missionaries:
<http://www.medicalmissionaries.info/>

1960'S

Gerald S. Levey, MD'61, vice chancellor for medical sciences and dean of the David Geffen School of Medicine at UCLA, will retire as dean on June 30, 2009. He will continue as vice chancellor through 2010.

Richard Pelosi, MD'61, and his wife Susan retired to FL where he is volunteering with the American Red Cross and the Medical Reserve Corps of the Palm Beach Medical Society.

Guy T. Selander, MD'61, has had a rewarding year. After 25 years of working with the Florida Impaired Physicians program, he received several accolades, including the Florida Board of Medicine Chairman's Recognition Award; the Meritorious Service Award from the Federation of State Medical Boards of the USA; the Florida Academy of Family Physicians Distinguished Service Award; and the Certificate of Merit, the highest award of the Florida Medical Association.

John Wrable, MD'61, has written his memoir, *Juvenile Delinquent to Surgeon*, sharing his struggle on the path to becoming a general, chest and vascular surgeon. Dr. Wrable practices in Toms River, NJ.

Steven J. Stanzione, MD'66, writes that his hematology/oncology group moved into the Cancer Center at Overlook Hospital in Summit, NJ.

Gilbert R. Irwin, MD'68, is president of Medical Missionaries, his own volunteer group, which opened a hospital in Thomassique, Haiti, and sends sea containers of health equipment and supplies worldwide regularly. Visit the Web site: <http://www.medicalmissionaries.info/> and read the *Pulse* story on page 36.

1970'S

Donald E. Greydanus, MD'71, received the Michigan State University College of Human Medicine Outstanding Community Faculty Award in May 2008 for contributions to the college's educational and community-based research programs. A resident of Kalamazoo, he was also recognized for serving as a role model for students, residents and faculty. Dr. Greydanus is a professor of pediatrics and human development at his medical school, and also pediatrics program director at Michigan State University/Kalamazoo Center for Medical Studies.

James M. Oleske, MD, MPH'71, received the Children's Hospice International Robert A. Milch Award for Palliative Pain and Symptom Management in November 2008 in Washington, DC, where it was presented at the CHI's 19th World Congress in partnership with George Mark Children's House. Dr. Oleske is the Director of the Division of Pulmonary, Allergy, Immunology and

Your News from Old Friends

How are you? What are you doing with your life? Send us an update, a photo, a story idea or just your latest address. *Pulse* magazine is your way to stay in touch. Mail this form to: Alumni Association of New Jersey Medical School, 185 South Orange Avenue, MSB-B504, Newark, NJ 07101-1709. Photos are welcome. You can also send your news via e-mail to: njmsalum@umdnj.edu or fax us at (973)972-2251.

Name _____ Graduation Year _____

Home Phone _____ Office _____ Fax _____

E-Mail Address _____

Mailing Address _____

What I Have Been Doing (enclose photos) _____

I would like to be a representative for my class.

Please join the Alumni Association of New Jersey Medical School.

General Dues \$65.00
 Resident in Training \$15.00
 Lifetime Membership \$1,000.00

Visit <http://njms.umdnj.edu/>, click on **Alumni** and **Alumni Association** and then **Online Dues Payment** to pay your dues online.

The Lifetime Membership is being offered to our alumni as a means to perpetuate the goals of the Alumni Association and enable its members to sustain their support in a more meaningful way. All categories of membership will afford you the opportunity to keep connected with us. You will continue to receive all membership benefits, including NJMS *Pulse* magazine, information about upcoming events and reunions, and library privileges.

Infectious Diseases at NJMS and is the current president of the Alumni Association—NJMS.

1980'S

Michael Finkelstein, MD'83, is president of Carondelet Medical Group, a 70-physician primary care group in Tucson, AZ.

Andrew Pecora, MD'83, was appointed chairman of the board by TetraLogic Pharmaceuticals, a privately held biopharmaceutical company, in May 2008. Dr. Pecora will provide TetraLogic with his expertise in the field of hematology and oncology, cancer research, novel therapeutic development and clinical trial design. Dr. Pecora has spent the past 18 years at Hackensack University Medical Center; was a hematology-oncology fellow at Memorial Sloan-Kettering Cancer Center in NY, and is a professor of medicine at NJMS.

Michael Entrup, MD'84, left the Lahey Clinic after 19 years of clinical practice, the last seven as chair of the Department of Anesthesiology. He is now chair of the Department of Anesthesiology at Tufts University School of Medicine and anesthesiologist-in-chief at Tufts Medical Center.

Allan R. Tunkel, MD'84, was honored with mastership by the American College of Physicians at their national meeting in Washington, DC, on May 15, 2008.

Cynthia Burdge, MD'86, who lives in Hawaii, took early retirement to travel and look for volunteer opportunities.

Rosemary P. Fiore, MD'88, is practicing hematology-oncology with Monmouth Hematology-Oncology Associates in West Long Branch, NJ.

IN MEMORIAM

The Alumni Association and the NJMS community extend deepest sympathies to the families and friends of:

Henry "Hank" Lowenthal, MD'75, August 7, 2008, at age 58. Lowenthal, who specialized in internal medicine and oncology, practiced in Glen Ridge, NJ, for many years. He leaves his wife Phyllis, mother Dorothy, a daughter and a son.

Charles J. McCabe, MD'74, a physician at the Massachusetts General Hospital, on July 7, 2008. McCabe was a professor of surgery at Harvard Medical School for more than 30 years. His wife Rose, daughter Krista, a sister and a brother survive him.

Ronald Remy, MD'62, December 2007 after battling cancer. Remy lived with his wife Phyllis in Jupiter, FL.

Harvey P. Tapolow, MD'65, of Rockville Centre, NY, January 31, 2002.

Gerard Cicalese, MD'89, is in private practice in obstetrics and gynecology in Belleville, NJ.

1990'S

Minda J. Gold-Vesery, MD'91, is in her fifth year of private family practice in rural Maine. She's also teaching University of Vermont medical students and will soon be adding Tufts' University students. Dr. Gold stays in touch with Jocelyn Sicat, NJMS '91.

Adam Hamawy, MD'96, a U.S. Army Major, completed a fellowship in plastic surgery at the University of Tacoma-Southwestern. Dr. Hamawy is back on active duty, stationed at Madigan Army Medical Center in Tacoma, WA.

Stephen Sun, MD'96, is senior director of medical affairs at Alpharma Pharmaceuticals. Dr. Sun and his team are addressing the issue of prescription opioid drug abuse.

Carla Martin, MD'97, is working as a pediatrician again after taking a year off with her twins, Nicholas and Christopher, and four-year-old daughter. She and her husband, Michael Johnson, MD, who is an internist, live

in RI, and enjoyed several years of world travel. They are looking forward to resuming this with their children.

Sumant Ramachandra, MD'97, PhD, was named senior vice president and chief scientific officer at Hospira, Inc. in Lake Forest, IL. Responsible for global research and development, and medical affairs organization, Dr. Ramachandra was formerly vice president and senior project leader, global development, at Schering-Plough Research Institute.

Susan Walsh, MD'99, is in her third year as an attending physician in pediatric emergency medicine at Yale New Haven Children's Hospital. She is also an assistant professor at Yale University.

2000'S

Ravindran T. Rajaraman, MD'00, is in a new medicine and pediatrics practice in Shrewsbury, NJ.

Rajesh Raman, MD'02, has joined Wellness Center Pediatrics in Sparta, NJ. Dr. Raman had been with Inova Hospital Systems in northern VA, where he supervised resident training.

The Goodbye Columbus Question

A PHOTO asking, "Are You In This Picture?" in the last issue of *Pulse* magazine (Summer 2008)



brought back memories for many alums and of course, they wrote to tell us: That tall guy in the double-breasted suit standing under the theater marquee is **Mike Meyers, MD'72**, who had an important role in the movie, *Goodbye Columbus*, starring Ali McGraw and Richard Benjamin. **Rick Levinson, MD'69**, remembers that Meyers was picked by coincidence for this role and had no prior acting experience. **Willie Citrin, MD'72**, recalls that the class was bussed to New York City for this publicity stunt. "I'm the one next to Meyers with the shades on," he reports. **Paul Lundstrom, MD'73**, wasn't in the picture but can recollect Meyers making the talk show rounds, including "The Johnny Carson Show," where he would describe life as an NJMS medical student. **Joel Wallack, MD'74**, at Beth Israel Medical Center in New York City and a professor of psychiatry at Mount Sinai, says that Meyers played that "younger jock brother of Ali McGraw." And **Gordon Walbroehl, MD'72**, missed the adventure. "Unfortunately, I'm not in the picture because I was in Chicago for the SAMA (now the AMSA or American Medical Student Association) annual meeting. Mike played the graduating Ohio State basketball player, hence the name of the movie was *Goodbye Columbus*."

One of the last class members to respond to our headline, "Are You In This Picture?" was none other than Meyers himself who is now an addiction specialist in family practice at Kaiser Permanente in Carson, CA. "I can't believe it's not the seventies anymore," he says. The movie opened the Thursday before Easter in 1969 and because there were no classes on that Good Friday, the entire first year medical class was invited to attend the opening. Meyers, who went on to write a book, *Goodbye Columbus, Hello Medicine* (Morrow), recalls, "Everybody was asked to wear their white lab coats so that publicity pictures could be taken....But there was one unforeseen complication: After almost a year of gross anatomy, urinalysis, and various other laboratory experiences, most of the lab coats were a bit on the gamey side."

Are You In This Picture?



Write and let us know the funny circumstances behind this photograph, including the yearbook from which we plucked it. Where was the party? Who took the picture? Are there stories behind the costumes? That ten-gallon hat is still pretty impressive. What were you wearing? **Email: njmsalum@umdnj.edu**

A Lions' Share for Cinotti's Legacy

It took 12 years of hard work for the newest endowed chair to become a reality for the founder of the ophthalmology department.

THE Institute of Ophthalmology and Visual Science (IOVS) at NJMS is a national model of scientific achievement, a center of knowledge where each year promising new advances are made to treat the most challenging and debilitating vision-threatening diseases.

In September, the man who is credited with building the program from infancy—Alfonse A. Cinotti, MD, professor emeritus and founding chair of IOVS—was honored by UMDNJ and the Lions Eye Research Foundation through a \$1.5 million endowed research chair—the Alfonse A. Cinotti/Lions Eye Research Chair. The endowed chair has been awarded to Cinotti's successor, Marco Zarbin, MD, PhD, professor and chair of the Department of Ophthalmology.

The endowment will help IOVS support its research, including ongoing high-technology programs such as telemedicine screening for vision-threatening disease, noninvasive intraoperative monitoring of ocular blood flow, and cell transplantation for blinding ocular disease. Other IOVS projects hold promise for providing sight-restoring therapy to patients with blinding degenerative diseases like age-related macular degeneration.

The field of ophthalmology was in its infancy when Cinotti first began his career. With few resources, but a great deal of determination, Cinotti began his push to create a separate ophthalmology department within NJMS—and ultimately IOVS—more than 35 years ago.

Located in the Doctors Office Building (DOC) on the NJMS campus, IOVS today comprises 30 ophthalmic surgeons, researchers and ophthalmic surgeons in training, as well as additional associated support staff members.

The path to creating a new department was not always easy, Cinotti recalls, with ter-

ritorial politics, limited resources and other obstacles blocking the way.

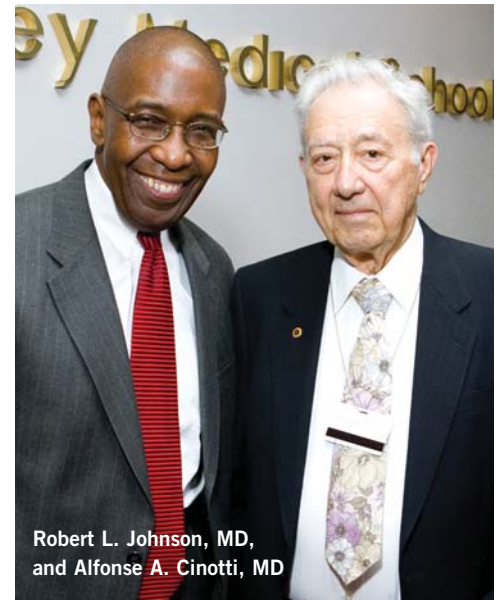
But then an international organization devoted to the eradication of preventable blindness stepped in, and amazing things began to happen. In 1970, the Lions and Lions Clubs of New Jersey—which already had a history of supporting the fledgling department—pooled together their resources to purchase a new and sorely needed electron microscope.

“When we got that microscope, we had faculty lining up to use it, and a number of people now had an opportunity to start doing research in vision,” recalls Cinotti. “One team began doing studies in cataracts, and we soon became known as one of the 10 cataract research centers in the U.S.”

As IOVS grew, so did its need for dedicated space. This need in fact served as a catalyst for building the DOC, where IOVS occupies a floor. As always, support from the Lions, as well as other friends of the institute, proved instrumental in securing the space that was needed for this purpose.

Just as the earlier contributions from the Lions arrived at critical periods in the IOVS' history, the recent endowment of the Cinotti chair comes at a difficult time in which the university is struggling with decreasing revenues and rising costs. For this reason, the Cinotti chair endowment will be critical to the institute's future growth and success as a self-sustaining enterprise, says Zarbin.

“As the only ophthalmology residency training program in New Jersey, we have a critical—if disproportionate impact—on the practice of ophthalmology in the state,” Zarbin adds. “With this endowment, we're really making an investment in our futures as citizens of New Jersey—with potential benefits that go well beyond the state of New Jersey.”



Robert L. Johnson, MD,
and Alfonse A. Cinotti, MD

Twelve years in the making, the Cinotti chair endowment was pieced together by the Lions Eye Research Foundation, the Lions, and donations from club members, faculty, former residents, alumni and friends.

“This (Cinotti chair) has really been a grassroots effort from all of our clubs,” says James Hynes, executive director of the Lions Eye Research Foundation. Contributions were made by some 7,000 individual members representing 260 local clubs.

Established in 1917, the Lions organization's community service mission was transformed in 1922, when Helen Keller appeared at an international Lions convention and encouraged its members to “become knights of the blind in the crusade against darkness.” Since that time, the Lions have devoted their resources in service to the blind and visually impaired.

Hynes is certain the work of the IOVS will advance the Lions mission. “Dr. Zarbin has some of the most cutting-edge research in the world in the area of retinal disease,” he says. “I'm convinced that if there's going to be a cure for these diseases, it's going to come from New Jersey.” — **JONI SCANLON**

For information about contributing to any UMDNJ project, contact Elizabeth Ketterlinus at 973-972-2486, toll-free at 866-44-UMDNJ or email eketterlinus@njhf.org.



Endowing Health... to make a

The Foundation of UMDNJ is helping to make New Jersey a healthier place to live and work. Thanks to the generosity of the Foundation's many donors, future clinicians receive outstanding educations, today's patients receive the best medical care and researchers work to fulfill the promise of tomorrow's cures.

We would like to express our gratitude to the following donors, and the many others, who have contributed to the Foundation's success through their gifts to New Jersey Medical School:

- The Angel Family Foundation, for ensuring that needy children with asthma have the medications they depend on

difference...

- Dr. Richard Pozen and Ann Silver Pozen, who established the Pozen Community Scholars program at New Jersey Medical School to enhance and expand community service opportunities for NJMS medical students
- Marie Toohey and Gerard E. Toohey, Sr., for investing in groundbreaking neuroscience research

They realize that the Foundation of UMDNJ, as a New Jersey Health Foundation affiliate, has the financial strength and ability to build partnerships between medical school resources and interested donors to make a real difference in the lives of New Jersey residents.

Learn how you can help endow the health of New Jersey. Contact Elizabeth Ketterlinus, vice president of development, at (973) 972-2486 or at eketterlinus@njhf.org.



Foundation

University of Medicine &
Dentistry of New Jersey

A New Jersey Health Foundation Affiliate

Newark. New Brunswick. Stratford.

www.umdj.edu/foundation

University of Medicine and Dentistry of New Jersey
New Jersey Medical School
185 South Orange Avenue
P.O. Box 1709
Newark, New Jersey 07101-1709

<http://njms.umdnj.edu>

Non-profit Organization
U.S. Postage
PAID
Permit No. 5287
Newark, New Jersey

Limited Edition from Lionel

Commemorative Surgical Response Train Set

Made of O-gauge die-cast metal, the Rapid Surgical Response Train has 8 curved tracks, 8 straight tracks, steam locomotive, coal car, NJMS medical supplies boxcar, helicopter, caboose and transformer. The accessory car is an operational handcar on a depressed flat car.



Special Package Deal—Train PLUS New Accessory Car
\$350 includes shipping

Accessory Car ONLY (for those who already own the train)
\$75 plus shipping



To order, call 973-972-6864 (outside NJ call 800-477-7040) or email njmsalum@umdnj.edu

Profits support student scholarships and programming.