weillcornellmedicine

THE MAGAZINE OF
WEILL CORNELL MEDICAL
COLLEGE AND
WEILL CORNELL
GRADUATE SCHOOL OF
MEDICAL SCIENCES

SPRING 2009

Art & Science

The photography of Zina Semenovskaya '09

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Weill Cornell Medical College

DISCOVERIES THAT MAKE A DIFFERENCE
THE CAMPAIGN FOR WEILL CORNELL MEDICAL COLLEGE

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SPRING 2009

NATIONAL MUSEUM OF HEALTH AND MEDICINE

FEATURES

JOHN ABBOTT

Cover photograph by Zina Semenovskaya '09

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Child-centered treatment in a supportive environment

THE WEILL CORNELL CENTER FOR PEDIATRIC OTOLARYNGOLOGY

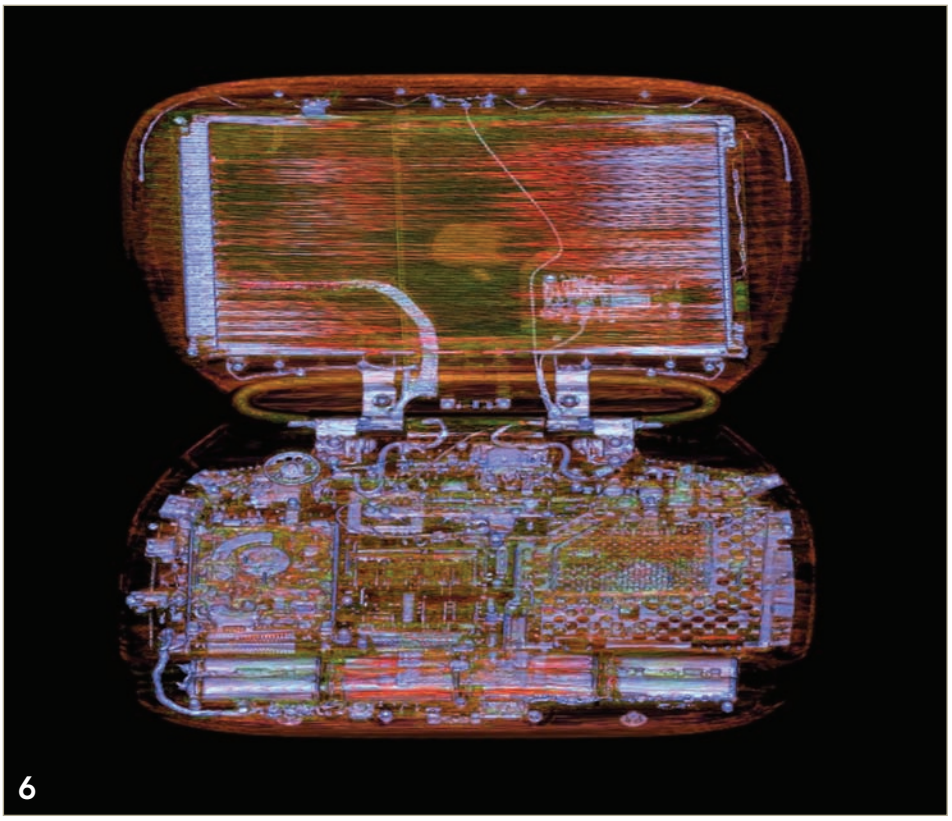
She's four years old. She's waiting for a hearing test, and she'd like to romp around a little. He's not quite a year old and his ear aches, and all he wants is to do is nestle into his mother's shoulder until the pain goes away. She's sixteen and her tonsils are acting up again, but she's got the SATs on Saturday and needs to feel better.

This spring, when the Weill Cornell Center for Pediatric Otolaryngology opens in a newly renovated space in the Oxford Building, they will each find a practice that is entirely child-centered—with a waiting room where playing is part of the experience and doctors who treat ear, nose, and throat ailments both common and complex. As part of a $1 million initiative in the *Discoveries That Make a Difference* campaign, the Medical College plans to create a world-class center in pediatric otolaryngology, the first of its kind in New York City.

Robert Ward, MD, and Max April, MD, were recruited to the Department of Otorhinolaryngology because they are innovators who have shaped their careers around developing better treatments for children. Almost a decade ago, Ward and April looked long and hard at the way tonsillectomies were performed, seeking a surgical method that was less painful and allowed children to heal faster. They were early proponents of the partial or intracapsular technique and contributed to the literature establishing the new procedure. At the time, many were leery of the concept. "Now it's a standard of care," says April, professor of clinical otorhinolaryngology and pediatrics, an expert in pediatric sinus disease as well as the treatment of head and neck masses and obstructive sleep apnea. "Ours has been a journey of discovery and that's what it will continue to be at the Center," says Ward, professor of otorhinolaryngology and pediatrics, who has played an important role in the development of innovative surgical techniques for airway reconstruction. He also travels to Central and South America to perform *pro bono* cleft lip and palate surgery.

Both physicians were drawn to Weill Cornell because it gave them a chance to work with residents and medical students and to establish a fellowship to train the next generation of pediatric otolaryngologists. Vikash Modi, MD, assistant professor of otorhinolaryngology and pediatrics, has joined their team. Modi has expertise in airway reconstructive procedures, surgical management of pediatric head and neck masses, and pediatric sinus surgery using computer-aided image guidance. The Center is also forming an aerodigestive team of specialists in ENT, pediatric pulmonology, and pediatric gastroenterology. "Because we did not have this kind of practice in the area, parents and children got shuffled around to many different doctors," Modi says. "It's an exhausting and difficult experience."

The team also works with pediatric anesthesiologists and has access to one of the best neonatal and pediatric intensive care units in the nation. The Center will feature the latest technology including video and fiber optic endoscopy as well as an audiology suite supporting programs of excellence in hearing loss, deafness, and speech delay. "We know that parents would do anything for their child," April says. "They want their child to get the very best care, and that is what drives us. It's why we are here."



SATRE STUELKE

DEPARTMENTS

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Weill Cornell Medical College

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‘The envelopes, please…’

Antonio M. Gotto Jr., MD, DPhil, Dean of the Medical College

RICHARD LOBELL

Residency bound: Eva Umoh learns that she has matched in orthopaedic surgery at the Cleveland Clinic.

Rarely have I seen so many agitated medical students in one place—dozens of them, chomping at the bit to get to a table of envelopes in the Griffis Faculty Club during the Medical College’s annual Match Day ceremony on March 19. I likely added to their anxiety by taking a few moments to acknowledge this rite of passage for the physicians-to-be who would soon find out where they would undertake their residency training. Would they be uprooting themselves to work in a different city or remaining in New York to complete their residency here at NewYork-Presbyterian/Weill Cornell?

When the clock hit noon, Carol Storey-Johnson, MD, the senior associate dean for education, announced, “The table is yours!” Next came the sound of dozens of envelopes being torn—then a moment of silence as the students read their letters, followed by exclamations of joy as we learned that eighty-one out of ninety-one had matched to a top-fifty hospital as ranked by *U.S. News & World Report*. Internal and transitional medicine were the most popular specialties, with ten and eleven students, respectively, accepting appointments in those fields. Nine students accepted psychiatry residencies. And it turns out that almost half the students are staying in the New York metropolitan area, twenty-one of them at Weill Cornell.

Some 15,000 medical students around the world were participating in Match Day at that moment—including the seventeen graduating members of Weill Cornell Medical College in Qatar, albeit electronically. I’m told that instead of ripping envelopes, the dominant sound was that of computer mice clicking to open e-mails that contained their matches. It turns out that all but three of the students will be coming to the U.S. for residency, four of them at Weill Cornell.

I like to think that Match Day isn’t just about residency placement, but a time when all doctors pause to think about the reasons why they went into medicine, and perhaps about their own Match Day ceremony. At some point during your residency, you begin to recognize the enormity of your commitment to a life in medicine.

As we turned to leave after the ceremony, I noticed one student alone in the corner with a cell phone pressed to his ear. Tears were streaming down his face. “Mom, I did it,” I heard him say. “I got the match. I really *am* going to be a doctor!”

What more needs to be said?

By the Numbers

Seven cutting-edge programs of study. More than 250 world-renowned research faculty members. More than $200 million in research funding. Two of the finest medical institutions in the world.

Here at the Weill Cornell Graduate School of Medical Sciences of Cornell University, the numbers bear out what we have long known—great people come here to accomplish great things. And outside our labs and classrooms, the global higher education community has also taken notice.

The Weill Cornell Graduate School comprises faculty from the Weill Cornell Medical College and the Sloan-Kettering Institute. And in a series of rankings recently released by the *Chronicle of Higher Education*, all of the Graduate School programs were rated in the top ten in the nation.

Our Biochemistry and Structural Biology program was ranked number one, besting such schools as Baylor and New York University. Chaired by Frederick Maxfield, PhD, and Nikola Pavletich, PhD, the program has focused its research on understanding the roles of various signaling pathways in cancer, atherosclerosis, and inflammation; the role of defective DNA repair in cancer predisposition; and the link between defective protein folding and diseases such as Alzheimer's and Parkinson's.

Three other programs—Molecular Biology, Immunology and Microbial Pathogenesis, and Pharmacology—all ranked in the top five among the listed institutions. Our Physiology program ranked sixth; the Cell Biology and Genetics program ranked eighth; and the Neuroscience program ranked tenth.

To determine the rankings, the *Chronicle of Higher Education* studied the Graduate School's faculty members, focusing on their productivity as determined by the number of peer-reviewed publications, citations of journal articles, federal grant dollars awarded, and honors and awards received.

These most recent accolades come at a time of great growth and development at the Graduate School. For example, Francis Lee, MD, PhD, was honored at the White House in December 2008 as a recipient of the Presidential Early Career Award for Scientists and Researchers. Dr. Lee, a faculty member in our pharmacology program, was recognized for work that could lead to the first-ever diagnostic test to guide the treatment for depression.

This summer, Weill Cornell graduate students are organizing the annual du Vigneaud Research Symposium. The symposium, honoring the late Nobel laureate Dr. Vincent du Vigneaud, former head of the Department of Biochemistry at Weill Cornell Medical College, is a Graduate School tradition dating back to 1981. The presentation of student research through posters and oral presentations is an opportunity for students and faculty to exchange ideas across disciplines.

We are, of course, overwhelmingly proud of all of our programs of study and very grateful to our faculty and students, whose hard work made this possible.

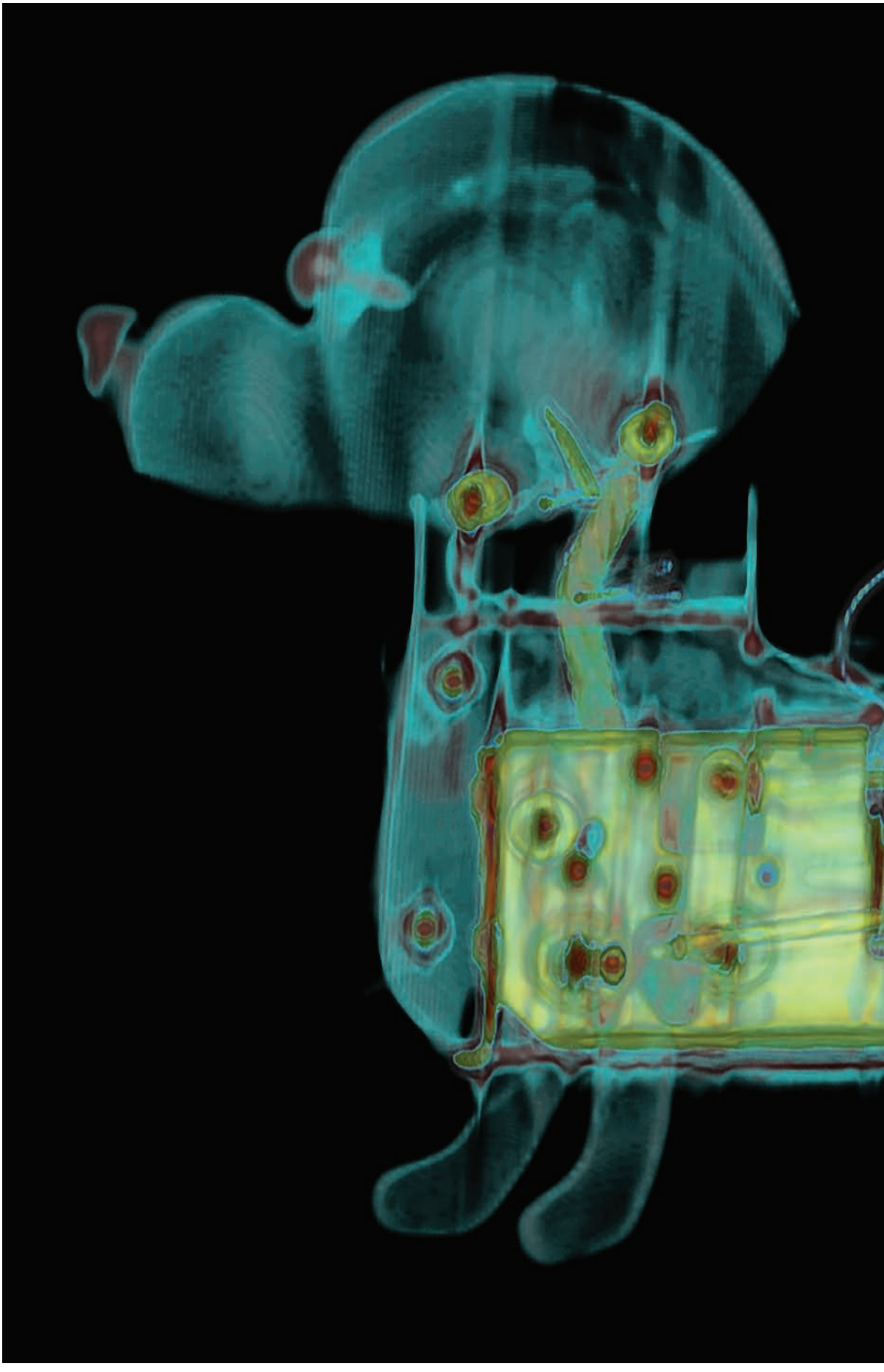
David P. Hajjar, PhD,
Dean of the Graduate School of Medical Sciences

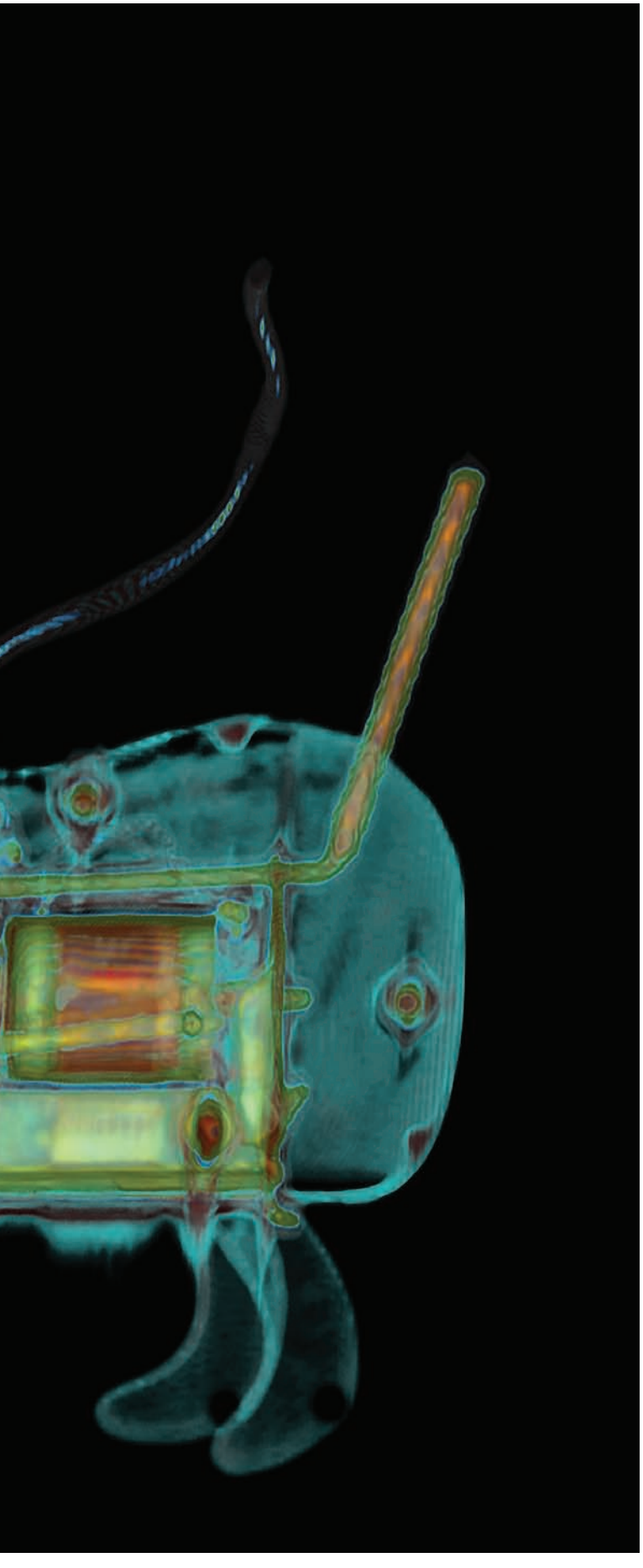
JOHN ABBOTT

Lab work: MD-PhD student Gabrielle Rizzuto at the bench. For a full story on the MD-PhD program, see page 36.

Light Box

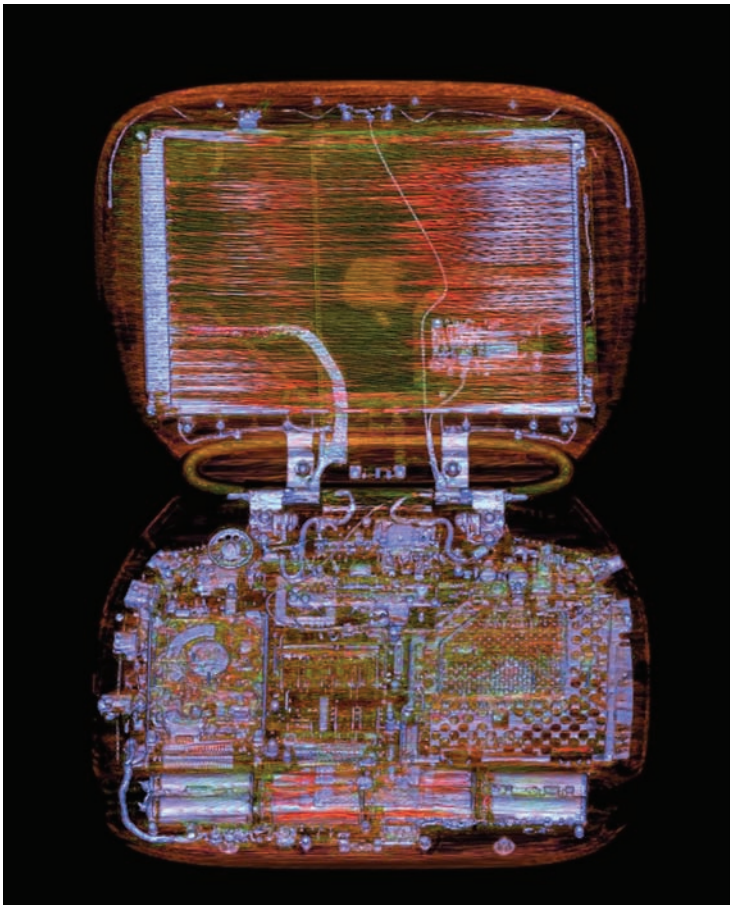
Inside look: Using a CT scanner, third-year medical student Satre Stuelke creates images and animations of common objects—toys, food, and electronics—that reveal startling inner lives. Stuelke, who had a previous career as a professor at Manhattan's School of Visual Arts, takes the hundreds of slices from the scans and assigns different colors to the various densities. Here, a shot of a remote-controlled dog shows its motor mechanism and the levers that wag its tail and move its head. His other toy images, which can be found in his online gallery at www.radiologyart.com, include a Barbie doll, a stuffed bunny, and a wind-up car.





Want fries with that?: Stuelke's image of a Big Mac is part of a foray into McDonald's cuisine that includes Chicken McNuggets and a Filet-O-Fish sandwich. "Note the sesame seed bun, pickles, special sauce, and cheese all readily visualized within the box," he says. "Interestingly, spots of glue can be seen holding the tabs of the packaging."

Apple's core: In his scan of an early clamshell iBook, the Apple logo can be seen upside-down through the screen. Also on view are the batteries, hard drive, CD-ROM, wireless antenna, and more.



Weills Fulfill Pledge With $170 Million Gift

The Weill Challenge will encourage other donors to support the College's new research building

Foremost benefactors: Sanford and Joan Weill

RICHARD LOBELL

To boost the Medical College's $1.3 billion *Discoveries That Make a Difference* capital campaign during the difficult economy, benefactors Joan and Sanford Weill have fulfilled their pledge with a $170 million cash payment. Of that gift, $15 million will be applied to research collaborations between the Ithaca and New York campuses, and to the Weill Institute for Cell and Molecular Biology. The Weills made the cash payment at the request of Cornell president David Skorton, MD, and Board of Trustees chairman Peter Meinig. "The Weills are fully aware that philanthropy—now, more than ever—is critical to the advancement of Weill Cornell and its research enterprise," says Skorton. "As such, they enthusiastically agreed."

The Weills have also offered a unique challenge: for each $1.50 given to support the College's new research building, $1 of the Weills' gift will be allocated. The Weill Challenge is meant to encourage other donors by making naming opportunities more accessible. For example, a donor giving $150,000 to the building project would have a naming opportunity equal to a gift of $250,000. The Challenge will raise up to $203 million in additional gifts to support the building, a $650 million, sixteen-floor facility scheduled to break ground this year on East 69th Street between York and First avenues.

"The world has changed in the past six months," says Sanford Weill, chairman of the Board of Overseers and a 1955 graduate of the Ithaca campus. "In order to ensure that the research building project moves forward, we decided to make our gift available to other donors who may be holding back. It is our hope that this decision will encourage everyone to join us in support of superior medical education, first-class research, and superb clinical care."

The Weills' pledge, originally made in 2007 as a bequest to the University, is believed to be the largest single gift ever made to an American medical school. To date, the Weills and their family foundation have given more than $500 million to Cornell. "We are enormously greatful to Joan and Sandy Weill for everything they have done for Weill Cornell Medical College," says Dean Antonio Gotto, MD, "helping put this institution on the map for innovation and biomedical discovery and fulfilling our mission to promote healing here in New York and around the globe."

Clinic in Haiti Named for Warren Johnson

PIXELLE PHOTOGRAPHY

Nearly forty years ago, Weill Cornell professor Warren Johnson, MD, mentored Jean Pape, a medical student from Haiti. Pape, MD '75, went on to become a major force in public health in his native country, initially battling infant mortality and childhood diarrhea. At the dawn of the HIV epidemic, he and Johnson were among the founders of GHESKIO, an organization devoted to the study of AIDS and other illnesses such as tuberculosis and typhoid. (In French, the acronym stands for the Haitian Group for the Study of Kaposi's Sarcoma and Opportunistic Infections.) In February, the B. H. Kean Professor of Tropical Medicine was honored at a ceremony dedicating GHESKIO's new clinic, the Warren D. Johnson Jr. Medical Center. "You guided my career as a young physician," Pape told him at the ceremony, "gave me the opportunity to train in your lab as an infectious disease fellow, and supported wholeheartedly my determination to return to Haiti and make a difference in my own country."

Part of the organization's Institute of Infectious Diseases and Public Health, the new facility is located in northern Port-au-Prince, about thirty minutes from the original GHESKIO clinic, still in operation. In addition to its medical mission, the nonprofit has developed social programs in such fields as nutrition, victim counseling, and microcredit. "The GHESKIO team has persevered through adversity and thrived," Johnson says. "We were told many times over the years that it couldn't be done, let alone be done in Haiti. But it was done, and often for the first time anywhere. It has been my joy, my honor, to participate in this vision."

PIXELLE PHOTOGRAPHY

Tropical medicine: On hand to mark the opening of the Warren D. Johnson Jr. Medical Center were (from left) its namesake; Alain Mérieux, CEO of the French medical diagnostics company bioMérieux, whose late son Rodolphe was honored with the naming of a GHESKIO lab; Jean Pape, MD '75; and Andrew Schafer, MD, chairman of the Weill Cornell Department of Medicine.

Ortho Partnership for WCMC-Q

Students at Weill Cornell Medical College in Qatar will now have access to clinical facilities for orthopaedic care, thanks to an agreement between the Medical College and ASPETAR, Qatar's fifty-bed hospital for orthopaedics and sports medicine. The arrangement will complement WCMC-Q's existing agreement with its teaching hospital, Hamad Medical Corporation, says Dean Antonio M. Gotto Jr., who calls it "welcome evidence of the growing relationship between the United States and the Islamic world."

Bugando Campus Graduates First Doctors

PROVIDED

Last November, Weill Bugando University College of Health Sciences in Tanzania celebrated the graduation of its inaugural class of nine physicians in a ceremony that featured remarks by Tanzanian president Jakaya Kikwete. Degrees were also granted to the 135 members of Weill Bugando's paramedical programs: assistant medical officers, nurses, lab and pharmacy technicians, radiographers, and nurse-anesthetists. Just four years old, the African college now has nearly 300 medical students and a total enrollment of 800.

TIP OF THE CAP TO...

Adam Cheriff, MD, named Weill Cornell's chief medical information officer, and **Curtis Cole, MD '94**, named its chief information officer.

Public health professor **Oliver Fein, MD**, a former Robert Wood Johnson Health Policy Fellow, winner of the program's inaugural Alumni Award for Excellence in Promoting and Advancing Health Policy.

Microbiology professor **William Holloman, PhD**, named a fellow of the American Association for the Advancement of Science.

Pathology postdoc **Brian Lamon, PhD**, recipient of a $100,000 biomedical research fellowship from the Hartwell Foundation.

Pharmacology professor **Francis Lee, MD, PhD**, winner of a Presidential Early Career Award, the White House's highest honor for young scientists, for his work on the molecular mechanisms of depression.

Microbiology and immunology chairman **Carl Nathan, MD**, winner of Germany's Robert Koch Award for his research into the mechanisms of antibacterial infection defense.

Larry Schafer, Weill Cornell vice provost for development/NewYork-Presbyterian Hospital vice president for development, elected chairman of the steering committee of the American Association of Medical Colleges' Group on Institutional Advancement.

MD-PhD candidates **Fatima Soliman**, **Dennis Spencer**, and **Tanya Williams**, winners of United Negro College Fund/Merck Institute for Science Education Fellowships.

Urologist **Ashutosh Tewari, MD**, awarded the Cutlers' Surgical Prize by the Worshipful Company of Cutlers of London, an organization dedicated to the craft of cutting instruments that traces its roots to a charter from King Henry V.

WCMC-Q Students Up for Debate

At the World Universities Debating Championships in Ireland last winter, there were teams from two Cornell campuses: Ithaca and Weill Cornell Medical College in Qatar. It was the first time that schools from the Middle East participated in the competition, held at University College Cork. Billed as the world's largest academic event, it drew students from more than forty countries for eight days of debates. During the event, the Ithaca and Doha teams had time to socialize and discuss potential plans for an annual debate between their campuses.

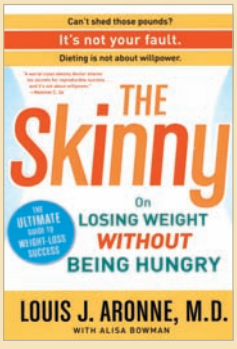
Stanton Gives $50 Million for Cancer Care

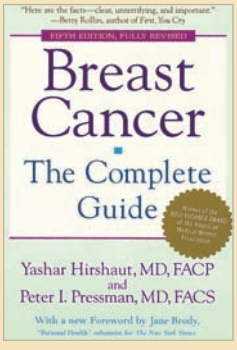
Hospital trustee Ronald Stanton has given $50 million to support clinical cancer care at NewYork-Presbyterian Hospital/Weill Cornell Medical Center. The gift will support the purchase of state-of-the-art radiation therapy equipment, the creation of a new infusion center, and the recruitment of top cancer specialists. "A diagnosis of cancer can be devastating for patients and their families," says NYPH president Herbert Pardes, MD. "This remarkable gift will help our hospital keep its promise to provide the best available treatments in a comforting and compassionate environment." Stanton is the founder and chairman of Transammonia Inc., a firm that trades in fertilizers, liquefied petroleum gas, and petrochemicals.

Kudos for New York's Health Info Systems

According to a review by Weill Cornell researchers, the health information technology programs that New York State implemented two years ago are all still functioning and running optimally—and could serve as models for federal initiatives. Such systems, they report in *Health Affairs*, have the potential to improve quality of care and efficiency while lowering costs. New York State has invested $390 million in its health information infrastructure, creating a way for doctors to share patient records through a statewide network. "Programs such as these could transform the way health care is delivered nationally and locally," says associate professor of public health Rainu Kaushal, MD. The federal government is set to invest $19 billion in health information technology under the economic stimulus plan.

Books on Battling Weight, Breast Cancer





Random House has published *The Skinny: On Losing Weight Without Being Hungry* by medicine professor and weight-loss expert Louis Aronne, MD, with Alisa Bowman. Aronne, director of the Comprehensive Weight Control Program at NYPH/WCMC, offers advice on such issues as feeling full on fewer calories and stopping the cycle of weight loss and gain, as well as which medications and conditions are likely to cause weight gain. The book has been endorsed by David Letterman, whose heart condition Aronne diagnosed; the physician has since appeared on his show as a regular guest.

Also, clinical associate professor of medicine Yashar Hirshaut, MD, and clinical professor of surgery Peter Pressman, MD, have published a fifth edition of their book, *Breast Cancer: The Complete Guide*. The volume, which first came out in 1992, was written for women who have or are concerned about getting breast cancer. It is organized in four sections: "From Suspicion to Diagnosis," "Treatment," "After Treatment," and "Life After Cancer." The book won the American Medical Writers Association's Rose Kushner Award for achievement in writing about breast cancer.

FROM THE BENCH

HIV Drug Proven Effective

Due to rapid mutations, HIV can quickly become resistant to entire classes of medication. But as medicine professor Roy Gulick, MD, has shown, a new drug called maraviroc can successfully suppress the virus. The drug—which the FDA approved in August 2007—acts not on the virus itself but on the human T-cell, binding to it in a way that prevents the spread of HIV. According to Gulick, director of Weill Cornell's HIV Clinical Trials Unit, many patients whose current drugs have failed can regain control of their HIV infection with a combination of maraviroc and other antiretrovirals. The results of a Phase III multicenter trial of 1,049 patients with advanced, drug-resistant HIV were published in the *New England Journal of Medicine* in October. "This is an important step forward," says Gulick, the study's principal investigator.

Technique Eases Prostate Surgery Pain

A new device has been found preferable to the standard catheter following prostate cancer surgery, according to a study led by urology professor Ashutosh Tewari, MD, director of robotic prostatectomy. The approach avoids the use of a catheter, instead rerouting urine directly from the bladder with a small needle, implanted below the gut, which also supports the internal urinary structures as the patient heals. "The results are very exciting because through this new technology, we are able to continually improve on the robotic surgical option that has already given men a high rate of continence and sexual function," says Tewari, whose work was published in the *British Journal of Urology International* in October. His study followed thirty patients implanted with the new device and twenty with the standard penile catheter.

Strong Surgical Options for Detached Retinas

Retinal detachment—a condition that puts some 10,000 Americans at risk for vision loss or blindness each year—has become highly treatable, thanks to the development of several surgical techniques. According to a review published in the *New England Journal of Medicine* by ophthalmologist-in-chief Donald D'Amico, MD, surgeons now have three options for reattaching the retina: scleral buckling (a piece of silicone is inserted to restore contact between retina and eyeball), pneumatic retinopexy (a gas bubble is injected to close the break), and vitrectomy (vitreous gel, a typical cause of detachment, is removed). "No matter which procedure the surgeon chooses," D'Amico says, "there is a good chance today that a patient's retina can be reattached and his or her vision preserved."

A Test for Breast Cancer Metastasis?

Weill Cornell investigators led by clinical pathology professor Joan Jones, MD, are working to develop a tissue test that could help predict the likelihood of breast cancer metastasis. The test—an immunostain to judge the density of three cell types associated with metastasis—could change the way the cancer is treated and spare some patients expensive and debilitating procedures like radiation and chemotherapy. "If patients can be better classified as either low risk or high risk for metastasis, therapies can be custom tailored to them, preventing over-treatment or under-treatment of the disease," says first author Brian Robinson, MD, a resident in anatomic pathology. The three cell types are invasive carcinoma cells, macrophages, and endothelial cells.

Drug Offers Weapon Against Blood Disease

A new treatment for chronic immune thrombocytopenic purpura (ITP) has proven highly effective in clinical trials, researchers report in the *Lancet*. ITP is an autoimmune disease that reduces the number of platelets, preventing proper clotting and causing nosebleeds, bruising, and even brain hemorrhages. The drug Promacta, which was granted accelerated approval by the FDA after a successful international trial run by Weill Cornell, stimulates the bone marrow cells that form platelets, treating the disease without the side effects associated with other therapies. "Findings from the new study are very encouraging," says pediatrician James Bussel, MD, "and I believe this treatment is an effective option for all patients suffering from chronic ITP."

Many Teens Lack Vitamin D, Study Finds

One out of seven American adolescents—and more than half of African American teens—are vitamin D deficient, according to a study by public health researchers. Girls had more than double the risk as boys, and overweight teens were nearly twice as likely to be deficient than those of average weight; since vitamin D is stored in body fat, simply increasing the dosage in obese adolescents may not be effective. "As the prevalence of childhood obesity increases, vitamin D deficiency may increase as well," says public health professor Linda Gerber, PhD. "In this group, appropriate nutrition could solve both problems." The deficiency can interfere with bone growth in children; in adults, it has been linked to cardiovascular disease, cancer, diabetes, immune dysfunction, and hypertension. The study examined nearly 3,000 people aged twelve to nineteen, with data taken from a national health and nutrition survey; the results were published in the journal *Pediatrics*.

PHOTOS THIS PAGE BY WEILL CORNELL ART & PHOTOGRAPHY

Ashutosh Tewari, MD

Donald D'Amico, MD

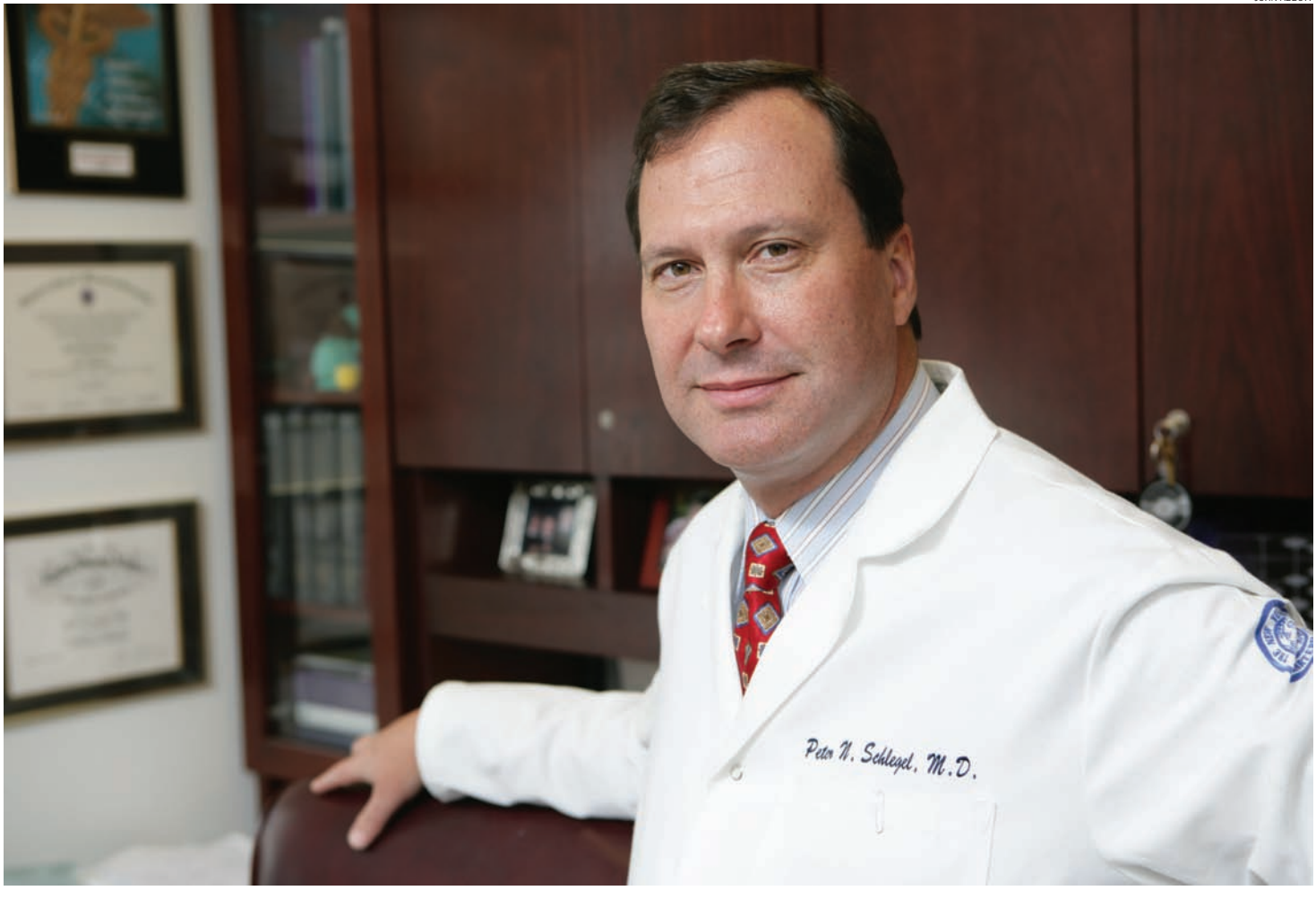
Linda Gerber, PhD

Proud Parents

Researchers from New York and Ithaca explore the mysteries of fertility—and not just in humans

When Peter Schlegel, MD, met with researchers from Cornell's College of Veterinary Medicine two years ago, he was "stunned." The Ithaca-based veterinarians, he learned, were working on the same problem—the genetic causes of male infertility—in mouse models that he and his Weill Cornell colleagues were exploring in humans. "It was clear," says Schlegel, chairman of urology, "that this was an ideal opportunity to build on what each of us could do." That 2007 meeting marked the start of the Center for Reproductive Genomics, a collaborative effort that currently involves more than a dozen faculty members from both campuses. And if a $5 million grant proposal is approved by the National Institutes of Health, the Center could grow to about 100 Cornell researchers.

JOHN ABBOTT



Peter Schlegel, MD

The Center is unique for its focus on the genetic mechanisms of reproductive performance in humans and animals, says director Paula Cohen, PhD, associate professor of genetics in the Vet college. In addition to her own lab work, Cohen handles much of the administrative shuttling between the campuses. "The key to genomics research is not so much what makes us different from other mammals, but what makes us the same," says Cohen. "Our ultimate aim is to foster research in infertility and contraception in humans and animals with other labs across the country."

Schlegel, who coordinates and directs the Weill Cornell side of the Center, has published extensively on the microsurgical treatment of infertile men as well as on genetic aspects of infertility. He is also an expert in the treatment of male infertility using surgical techniques such as sperm harvesting and is engaged in several ongoing studies with researchers in Ithaca, including Alex Travis, DVM, PhD, professor of reproductive biology in the Vet college, and John Schimenti, PhD, director of Cornell's Center for Vertebrate Genomics. Schimenti's research in animals has direct implications for Schlegel's clinical work on infertility in humans, which affects 10 to 15 percent of couples of childbearing age.

Schimenti—who has most closely collaborated with Darius Paduch, MD, PhD, a clinical researcher and colleague of Schlegel's in the Department of Urology—is a leading expert in the genetic analysis of mouse development, with a focus on methods for thorough genetic screening and analysis of meiosis (cell division) and gametogenesis (the production of haploid sex cells, such as ovum and spermatozoa in humans, that each contain half of the genetic complement of the parents' chromosomes). In 2007, Schimenti's lab announced a breakthrough: the discovery of a mutation that causes infertility in mice. Having identified a dominant mutation that leads specifically to mammalian infertility, researchers are now looking for similar mutations in the DNA of infertile men.

Weill Cornell's male infertility database is perhaps the most comprehensive repository of blood and tissue samples of its kind in the world, with specimens from more than 2,000 men. But for many scientists, such a bank of genetic materials is often out of reach. "One of the constant challenges for researchers in the reproductive sciences is obtaining [human] specimens for study," says Schlegel. "Our department has allowed researchers with the Center access to the database of DNA samples we have collected through routine testing of our patients and with their consent." Schlegel and Paduch have published pioneering work on Klinefelter syndrome, a genetic abnormality caused by an extra X-chromosome that renders one in 1,000 men infertile. Schlegel and Paduch have previously shown that up to one-third of men with severe male infertility have defective recombination of chromosomes during meiosis, which can often disrupt sperm production.

JASON KOSKI / CORNELL UNIVERSITY PHOTOGRAPHY

Paula Cohen, PhD

The Center for Reproductive Genomics is also facilitating research into the role that genetics plays in female infertility, says Cohen, whose own work using mice models seeks to answer why defects in male meiosis lead to the death of sperm cells while similar defects in female meiosis don't destroy eggs. Since these imperfect eggs survive, errors in female meiosis are responsible for many birth defects in humans, including Down syndrome. Here too, Cohen says, mice models are effective because they achieve reproductive meiosis in a matter of months—whereas in humans, it can take more than a dozen years.

Due to its affiliation with the Vet college, the Center also has a core of faculty focused on reproductive and contraceptive issues in animals. For instance, researchers are seeking more effective methods of sterilization for stray cats and dogs to reduce the hundreds of thousands of unwanted animals euthanized each year. Conversely, animal fertility studies generated through the Center will help with wildlife conservation as well as cattle and horse breeding.

Ultimately, Schlegel and Cohen envision the project as the first national center for reproductive genomics, one that encompasses research on infant mortality, evolutionary biology, and nutritional life sciences in addition to human and animal reproductive health. "Everyone involved with the Center is aware of the strengths of its interactive design," says Schlegel. "The question is, where do we grow from here?"

— Franklin Crawford

NYPD True

Francis Adams, MD '71, is among the two dozen 'police surgeons' who care for New York's Finest

Weill Cornell Medicine: First things first—do you get a badge?
Francis Adams: The coolest thing is I have a gold shield that says "Inspector." I also have a parking placard, so that is highly valued.

WCM: What does a police surgeon do?
FA: Because of the nature of their work, NYPD officers have unlimited sick leave. When an officer is injured or has called in sick, he or she must report to his medical district. I direct the officer to the appropriate care. We evaluate their fitness to return to duty or determine if they are disabled. If there's a major catastrophe, a police surgeon is assigned to be there, like when we had a steam pipe explosion in Manhattan about a year ago—I manned an area where people who were exposed to asbestos could be decontaminated. If an officer is hospitalized, a police surgeon is dispatched to do an evaluation and determine if the officer is receiving the proper care.

WCM: So you're not actually a surgeon per se?
FA: There's a misconception because in Europe and other countries, police surgeons are forensic pathologists, like CSI people who do crime-scene analysis. That is not what I do. There are some interesting aspects to the job, but I'm afraid it's not the glamorous work that people might think of.

WCM: How much of your work life does the job take up?

Francis Adams, MD '71

JOHN ABBOTT

FA: Each surgeon has a district in the metropolitan area—mine is in the northern Bronx. There are 1,800 officers in my district, and I spend at least two-and-a-half hours a day seeing injured officers. It's five days a week and I'm usually on call one or two days per month. I maintain a private practice in pulmonology and have a faculty appointment at NYU. I also host a Sirius Satellite Radio call-in show once a week called "Doctor Radio."

WCM: What are the most common injuries?
FA: I call these officers modern-day gladiators. They often come in having struggled with perpetrators; they can have every possible joint injury or fracture of every conceivable bone in the body. I had a lieutenant the other day who had fallen on the ice chasing a suspect. I see undercovers who come in looking just as they're supposed to—I wouldn't think this was an officer—and quite often they've been in significant struggles with criminals. "Police surgeon" is an archaic term, but it reflects the violent nature of the profession.

WCM: Has this job given you a particular admiration for the police?
FA: These are young men and women who are not paid a lot, and here they are putting themselves and their bodies on the line every day and often suffering significant injuries. That opened my eyes. I had no real appreciation for what an officer's day-to-day life might be like.

WCM: Any memorable war stories?
FA: Once, the phone rang at five in the morning—an officer had been shot. It was a forty-five-minute drive to the hospital, and I'm anticipating the entire time that this is a very serious injury. When a cop gets hurt, the people in his precinct all migrate quickly to the hospital. So I had this vision of a seriously injured officer, tons of police—what am I going to do, what am I going to say? This was my first experience with an officer who had been shot, and they couldn't tell me whether he was alive or dead. And then I get a block away from the emergency room and the police call and say, "You don't even have to go, it's just a scratch, he's already getting released."

WCM: Have you gotten to know the officers well?
FA: Yeah. Being a lung specialist, I've evaluated some of them for 9/11 issues. You form connections with them. And I'm crazy about animals, so I had the K-9 unit of the Port Authority Police on my radio show. In fact, I asked the officer, "Who do you prefer, your human partner or your canine partner?" He didn't hesitate one second and said, "The dog."

— Beth Saulnier

Surgical intervention: Hartl (right) operated on a patient with an unstable C2 fracture with spinal cord compression.

PROVIDED BY DR. HARTL

Mind Over Matter

Dr. Roger Hartl's quest to improve neurosurgery in Tanzania

Of Tanzania's forty million citizens, only three are certified to provide neurosurgical care. That's one for every 13.3 million people—far beyond the World Health Organization's recommendation of one for every 100,000. With hospitals understaffed and lacking standard equipment, the odds of surviving a grave medical crisis in Tanzania are dismal. Though wealthier citizens find care overseas, thousands die every year from conditions that could easily be prevented or treated.

In the hope of improving care in the East African nation, Weill Cornell Chief of Spinal Surgery Roger Hartl, MD, has launched a humanitarian mission. On a weeklong visit to the capital city of Dar Es Salaam in November, Hartl delivered more than $400,000 worth of donated surgical equipment and performed three procedures, saving one patient from lifelong paralysis and two from certain death. "Working with patients directly is incredibly rewarding," says Hartl. "But I can treat only so many patients while I'm there. The real purpose of our work is to ensure that Tanzanians have consistent, reliable care from their own doctors."

Hartl first visited Africa twenty years ago while a student at Munich's Ludwig-Maximilians University. Trekking through Malawi, he was taken aback by the impoverished living conditions and the effect of malaria and HIV on the population. Today, having studied and practiced in Germany and the U.S., he is deeply concerned about the continuing disparity between developed and developing nations. "Relatively, there is no health care in Africa," Hartl says. "There is a responsibility for others to help them provide their people with even, balanced, and fair treatment."

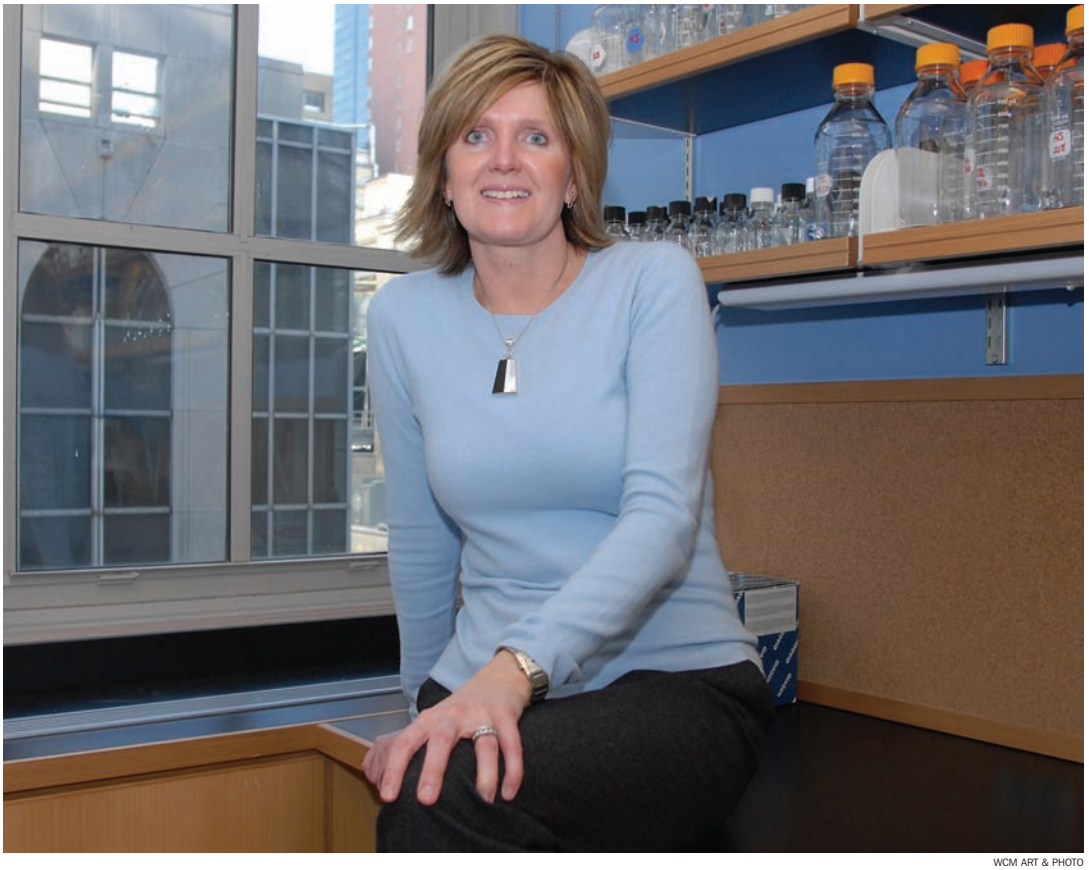
Although philanthropic donations and medical volunteers can provide short-term aid, Hartl's larger goal is to help the country develop its own neurosurgical resources. To that end, he is working with Madaktari Africa and the Foundation for International Education in Neurological Surgery to help Tanzanians train their own neurosurgeons by donating his time to teach them. On his November trip, Hartl visited Muhimbili Orthopaedic Institute, the nation's only neurosurgical facility, which is working to create an educational program for young surgeons; he is also lobbying American medical schools to send students to Dar Es Salaam for residency. "Our goals are modest," says Hartl. "Even so, there is a world of difference to be made in helping them achieve neurosurgical independence."

— Brian Hotchkiss

Of Mice & Women

Tackling the genetics of a deadly pregnancy complication

Robin Davisson, PhD



WCM ART & PHOTO

Worldwide, some 500,000 women die annually from pre-eclampsia and roughly 15 percent of all premature deliveries are due to the condition.

Each year, 5 to 8 percent of pregnant women develop a constellation of symptoms that includes a mysterious, mid- to late-gestational spike in blood pressure. Known as pre-eclampsia, the syndrome in its milder forms can be managed with bed rest and anti-hypertensive drugs. Ultimately, however, the only cure for this progressive condition—which can lead to maternal and fetal death—is delivery. Where prenatal care is available, physicians typically monitor for pre-eclampsia, staving off the risks of premature birth in a high-stakes balancing act against the maternal and fetal organ damage caused by persistent hypertension. But not everyone is so lucky. Worldwide, some 500,000 women die annually from the condition and roughly 15 percent of all premature deliveries are due to pre-eclampsia.

This spring, Weill Cornell professor of cell and developmental biology Robin Davisson, PhD, released findings on an experimental gene therapy that reduces symptoms of pre-eclampsia in an inbred-mouse strain known as BPH/5, which is predisposed to the syndrome. The line of research emerged almost a decade ago, from the hypertension expert's investigations of the renin-angiotensin system—a dynamic, hormone-based feedback loop that regulates fluid balance and blood vessel dilation. In the intervening years, Davisson (who holds a joint appointment in molecular physiology at the Veterinary college on the Ithaca campus) has detailed the parallels between human pre-eclampsia and the BPH/5 mouse on which she holds a patent, developed new technologies for monitoring hypertension in pregnant mice, and explored the role of the placenta in the development of pre-eclampsia.

But for a well-timed phone call and the generosity of a retiring geneticist, Davisson might never have tackled what has become a significant sideline in her research. "It was serendipity," she says. Back when it all started, she was an assistant professor at the University of Iowa seeking a control to include in her investigation of the renin-angiotensin system. University of Kansas geneticist Gunther Schlager, PhD, had devoted his career to breeding mice with varying

levels of high blood pressure and links to particular genes, including the BPH/2, whose hypertension was unrelated to the renin-angiotensin system—exactly what Davisson needed. "I called and asked if there were any way I could get this mouse," she recalls. Schlager, who was nearly retired, was already shutting down his lab and had agreed to provide a few of his animals to Jackson Labs, home of the mouse genome project in Bar Harbor, Maine. "It would be a long time before you could get mice from them," he told her, "so I'll send you some."

A week later, a dozen of Schlager's BPH/2 mice were in quarantine in Iowa, along with a half-dozen BPH/5 mice that the geneticist had also sent. "He said I could do whatever I wanted with them," says Davisson, who admits it was tempting to discard the extras. "At the time, I'm a brand-new assistant professor, working on startup funds. It costs a lot of money to keep mice." But these were the product of a life's work, and sentimentality prevailed. "It just didn't seem right not to maintain them. It was tugging at my heartstrings."

Nearly a year had passed when a graduate student in Davisson's group mentioned that the BPH/5 mice—which exhibit lifelong, low-level hypertension—seemed to have litters with fewer and smaller pups than the others. A review of the colony records confirmed his observation, and a literature search revealed parallels with preeclampsia, which disproportionately affects women with low-level hypertension and tends to restrict fetal growth. "Suddenly we had this set of phenotypes that looked interesting," says Davisson. "It was a total fishing expedition." When she came to Cornell in July 2006, Davisson brought $5 million in grant support, a team of junior researchers, and the mice. Today, she maintains labs in Ithaca and at Weill Cornell and collaborates with colleagues on both campuses.

Weill Cornell professor of medicine and ob/gyn Jane Salmon, MD, studies preeclampsia in women with lupus and heads the PROMISSE Study, a 500-patient search for biomarkers that predict poor pregnancy outcomes and treatments to target them. When she heard that Davisson was coming to Weill Cornell, Salmon made a point of getting in touch. "She brought an exciting animal model, a profound understanding of blood pressure regulation and its abnormalities in pregnancy, and a willingness to extend the model to aspects of human disease," Salmon says of her collaborator of three years. Together, the pair mentors Shari Gelber, MD, PhD, a clinical fellow in maternal-fetal medicine, and they have founded a group of basic scientists and practitioners with an interest in preeclampsia who meet monthly at the Cornell Club in midtown Manhattan for dinner and a videoconference with a research group in Canada.

Gelber participated in the most recent pre-eclampsia study, monitoring the effect of a gene that increases expression of an endothelial growth factor that boosts blood vessel formation in the placenta. "Here we have somebody who sees these high-risk, pre-eclamptic patients all the time," says Davisson. "Shari works in the lab, translating from bench to bedside and back again." The transgenic data has not yet been published, but Davisson says the findings are too promising not to share the insights that have been revealed so far. "As soon as we have something that could be of interest to the scientific community, it's our obligation to get it out there," she says, noting that the approach has frequently yielded new opportunities for collaboration. "The more the merrier."

— Sharon Tregaskis

Choreography of the Cellular Dance

Biophysicist unlocks the secrets of the ribosome

Scott Blanchard was fresh out of UC Davis with a BA in monetary theory and finance when the U.S. economy skidded in the early Nineties. Searching for a career that would be personally meaningful, he slept on friends' couches in the San Francisco Bay Area, attended community discussions of how to rebuild Santa Cruz in the wake of the 1989 earthquake, and volunteered. "I found that my true passions—and maybe my skills—were better aligned with studying nature," says Blanchard, now a thirty-nine-year-old assistant professor of physiology and biophysics at Weill Cornell. "I was enthralled with learning."

What started with a post-baccalaureate extension course in organic chemistry led to a second bachelor's degree in chemistry and molecular biology from UC Santa Cruz, a PhD in biophysics from Stanford, and a postdoc in applied physics. Today Blanchard's research integrates the study of ribosomes—the cellular components that translate RNA into proteins—with the development of medical imaging techniques aimed at revealing the nature of molecular processes and life in motion. "The holy grail in my field is to be able to use a microscope and look at a cell as a collection of single molecules moving around in time and space, much as we may one day use Google Earth to look at traffic in real time," says Blanchard, who last summer was awarded a National Science Foundation early career award of $806,000 over five years. "The question is, how do you look at things smaller than the wavelength of light inside a living cell, so you can understand what's happening in real time in the cellular dance?"

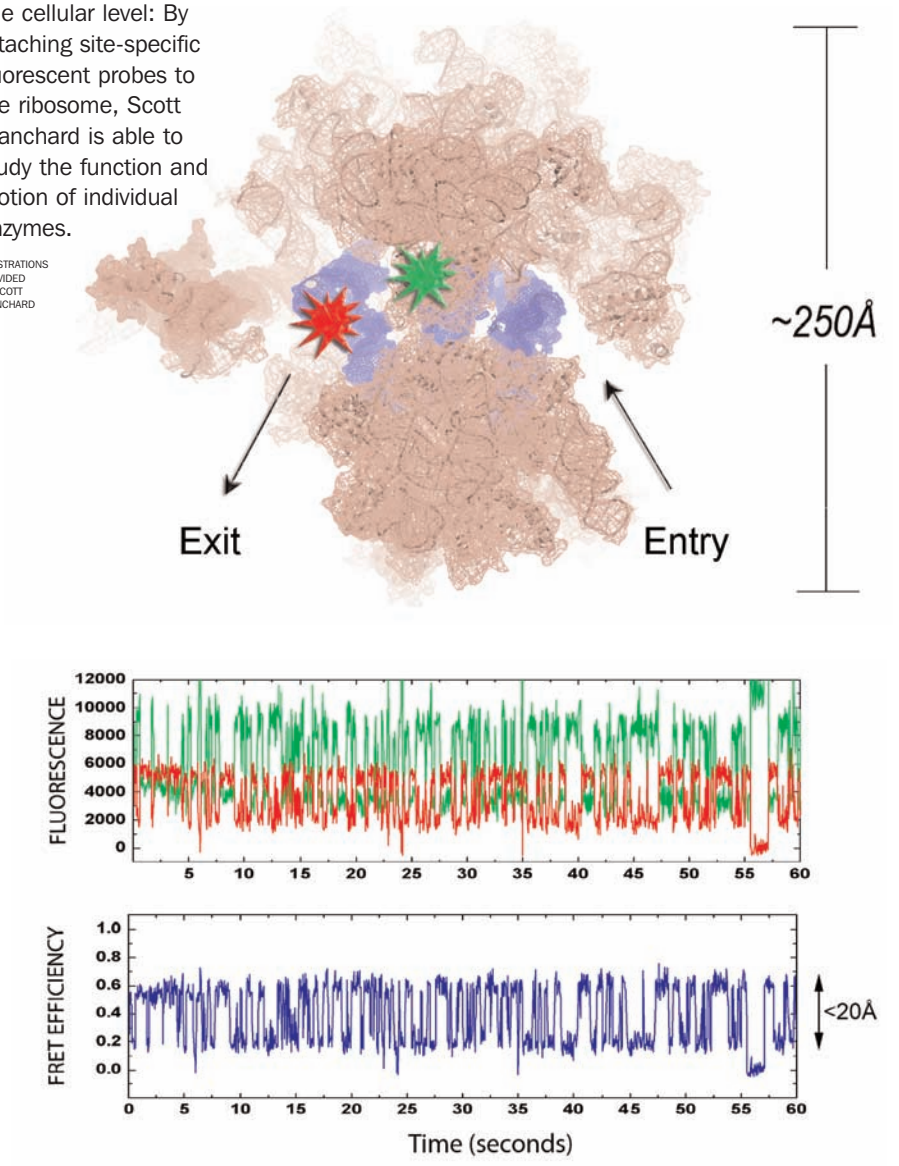
Understanding the action of the ribosome promises insights into how myriad pharmaceutical agents actually operate and will likely guide drug development in the future, from treatments for infection to enhanced chemotherapies. Consider an analogy: a photograph of dancers in motion offers a snapshot of how they relate to

PROVIDED

Scott Blanchard, PhD

The cellular level: By attaching site-specific fluorescent probes to the ribosome, Scott Blanchard is able to study the function and motion of individual enzymes.

ILLUSTRATIONS PROVIDED BY SCOTT BLANCHARD



one another at a particular moment, but it doesn't offer information about each dancer's movements through time and space. Similarly, scientists currently understand ribosome functions from a series of snapshots. Blanchard wants to detail the choreography.

In a locked wing converted from patient-care space on the second floor of the Whitney Pavilion, Blanchard's team of a half-dozen grad students and postdocs develops the new imaging tools that apply principles of optical physics, fluorophore chemistry, computer science, and molecular biology. Blanchard also draws heavily on several summers as an undergraduate intern in the automotive machine shop of his grandfather, a Detroit inventor. In a small, windowless room off the sunny chemistry lab, he brandishes a slide on which the team can immobilize single molecules in a femtoliter volume—one *quadrillionth* of a liter—to analyze ribosomal functions.

"Fluidics devices are a central component of our work," he says, indicating a Rube Goldberg-style contraption the team built to view such samples: a microscope sits in a miniature darkroom, mounted on a vibration-dampening stand rigged to a laser and homemade fluidics devices. When Blanchard says the contraption was assembled from garage parts and items from the Radio Shack catalog, he's only half-joking. The researchers not only refine their own fluorophores, they fabricate the fluidics devices using a diamond-tipped drill press, a blowtorch, and double-sided tape stashed at the far end of the counter. "Scott brings a real fire and enthusiasm to his research," says his UC Santa Cruz mentor Harry Noller, PhD, who directs the school's Center for Molecular Biology of RNA and whose own work tackles many of the same questions Blanchard has investigated over the last decade. "He's taken different approaches than we took, interesting and successful approaches, and he's uncovered some exciting things."

Those findings haven't come easily. As a postdoc at Stanford, Blanchard generated what Noller calls "landmark" papers on protein synthesis using fluorescence resonance energy transfer imaging—a technique that relies on fluorescent electrons to measure distance—to describe the activity of a single molecule. But in the process, the young scientist learned a hard lesson when two years' worth of sample preparations were contaminated by other research being done in the same lab. "It was like a doctor trying to use a stethoscope to check someone's heartbeat when there was dynamite and construction going on next door," says Blanchard, who has set strict standards in his Weill Cornell lab to protect himself and his graduate students from repeating the experience.

Blanchard shares space at Weill Cornell with two other principal investigators, and the three have found ways to facilitate one another's success. "It's in Scott's character that he's able to deal with what most people view as frustration in the short-run, failed experiments and so on, in a strong way," says Noller. "This is one of the most difficult parts of science. When you're on the leading edge, investigating new stuff, it mostly doesn't work. If your experiments are always succeeding, it's probably a sign that you're doing something boring, where the field is well-trodden and everything's already been worked out."

To keep publishing and garnering grants in a realm where failure is the norm takes a great deal of effort, Blanchard admits; his workday often stretches twelve to fifteen hours, and in five years in Manhattan, he has rarely ventured beyond the six-block commute to his University-owned apartment. "You can't tolerate anything less than 150 percent effort in science right now," he says, "or your papers don't get published and your grants don't get funded." Blanchard had two job offers when he was hired by Weill Cornell in 2004; the other was from the Ithaca campus. He chose the Medical College because, he says, "I like being surrounded by people in medicine. It keeps you grounded."

— Sharon Tregaskis

Rock Star

Med student daredevil scales new heights

PROVIDED BY SHAWN DIAMOND

Good grip: For a climb on Mallorca, Shawn Diamond had to access the cliff by boat and leap onto its face before a wave sent him crashing against the rocks.

Shawn Diamond got his first taste of rock climbing at an early age: inside the womb. When Diamond's mother was seven months pregnant with him, she scaled a challenging section of California's Mount Whitney, the highest summit in the contiguous U.S. Two months and seventeen years later, he began climbing professionally. "Climbing was the first sport where no coach could bench me because I was too small," says the second-year medical student, who stands five-eight. "I was given a chance to push myself. It wouldn't be anyone else's fault if I didn't get the job done."

At his peak, Diamond was ranked the sixth-best climber in the world in bouldering (scaling short heights without ropes) and sport climbing (ascending higher using ropes and anchors). With sponsorships from the North Face, PowerBar, and Smith Optics, he has competed across the globe in World Cup and Olympic exhibition competitions. His travels have taken him across the United States as well as to the French Alps, the Spanish Pyrenees, and other mountain ranges in Europe. Most recently he climbed on Mallorca, an island off the Iberian Peninsula that boasts a coastline of jagged limestone cliffs that jut out over the water at ninety-degree angles. "There are points where you're sixty feet off the ground, upside down, and have no clue where you're going," says Diamond. "You have to be aware of your body at all times. It's high pressure and high stakes, not unlike surgery and medicine."

As an undergraduate at UCLA, the Los Angeles native studied pre-med but majored in fine art, carving cliff-like sculptures of clay. Diamond sees strong connections among art, rock climbing, and neurosurgery—his likely specialty—that help explain the structural, hands-on way he sees the world. "I was taken aback by how beautiful the architecture inside the skull is," says Diamond. "Sculpture, surgery, and climbing are all tied in to a feeling of creativity, being physical, and paying attention to detail."

Despite the demands of medical school, Diamond—who was featured in a recent issue of *Climbing* magazine—has found ways to stay involved in his favorite sport. Three days a week, he keeps fit with yoga-inspired workouts at a gym near campus, and he takes weekend getaways to peaks on the West Coast to practice climbing and visit his family. Even after graduation, he plans to balance medicine and climbing as best he can. "They're my two biggest passions, so I want both," Diamond says. "I'm greedy."

— Brian Hotchkiss

Check Mate

Can a simple quiz prevent kidney disease?

A pencil and a brief checklist may be the first line of defense against the spread of chronic kidney disease, which has reached near-epidemic levels in the United States. The eight-point risk-factor quiz and scoring system—the first to deal specifically with chronic kidney disease (CKD)—is based on a model developed by researchers from Weill Cornell and the University of North Carolina. "This model accurately predicts who is at risk for CKD so we can, we hope, prevent the progression of the disease," says nephrologist Phyllis August, MD, MPH. "It's a low-tech approach to dealing with a disease that has a long pre-clinical phase. Many patients as well as doctors are completely unaware of CKD until the symptoms are severe."

JOHN ABBOTT

Phyllis August, MD, MPH

The checklist—which can be filled out by lay people in settings like drugstores and malls as well as doctors' offices or emergency departments—was featured on CBS's "Early Morning Show" in March 2008; the full study was published in the *Archives of Internal Medicine* in December. August, the Baer Professor of Medical Research at Weill Cornell and the study's senior author, says the model is especially helpful for patients with diabetes and heart disease who are often under-diagnosed for CKD. But it also serves as a useful screening tool for people with limited access to health care. "It's a great way to empower patients," August says. "They can take it to a physician and say, 'I got a high score on this quiz. Can you take a look at this?'"

CKD is a five-stage illness than can develop under the radar, often detected only after it has debilitated its victims. It can weaken bones, inflict nerve damage, and cause or exacerbate conditions such as high blood pressure, cardiovascular disease, and anemia. If left unchecked it can lead to kidney failure—requiring dialysis or a transplant—and even death. Symptoms, which are often vague and mimic other common problems, can include low energy, difficulty concentrating, muscle cramping in the legs, swollen feet and ankles, puffy eyes, dry skin, and frequent urination.

According to the National Kidney Foundation, CKD affects 26 million Americans—which means that there is about a one-in-nine chance of developing it. Because it is such an elusive illness, it is difficult to estimate its overall cost. However, the annual bill for treating end-stage renal disease—the worst-case scenario for those with CKD—is projected to rise to $30 billion by 2010 for Medicare patients alone. "Chronic kidney disease may be preventable if it is caught early, so it's important to know who's at risk," says Heejung Bang, MD, study co-author and an associate professor in the Division of Biostatistics and Epidemiology. "Our model helps answer that question." Because public awareness of CKD lags behind that of illnesses like cancer, diabetes, and hypertension, the National Institutes of Health and the National Kidney Disease Education Program have shown keen interest in the model as an educational tool.

While the checklist is simple, creating it was anything but. It incorporates data from two major studies, the Atherosclerosis Risk in Communities Trial and the Cardiovascular Health Study, which together total 14,155 men and women aged forty-five and up. At the outset, all participants presented with normal kidney function. Researchers tracked them for up to nine years and noted those whose glomular filtration rates (the rate at which the kidneys filter blood) fell below healthy thresholds. In all, 1,605 participants from the two studies went on to develop CKD.

A scoring system was then developed using eight key risk factors: age (over seventy), anemia, gender (females are more susceptible), hypertension, diabetes, peripheral vascular disease, and history of congestive heart failure or cardiovascular disease. Each time a patient answers "yes" to having one of the risk factors, they gain anywhere from one to three points. Tallied, these factors accurately predict which patients are at risk for CKD. A high score doesn't mean that a person has the disease, August and Bang stress. But it does mean that their kidney health should be monitored, as a score of four or higher raises the chances of having CKD to 20 percent. A score of nine raises the risk to 40 percent for healthy individuals—and to 60 percent for those with cardiovascular disease. "We were able to validate the accuracy of these scores across different cohorts," says Abhijit Kshirsagar, MD, of the UNC Kidney Center, another of the study's senior co-authors, "suggesting that it remains consistent in a variety of contexts."

Pending further peer review and validation, the checklist could become a common method for identifying those at risk, much like the ubiquitous questionnaires that identify those at risk for depression or alcoholism or the blood pressure machines in pharmacies and malls. Bang and her colleagues are now working on similar studies for the detection of diabetes and hypertension. "Scoring tools like this have proven to be an effective method for educating the public," she says. "Not only is it accurate and easy to use, it would work well for mass screenings, for health fairs, and on medical websites, among other venues. It is ready for the real world."

— Franklin Crawford

Final frontier: Jay Buckey does emergency bailout training in preparation for his 1998 space shuttle mission. Today (inset) he teaches at Dartmouth.

NASA

Mood Launch

Mental health in zero gravity

If you're having a conflict with a coworker or just feeling blue, a change of scenery—maybe a walk around the block to get some fresh air—could be what the doctor ordered. But what if your workplace is an Arctic research station or a spacecraft? Former astronaut Jay Buckey, MD '81, is working on ways to solve interpersonal problems, treat depression, and manage stress in such isolated, extreme environments. Buckey, a professor of medicine at Dartmouth, has been developing self-guided, computer-based approaches—"virtual" treatments that people can download from a thumbdrive and use on their own laptops. "When you're talking about a mission where a small group of people are going to be together for a long period of time, that environment is psychologically challenging," says Buckey. "You need to have people who can get along well with each other."

In 1998, Buckey served as a payload specialist on the space shuttle *Columbia*. As part of NASA's Neurolab life-science mission, the crew conducted twenty-six neuroscience experiments; during the sixteen-day voyage Buckey orbited the Earth 256 times, traveled 6.3 million miles, and logged 381 hours in space. He says that he and his fellow astronauts worked well together on this short mission and formed an effective team—but he knew that long-duration space flight was much more challenging psychologically and that new tools were needed. With a grant from the National Space Biomedical Research Institute, Buckey and Harvard psychologist James Cartreine, PhD, began work on the Virtual Space Station, a multimedia prevention and treatment program. "It's not that problems happen all the time," Buckey says. "Depression is not common among the people selected to be in the astronaut corps. But it is a demanding environment, and you need to have the tools at your disposal in case something develops."

The program—which could also help Earthbound patients who don't have access to mental health services—includes a conflict-management component containing simulated scenarios based on interviews with two dozen astronauts who have been on long-duration missions. For example, one addresses a conflict about whether a mistake made on board should be shared with ground control; another explores a disagreement over work styles. "We have an older, experienced astronaut who's doing an experiment and not following a checklist, and a younger, less experienced one who is concerned because using a checklist is a way to reduce errors," Buckey says. "So the two of them get into a conflict, because each has a different opinion about how important it is. And underlying that is a concern about an upcoming spacewalk when they're going to have to work together."

The program's depression component is a linear, self-guided treatment program that takes users through a problem-solving process. The system—which has been informally tested by scientists wintering in Antarctica and will have a formal clinical trial based at Harvard—helps users identify symptoms and gives them concrete ways to cope. "Maybe they've stopped interacting with people, their office is a mess, relationships are deteriorating," Buckey says. "It turns out that if they can choose a few specific problems they have some control over, they can identify things they can do to make them better. Just the process of taking on those problems helps improve mood by returning people's sense of mastery over their lives. If they've been isolating themselves, they can step back and say, 'OK, this week I'm going to have a meal with my crewmates at least three times and I'm going to suggest that we all watch a movie together.' "

NASA already has systems in place to treat mental health problems in space via consultations with psychologists on Earth, but the crew needs to initiate the contact—and, Buckey notes, astronauts tend to be focused, driven people who won't want to highlight psychological problems unless it's absolutely necessary. "In environments like space flight and the military, people don't like to talk about psychosocial problems, which can be viewed as a sign of weakness," Buckey says. "So we're hoping that having a computer-based system on board—one you can use whenever you want, and nobody else has access to the results—will allow people to work through these issues before they become more severe. Because once you're on a mission to Mars, you can't come back. You're committed."

— Beth Saulnier

Viral Load

Research and treatment center battles hepatitis C

On the morning of July 19, 1999, Steven DiSomma died—for about nine minutes.

He was living on West 86th Street at the time, and because he had refused treatment for HIV, was on the verge of full-blown AIDS. On weekends, DiSomma liked to ride his bike all the way down Eleventh Avenue to Battery Park. He'd hang out there for a while and pedal home again. On that morning, DiSomma didn't make it very far. A car plowed into him as he was crossing 53rd Street, throwing him into the air before running over him and dragging him several blocks. "I knew to stay away from the tires," says DiSomma, who works as an extra on TV shows like "Law & Order."

He suffered four fractured vertebrae in his spine, four more in his neck, and several cracked ribs; he flatlined for nine minutes. On top of that, DiSomma's viral load was at 3.5 million. Ignoring his HIV had begun to take a serious toll. Wrapped almost head to toe in a cast at St. Luke's-Roosevelt Hospital, DiSomma got more bad news. He had hepatitis C.

Hepatitis C, which affects roughly 5 million Americans, is transmitted primarily through intravenous drug use and attacks liver cells. In the absence of other factors, it can take as long as thirty years to develop into end-stage liver disease, such as cirrhosis or cancer. But as in DiSomma's case, hepatitis C sufferers are often battling other life-threatening diseases. The HIV and hepatitis C, which DiSomma contracted through sharing needles, had joined forces and were killing him. And yet, because of the horror stories he had heard about the pain and weakness wrought by HIV and hepatitis medications, he would delay another year before agreeing to treatment.

DiSomma eventually saw Andrew Talal, MD, associate professor of medicine at Weill Cornell's Center for the Study of Hepatitis C, a cooperative research and treatment facility run by the Medical College, NewYork-Presbyterian Hospital, and the Rockefeller University. "Hepatitis C patients are disenfranchised and marginalized," Talal says. "There hasn't been a big patient-centered push the way you had with the gay community and HIV in the Eighties and Nineties. We need to be just as aggressive here."

At the Center, physicians and researchers have a multi-layered approach to fighting the

JOHN ABBOTT

Andrew Talal, MD

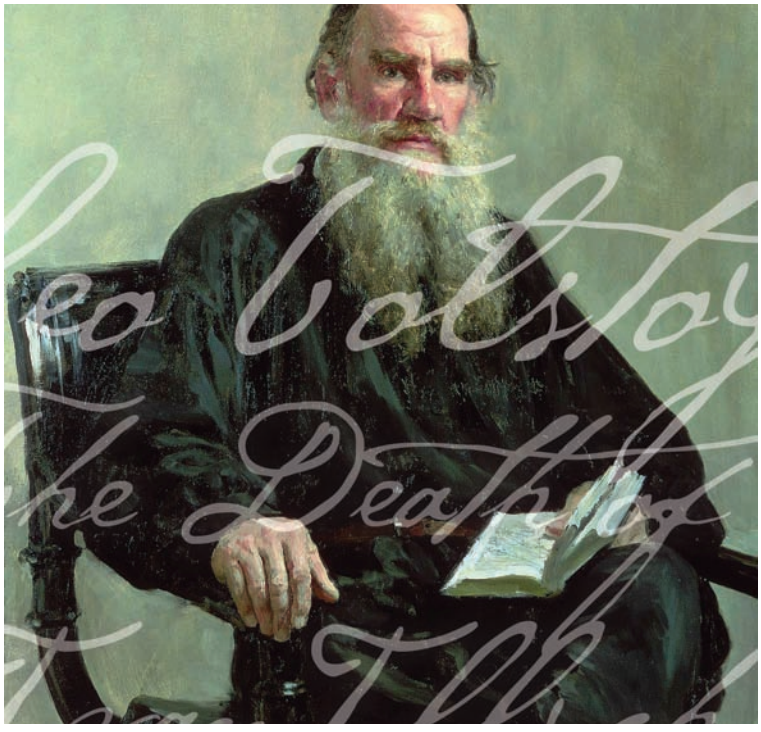
disease and raising awareness. Medical Director Ira Jacobson, MD, heads up patient care and clinical trials, testing new classes of drugs that could shorten treatment and reduce side effects. Charles Rice, PhD, serves as the scientific and executive director; his labs at Rockefeller are the headquarters for the study of the virus's replication. Meanwhile, Talal has spent the past nine years building a vast database and tissue repository of samples from more than 2,000 patients. He has used these samples to show how the virus causes scarring in the liver. At NewYork-Presbyterian Hospital/Columbia Medical Center, Robert Brown, MD, and Jean Edmond, MD, run the Center's transplant team; hepatitis C is the number one cause of liver transplantation in the U.S. and Western Europe.

The treatment that Talal prescribed for DiSomma, a combination of the drugs ribavirin and interferon, is the most effective therapy currently in use. The hepatitis C virus itself wasn't even identified until 1989; before ribavirin and interferon, there was no treatment. In 2001, peginterferon, a modified version of the drug that stays in the body longer, was made commercially available. As effective as the combination of ribavirin and peginterferon is—boasting a 55 percent cure rate—the treatment is quite toxic and debilitating. Interferon is created naturally by the body in response to the flu; in pharmaceutical form, it not only causes flu symptoms like body aches, but has side effects such as irritability, depression, skin reactions, and gastrointestinal distress. "It's like chemotherapy, basically," says DiSomma, now sixty-two, who followed a daily regimen for one year. "It was like being beat up by a 500-pound gorilla every day. A lot of people start the therapy but don't finish."

What doctors are now seeking is a treatment that is even more potent than ribavirin and peginterferon, as well as easier on the patient. Peginterferon revs up the body's antiviral defenses by stimulating the immune system; more targeted drugs currently under development attack critical enzymes within hepatitis C itself. Jacobson envisions a scenario in which these new drugs can suppress the virus's ability to replicate and mutate, just as protease and polymerase inhibitors have transformed HIV from a death sentence to a manageable chronic disease. Even better, the hepatitis C virus, unlike HIV, can actually be eradicated. "We are standing at the dawn of a new era in treatment," Jacobson says.

DiSomma finished his year of treatment in late 2002. Several blood test and liver biopsies have since confirmed that he is free of hepatitis C. "It was pretty rough," he says. "All those years, in my mind, I thought I was doing fine. But I was dying. Today, I know I'm doing better."

— Josh Hammann



Novel Idea

For WCMC-Q students, Tolstoy's classic tale highlights the patient experience

A judge named Ivan goes to the hospital complaining of irritability, depression, pain in his left side, and a foul taste in his mouth. He is rapidly deteriorating, both physically and mentally. Despite the efforts of his doctors, he ultimately dies an agonizing death.

The fictional case—described by Leo Tolstoy in *The Death of Ivan Ilych*—is the focus of a unit on the patient experience taught by Pablo Rodriguez del Pozo, MD, associate professor of public heath, in the premedical program at Weill Cornell Medical College in Qatar. "These students have not been exposed to any kind of clinical experience," says the professor of medical ethics. "They're young and have little life experience. Tolstoy's novella provides the perfect window into the world of the patient."

The classic tale about a status-conscious judge who sees his life's errors only when he is on his deathbed gives Rodriguez del Pozo's students an introduction to the complexities of the doctor-patient relationship. He uses the novella to examine a case from both points of view, so the future physicians can observe the impact that their decisions may have. "All Ilych wants to know is his prognosis, what is going to happen to him," Rodriguez del Pozo says. "But the doctors care only about the diagnosis."

Like the Humanities in Medicine program on the New York campus, Rodriguez del Pozo's use of *Ivan Ilych* gives students insights into clinical issues through the lens of the arts. Rather than having his students deconstruct the novella's literary elements, he tells them to observe the doctors' reactions to the patient and the clinical information that is embedded in the text. "I think it's the best narrative of the personal voyage from life to death," Rodriguez del Pozo says. "We take the story at face value, pretend that it's real. It's not that Tolstoy recreates reality—he creates something that is more than life."

— Zak Failla

in the event of an emergency

Weill Cornell's disaster prep expert helps America plan for the worst

NATIONAL MUSEUM OF HEALTH AND MEDICINE

Outbreak: A U.S. Army influenza ward during World War I. Weill Cornell public health researchers and engineers from the Ithaca campus are working to help the government plan for a possible pandemic.

By Beth Saulnier

One of Nathaniel Hupert's disaster preparedness models came to life on a fall morning in 2001. Just weeks after 9/11, the anthrax attacks had struck New York City; after a postal worker contracted the disease from handling tainted letters, New Yorkers started to get scared. The associate professor of public health arrived on campus and saw a flurry of activity in front of 1300 York Avenue. "I walked in and found a line of patients, mostly parents with children, waiting for antibiotics," he recalls. "Lo and behold, there we were, in our second cafeteria in the basement of the hospital, setting up a dispensing clinic—designed much like the ones I'd been working on over the summer, making computer models. It immediately became quite real."

Hupert, who holds both an MD and a master's in public health, is a nationally recognized expert in the field of disaster preparedness. In collaboration with Weill Cornell colleagues as well as engineers from the Ithaca campus, he aims to devise the best methods for responding to calamities of every stripe—from pandemic flu to hurricanes to bioterror attacks to nuclear bombings. Addressing such challenges raises a wide array of issues: How do you mobilize staff, from first responders to trained volunteers? Where do you store strategic drug stockpiles? What are the best methods of patient triage? How should people and supplies be transported? How do you communicate information to the public? And will the public pay attention?

Hupert is co-director of the Institute for Disease and Disaster Preparedness, a joint effort between Weill Cornell and the School of Operations Research and Information Engineering (ORIE) in Ithaca. In October, in addition to his Cornell duties, he became inaugural director of the Preparedness Modeling Unit at the U.S. Centers for Disease Control and Prevention in Atlanta, helping to expand the use of mathematical and simulation modeling to inform national policy on public health emergency and disaster response. "When we look at preparedness, we try to focus not just on the ability to respond when bad things happen," he says. "We hope to build stronger, more resilient communities, so that when anything happens, they will have it within their power to recover quickly."

While the concept of preparing for a disaster is hardly novel—a generation of Americans remembers school duck-and-cover drills during the Cold War—in many ways the field is having its moment. It began at the turn of the millennium, when the potentially catastrophic effects of the so-called "Y2K bug" on a vast array of systems from the power grid to air traffic control captured the national consciousness. "The federal government took a great interest in possible large-scale casualty events during the millennium," Hupert says. "What was then called the National Pharmaceutical Stockpile was created by an act of Congress so there would be antibiotics and other items on hand in case anything went wrong."

In the ensuing years, high-profile disasters like the September 11 attacks and Hurricane Katrina, as well as disease threats like avian flu, have increased both public awareness and grant funding for readiness efforts. "This is a unique time in the history of public health, in that we are now facing issues that only several decades ago we thought might have been vanquished," Hupert says. He repeats an often-cited quote from an early surgeon general, who decades ago announced that infectious disease had been all but eliminated thanks to the discovery of antibiotics. "We clearly know that

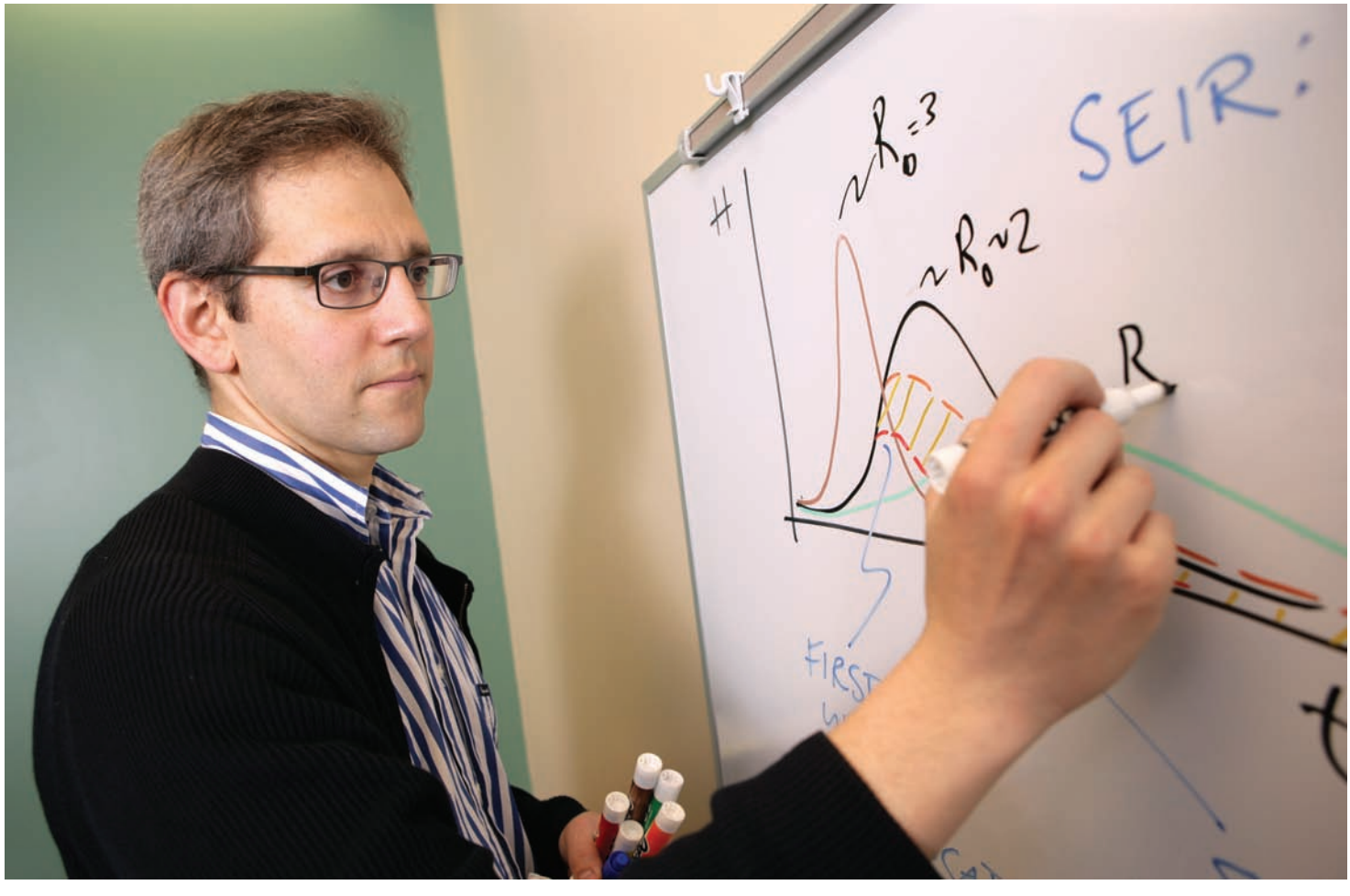
that's not the case," he says. "So there's a new awareness of the great capacity of natural systems to surprise us with things that are not good. That has certainly contributed to raising people's awareness of the human population's vulnerability to widespread disease."

Meanwhile, advances in computing power have made it possible to run increasingly sophisticated models, allowing experts to study how a host of variables can affect outcomes in a crisis. "The combination of the emergence of desktop computers—that have essentially what were supercomputer powers only a few years ago—and the rapid expansion of modeling capabilities on the business and engineering side has improved things in ways that were scarcely believable ten years ago," Hupert says. "One example is that you can order any of 40 million items on amazon.com and it will tell you, within a second, whether it's in stock and how quickly it will get to you. Those are engineering algorithms, many of which were created by our colleagues in Ithaca. Our challenge is to try to see the big picture, to see how these solutions in one realm could be the beginnings of productive approaches in another."

Hupert's chief colleague in Ithaca is Jack Muckstadt, PhD, a veteran ORIE professor who serves as co-director of the Institute for Disease and Disaster Preparedness. Its aim, Muckstadt says, is to understand "what kinds of resources would be required to meet the risks associated with various types of nasty stuff, whether it's man-made or naturally created." Muckstadt cites the example of how the Ithaca campus, and Tompkins County in general, might cope with pandemic influenza. "By definition that means it's a worldwide event, and it will cause great demand for resources—some medical, some facilities related," he says. "Our county hospital would be under stress, and it has limited resources to deal with respiratory problems." Although Cornell's disaster plan calls for the evacuation of more than two-thirds of the student body, that would still leave thousands on campus, many of whom would likely need medical care—not to mention treatment for employees and their families. "The question then is, how do you do that? And how do you coordinate that across a county? What resources are going to be required? So on a national scale,

Nathaniel Hupert, MD, MPH

JOHN ABBOTT



Near Miss

How a disaster expert fared on September 11—and afterward

Most New Yorkers have a 9/11 story. But as it turned out, Nathaniel Hupert, MD, was contemplating disaster long before the first plane hit.

That summer, the public health professor was heavily immersed in preparing for a large-scale mass-prophylaxis exercise, to be held on a pier on the West Side of Manhattan, in which 600 probationary firefighters would play citizens seeking antibiotics from an emergency dispensing clinic. He and his colleagues in the Mayor's Office of Emergency Management held weekly planning meetings on the twenty-third floor of Building 7 of the World Trade Center; the exercise was scheduled for September 12.

The day before the event, he had arranged to be at the Trade Center at 9 a.m. to meet colleagues for the commute to the pier to finish preparing the site. But when he was leaving Building 7 on the evening of September 10, someone offered to give him a ride a couple of hours later. "That was quite lucky, because at that time I lived three blocks south of Ground Zero," he says. "My route to those meetings was to walk right between the towers and go across the plaza. My guess is I would have been between the towers around 8:45. Exactly one minute later, the first plane struck. As it was, I was home and witnessed it from our living room window. And after I went up to the roof, the second plane flew right over my head."

He and his wife evacuated with their dog before the towers fell—"Luckily we went all the way east, so we missed the dust cloud"—and then had to cope with the fallout for months afterward. An expert in disaster preparedness, Hupert experienced life in the aftermath of an environmental catastrophe. "Living downtown during those months was extremely difficult for psychological reasons, but also for health reasons," he recalls. "The stench was unbelievable. When the wind wasn't blowing the right way, we had to shut ourselves in with our air purifiers or leave. We would wake up in the morning and check the flags over in New Jersey to determine which way to walk out of our building." A year after 9/11, the family's seven-year-old Australian shepherd was diagnosed with intestinal cancer, which Hupert strongly suspects was caused by the contaminated environment. "She was one of many dogs in the neighborhood who died of cancer or other related illness," he says. "Dogs can't wear masks and they lick their feet. It was a very sad reminder of how toxic the neighborhood had become."

Hupert had grown up in a loft two blocks north of the World Trade Center that his family still owned; two years after the attacks, he and his wife moved into it, committing to stay downtown. And the sense of threat that pervaded the neighborhood and the city at large—after not only 9/11 but the anthrax scare as well—helped solidify his professional calling. "There was real uncertainty over whether there would be another attack," he recalls. "If so, what would it be like? Would it be a chemical attack? A lot of folks were carrying around masks because of the dust and the smell. Carrying a mask into the subway speaks a lot about your personal security and that of your city. Those experiences definitely influenced my interest in pursuing the science of mass casualty and terrorism response from a public health perspective."

DR. NATHANIEL HUPERT

The view from Battery Place: From the rooftop of his apartment building, Nathaniel Hupert took photos of the World Trade Center ablaze. The images were later shown in an exhibition of New Yorkers' photographs from 9/11.

This Is Only a Test

In a national disaster, how will the public respond?

Trying to predict what the public will do in a crisis is the wild card in any disaster plan. Public health professor Nathaniel Hupert, MD, calls it a "black box" issue. "Perhaps we should call it a gray box," he muses, "because there is some data, some body of literature about how the public responds in emergencies." He cites a study done several years ago by the New York Academy of Medicine that explored whether people were inclined to obey government directives. "The response often is, 'No, I'm going to take my family somewhere where I can protect them,' " Hupert says. "That usually doesn't square with public health plans for things like mass prophylaxis. There's a disconnect."

Ithaca-based engineering professor Jack Muckstadt, PhD, notes that in earlier eras, the public was more likely to be compliant, such as during a flu outbreak in 1957. "We still had a civil defense system in place," he says. "People were used to getting government directives, and every block of every city had a warden. This was all assuming we were going to get bombed by the Soviets, but there was a national infrastructure and people were mentally attuned to it. Now, significant segments of our society don't trust the government at all; if it told them to do something they'd do the opposite. It's a big difference psychologically." And he points out that scenarios in which volunteers play the public are often of limited value in figuring out what would really happen in an emergency. "Who do they put through these tests?" he asks. "Government employees like police—people who know how to follow instructions."

Hupert says that communication is key to public compliance—both in advance and during the crisis itself, potentially via technology such as text messaging. After the anthrax scare, he notes, it became common knowledge that New York City's plan in a bioterror attack was to set up hundreds of clinics around the five boroughs to dispense medications. "That's great," he says. "But if you have a populace that has no idea that's the plan, it might be difficult to get them to do exactly what you want them to do over the space of several hours." And there's a flip side: if the public knows the drill, so do potential evildoers. "There are obviously security issues and varying opinions about how much these plans should be shared and whether this would be giving the enemy information they could use to subvert the process," Hupert says. "But, in general, if we have a population of a large metropolitan area that has no clue what the emergency response plan is, it would be very difficult to put it into in action."

Hupert wonders whether a large-scale exercise like California's recent earthquake scenario might work in New York; Japan, he notes, has a countrywide earthquake day when citizens are drilled in how to survive. "It's an interesting question whether we need to go back to the civil defense activities from the Fifties," he says. "Some of those were laughable, but some might pay off. It's a balance that needs to be struck. Personally, I think more attention needs to be paid to giving people the tools that will help them make the right decision when the time comes."

these questions arise."

Muckstadt and Hupert have provided periodic updates to the White House's Homeland Security Council on the resources that would be needed to cope with such threats as an anthrax attack or a nuclear bombing. He notes that all disasters are not created equal. "September 11 was a disaster, but it occurred in a matter of seconds, its results were known entirely within a matter of moments, and operations to deal with the victims as well as cleaning up the sites were undertaken immediately, to a large extent," Muckstadt says. "Pandemic flu isn't going to be like that. It's going to stretch out over a long period, maybe 180 days, and it may come back in two to three successive years like it did after the great influenza outbreak of 1918. It will come in waves and will affect every household. But that doesn't mean all at once—it just means over time. So how are you going to respond to that?"

Muckstadt notes that although every county already has plans for dealing with large-scale emergencies, many of them would likely be of limited practical value—as recent disasters have shown. "We had substantial plans for how to deal with hurricanes that didn't turn out to be executable when Katrina hit," he says. "Everybody has a paper plan, almost no part of which can actually be implemented." Crafting a workable response means considering logistical factors that may not be immediately obvious. For example: during a pandemic, how do you insure a steady stream of medical supplies while limiting contagion? "Many things that would be required to deal with sick people, simple things like masks, are not made in the U.S.—they're made in China—and some of the plans call for dramatically reducing the amount of material that comes in from other countries, trying to quarantine yourself to some extent," Muckstadt says. "But if you do that, you're liable not to get some needed supplies. So part of what we're trying to do is to stimulate thinking about what is really required, and then help address how you would go about doing it. We've been developing mathematical and computer-based models, representations of these problems, to try to understand where the constraints are going to fall, what capacities are going to be limited, what people are going to have to think about so they can insure that these bottlenecks can be dealt with."

Take the theoretical case of a terrorist bombing of the Manhattan subway. Muckstadt offers a scenario in which three stations on the 4/5 line are blown up during rush hour: Grand Central, Wall Street, and City Hall. "Tens of thousands of people are going to be directly affected," he says. "Many will be trapped, some will be killed, there will be a lot of panic, and you are going to need a huge amount of resources to get them out. If the explosions result in significant fire, you will have a lot of burn patients. So what would you do? Whom are you going to send where? Medical protocols will change in these times, so how are hospitals going to prepare?" In a cursory study of the 2005 London transit bombings, he and Hupert asked questions about which hospitals treated the casualties and how they got there. "You get two types—people who are taken by ambulance and the walking wounded who are on their own or somebody drives them," Muckstadt says. "Unless you do this in a careful way, the facilities are going to be gridlocked. So you have to think

about how you're going to triage people, then you're going to have to move people from where they are congregating to the site where you want to provide care."

Hupert and colleague Wei Xiong, PhD, an instructor in public health, have been studying triage systems—particularly the issue of over-triage, in which first responders err on the side of giving borderline patients more critical status, potentially misallocating resources. In a paper published in fall 2007 in *Disaster Medicine and Public Health Preparedness*, the researchers concluded that accurately categorizing triaged patients is a less important factor than the capability of regional hospitals to treat critically injured victims—whether there is a surplus or a shortage of trauma bays. "If patients' treatment was delayed by thirty minutes, they might still have a high survival rate," Xiong says. "However, if too many patients arrive at a certain hospital in a mass casualty event, you may have a lot of people waiting for treatment. So we are trying to understand all of the factors that impact the outcome."

JASON KOSKI / CORNELL UNIVERSITY PHOTO

Jack Muckstadt, PhD

For Hupert, one of the most important elements in developing disaster plans is looking at the challenges and resources from a variety of perspectives. He notes that it was a Cornell ORIE grad whom he hired a few years ago—a young man in the process of applying to medical school—who first pointed out that the problems Hupert was tackling sounded a lot like those addressed by operations research, a field in which engineers try to develop the most efficient systems for business and manufacturing. "He was able to help us apply some of the theories of operations research methodology, such as queuing theory, to the models we had been making of patient flow through clinics—and suddenly we were on a different plane of sophistication," Hupert says. "Instead of having algebraic models that ran in spreadsheets and gave estimates of the number of staff you might need, we were able to create much more vivid representations of a clinic, such that you were able to watch over time as queues developed and were resolved by staffing. You could see efficiency change as various aspects of patient flow were changed."

Another invaluable perspective has come from Hupert's longtime colleague Sam Benson, a former paramedic and manager of Columbia-Presbyterian's emergency department who now serves as operations supervisor for New York City's Office of Emergency Management. Benson recalls an early collaboration, modeling scenarios for screening citizens after a bioterror attack. "We were talking about the process of evaluating people and began to discuss what I referred to as an 'open-ended' versus a 'close-ended' process. And I said, 'Nathaniel, you're looking at it as open-ended. A patient is presenting with a problem that you then need to examine, develop a differential, come up with your diagnosis, and start treating. I'm looking at this as a closed problem. You have a diagnosis: exposure to anthrax. Your treatment can then become protocol-driven."

That shift in perspective, he says, had a major impact on the preparedness models by cutting down on the staff needed to implement a medical response to a bioterror attack. "Before, every patient had required a physician to do an exam, and that is a deal-breaker—there are just not enough physicians to see every New Yorker in a very short time," Benson says. But by looking at it as a close-ended process, they were able to establish a "fast lane" for the majority of people who are not ill, a "slow lane" for those who have some complications, and an "off ramp" for those whose complex medical histories require a physician to review their cases. "It has been a learning experience for all sides of the issue to learn about the tools that the others have," Benson says. "The good thing is, people are learning that the tools are out there. The bad thing is that there is still a large amount of resistance. You have the public safety agencies who are saying, 'Let's get it done, we'll worry about it later.' You have a public health group that says, 'Let's make sure we do no harm, that we examine this in every way before we do anything.' It can be tough to find a meeting of the minds."

When Hupert saw his mass prophylaxis model in action during the anthrax scare, he learned a vital lesson: nothing works out quite as planned. "That is a critical finding," he says. "The fact that uncertainty marks all of these events is something that you can try to brush to the side when you create a model. It's much easier to make a model about things that are fairly stable. What makes it harder, but much more realistic, is to try to address the radical uncertainty that can occur, ranging from the rate at which people find out that they are supposed to go to a clinic and get antibiotics, all the way to the probability that the antibiotics will actually cure or prevent the disease." The best models, he says, don't necessarily provide concrete staffing numbers or other logistical details: they make their users think and feel. "They force them to try to comprehend the difficulty of making the right decision," he says, "and walk them through the consequences." ●

Through Zina's Lens

A year abroad yields a gallery of stunning photos

Photographs by Zina Semenovskaya '09

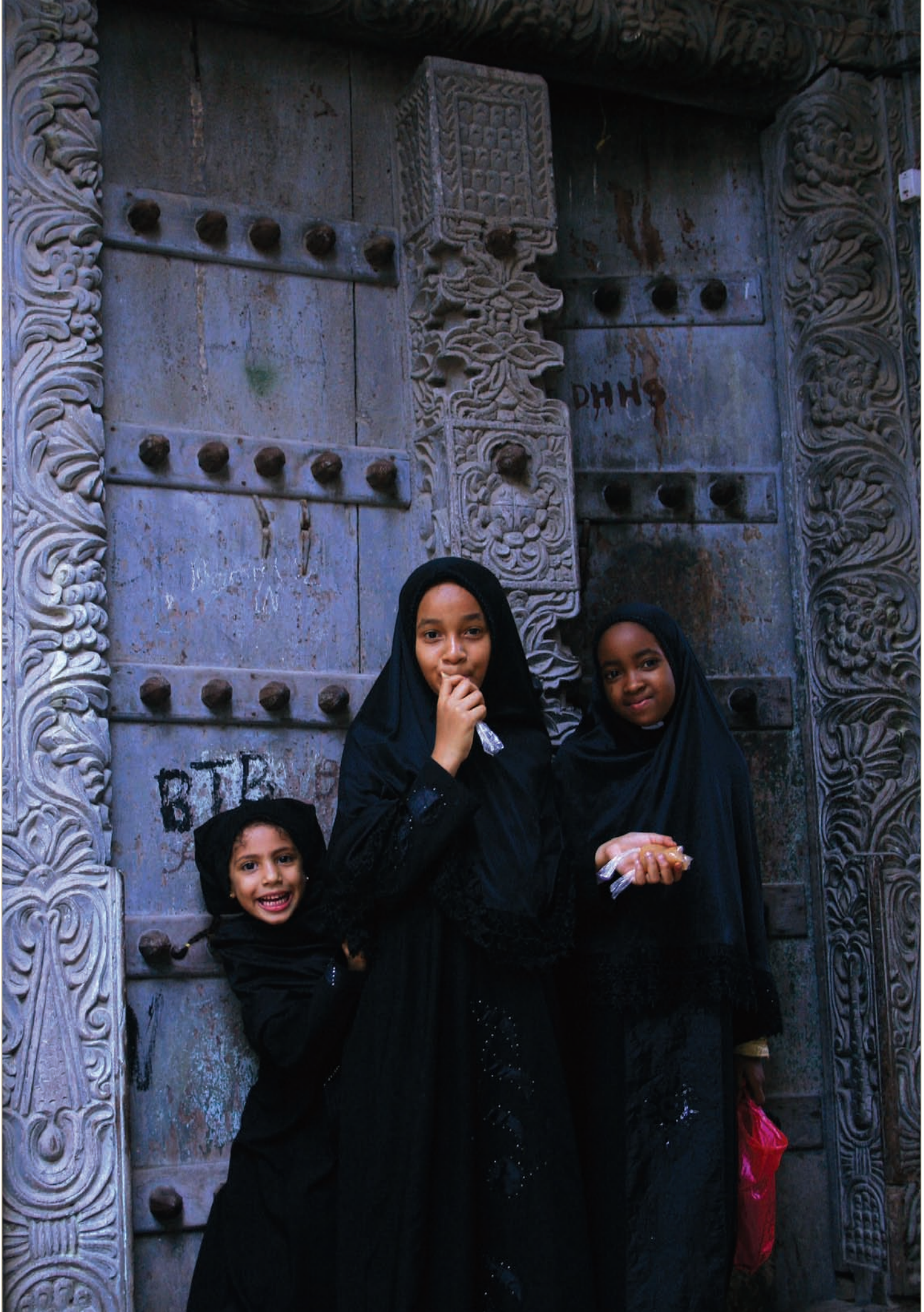
After her third year at Weill Cornell, Zina Semenovskaya took a year off to travel the world. For the first month she trekked in the Himalayas, setting up health camps for Tibetan refugees. Then she went to Mumbai, India, where she spent five months working for an NGO, designing and implementing a first-aid training program for village women's groups. After a month back in the U.S., she was off to Tanzania for a backpacking trip before moving on to Johannesburg, South Africa; she spent four months working in the trauma wards at two hospitals, one in the township of Soweto.

"No matter how much I read about working abroad and talked to people about it, there is nothing like actually going and doing it for yourself," she says. "It sounds like a cliché, but it really does broaden your perspective on so many things."

All along the way, she took photographs—digital images whose power and quality are particularly striking because she is entirely self-taught. "I love that photography can capture things that words can't," she says. "Often you're in a situation that's impossible to describe with words, but photographs can tell an entire story. I also love that it brings me closer to people. I show them the photographs I've taken, and they usually want me to take more, so it's a lot of fun."

A philosophy major at Rutgers, Semenovskaya emigrated from the Ukraine to the U.S. when she was eight; her family qualified for refugee status due to anti-Semitism in her native country. This spring, she jetted off again: she'd managed to schedule her final semester rotations, interviews, and exams so she'd have two months free. She returned to South Africa to work with an emergency medical service, flying in planes and helicopters and doing research on aeromedical response. For residency, she matched in emergency medicine at SUNY Downstate Medical Center in Brooklyn, a hospital that many young doctors might find intimidating due to its limited resources and heavy patient load—but, she says, "I want to go there because of those exact things."

Spice Islands: The Tanzanian archipelago of Zanzibar, Semenovskaya says, is "a magnificent place." She convinced three Muslim schoolgirls to pose in front of one of its intricately carved doorways, remnants of the wealth of the slave trade.



Passage to India: In Goa, Semenovskaya made a portrait of a Karnataka tribal woman (opposite, top left). While working for the Himalayan Health Exchange, she photographed two monks (top right) and their monastery (bottom). “We set up a health clinic for the monks and their families, and in the evening they brought us pita bread with yak butter and tea, and we had dinner on a terrace at the top of the monastery, overlooking the Himalayas.” Above: A social worker from the Impact India Foundation walking in Maharashtra during monsoon season, when she and Semenovskaya were studying whether local women could understand the first aid information Semenovskaya had designed. “I thought she was so elegant in that sari and the matching umbrella,” she says, “and then she just took her heels off and we waded through calf-deep muddy water all day.” Right: A clothing salesman in Maharashtra.

Under African skies: Sunset (left) over the Serengeti in Tanzania. Above: A resident of Soweto, South Africa, where Semenovskaya also photographed a woman selling vegetables at an outdoor market (below). “She was just sitting there, with that faraway look in her eyes, no doubt dreaming of a better place, maybe a different life.” Opposite: Trying to escape the touristy center of Arusha, Tanzania, Semenovskaya hopped a taxi to the outskirts of town. “These girls caught my eye because when we think of Muslims, a lot of people think of women heavily clad in black—but look at these girls! The colors are so cheerful, and I thought they really represented the bright, exciting side of Africa.”

‘She was just sitting there, with that faraway look in her eyes, no doubt dreaming of a better place, maybe a better life.’

Double Duty

It's hard enough to earn a medical degree or an academic doctorate. What does it take to be an MD-PhD?

By Beth Saulnier

Photographs by John Abbott

Medical College alumni who also got an undergraduate degree from Cornell are known as "Double Reds." Ankit Patel is angling for a triple. The suburban New York native, who earned a biology degree from the College of Agriculture and Life Sciences in 2004, is now in his fourth year of the Tri-Institutional MD-PhD Program—melding his passions for research and clinical medicine. Having completed the first two years of the Medical College curriculum, the twenty-five-year-old Patel is two years into his PhD work, studying renal physiology in the Weill Cornell lab of Larry Palmer, PhD.

Like all MD-PhD students, Patel was required to rotate into three labs in at least two of the three institutions—Weill Cornell, the Rockefeller University, and the Sloan-Kettering Institute—before choosing his adviser and thesis topic. After selecting Palmer's lab, Patel decided to focus on the kallikreins, enzymes in the serine protease family that play a key role in the regulation of sodium reabsorption. "I think this is going to be a very interesting project," Patel says, "so I'm excited."

Once Patel finishes his PhD, he'll still have two years of medical school to complete. Then comes residency—he's planning on internal medicine—and possibly a fellowship. "After that, there are so many opportunities that I'm not exactly sure how my career path will progress—if I'll be more interested in clinical research or basic science," Patel muses. "I hope to get a job at a university or hospital in an academic medical center. That's the career that I'm envisioning." Both during the process of earning the MD-PhD degree and after it has been granted, he notes, physician-scientists have a dizzying range of options. "I remember when I went to the annual MD-PhD student conference in Colorado," Patel recalls with a laugh. "The slogan was, 'Hosting Indecisive Overachievers for the Past Twenty-Two Years.'"

Each year, about fourteen of those over-

Ankit Patel

achievers matriculate into the Tri-Institutional MD-PhD Program, embarking on an intense process of research and training. "It takes a long time," says program director Olaf Andersen, MD. "It usually takes four years to graduate from medical school and about six for graduate school—and we would like MD-PhD students to graduate with both degrees in just seven or eight years. So there is enormous pressure from the word 'go.'"

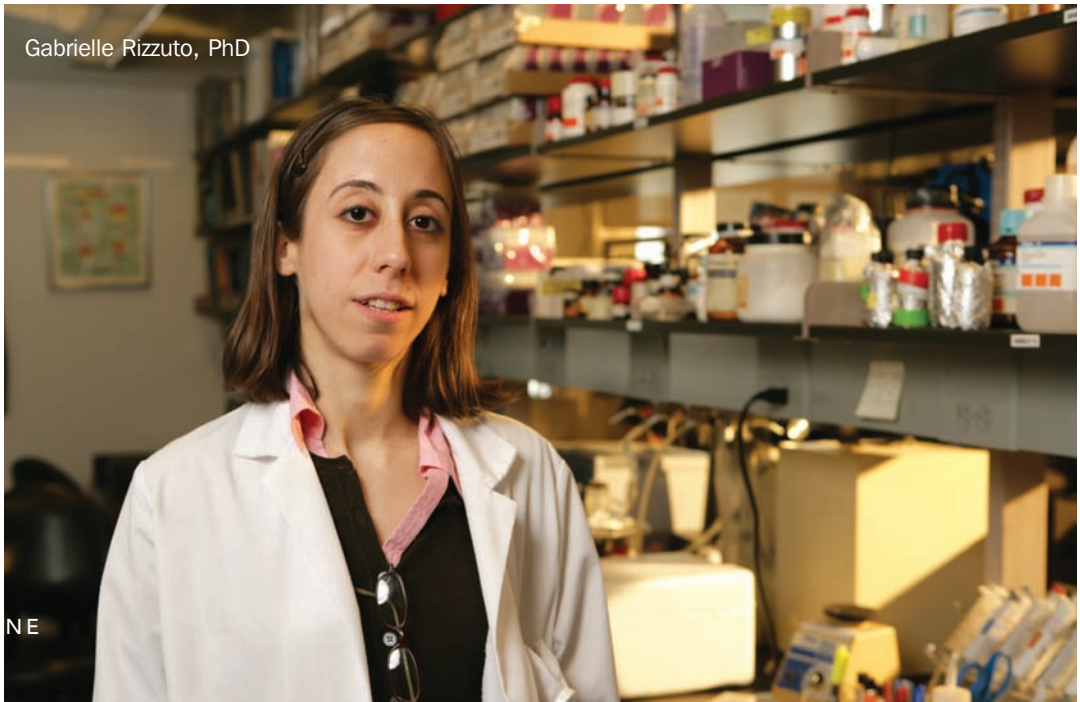
'These are crucial years for my development to become a great clinician and a great scientist.'

Like Patel, all MD-PhD candidates shift to thesis research after the first two years of their medical studies, which they resume after completing their doctorate. The process—as well as exposure to the diverse resources and faculty of the three institutions—is designed to produce physician-scientists who can segue from bench to bedside and back again. "This program started out from its inception to provide an integrated training environment," Andersen says, "where you acknowledge that an MD-PhD is not 'an MD plus a PhD' but 'an MD-hyphen-PhD.'" Says David Hajjar, PhD, dean of the Graduate School of Medical Sciences: "Our MD-PhD students don't just get their feet wet—they get their whole body wet in terms of training to be an outstanding scientist and an outstanding physician."

Gabrielle Rizzuto, who completed her PhD studies last year, jokes that she can't imagine what she was thinking when she signed on—and admits that it's a bit scary to contemplate how long the training can take with residency and fellowship. "Yeah, it's long," she says. "It's *very* long, actually. Even if you start right out of college, you can go well into your thirties." But Rizzuto, who earned an undergraduate biology degree from Georgetown, doesn't regret her decision. "It's school, but it's also training," she says. "I'm happy, because I'm doing what I want to be doing. I love learning, and I feel like the training we're receiving and the work that we're doing is learning for a good purpose." Because MD-PhD candidates receive a stipend and subsidized housing, Rizzuto says, she doesn't feel like a student living on a shoestring, subsisting on a diet of ramen noodles. "It's not much compared to, say, what some of my peers who graduated college at the same time and went into the business world are making," she says. "But I have a nice apartment, I live in a nice area, and I love what I'm doing."

Tanya Williams, who is in her third year of doctoral work under neurobiologist Teresa Milner, PhD, says she wasn't put off by the amount of time it would take to earn the dual degree. A neuroscience and behavioral biology major at Emory University in Atlanta, she spent summers doing research in labs at Stanford and Rockefeller as a student in the Gateways to the Laboratory Program (see sidebar) before beginning her MD-PhD studies. "I've always liked school, so it wasn't necessarily intimidating," she says. "I knew that my goal of both clinical practice and research would involve a lot of training, so I looked at it as paying my dues. These are crucial years for my development to become a great clinician and a great scientist. I'm excited about what I'm doing, so I don't mind it so much. I'd rather be training than doing something else."

Although Patel had concerns about deferring his first real job into his mid-thirties, he embraced the principle that studying medicine inherently entails being a lifelong student. "It's intimidating in some respects, but I consider this


Gabrielle Rizzuto, PhD

Olaf Andersen, MD

to be actual work," he says. "While I'm in the lab I'm independent, working on my own project, so it seems almost as if I have a full-time job. The line between student and working is not clearly defined, so the rigors and complications of being a student for so long really don't hit you."

As Patel sees it, two points in the program can be particularly challenging—the first being the start of thesis research. "You're kind of isolated because you're doing all of your work in a lab and have limited interaction beyond your close friends," he says. "When you're in grad school, it's hard to stay connected to the student body at large." He's anticipating another tough transition at the end of May, after his second year of doctoral work. "During the middle of your PhD training, your med school peers graduate, and that becomes a difficult time for a lot of students. You see the classmates that you entered with going on to residency programs, while you're in that area of your PhD where you're still trying to figure things out. It can be frustrating." But on the other hand, he says, the shift from medical studies to graduate school and back has its advantages. "Since there are these transitions, it seems as if you're starting anew," he says. "You get revitalized coming to graduate school because you're faced with a whole new set of tasks and responsibilities. It re-energizes you and motivates you to work hard."

Rizzuto made the transition back to medical school in July, after earning her doctorate in the tumor immunology lab of Alan Houghton, MD, at Sloan-Kettering. Using a mouse model, she studied the optimal number of a specific type of T-cell that is needed to generate an immune response to

'Diamonds in the Rough'

Gateways program grooms students for the lab and beyond

Each June, fifteen undergrads from around the U.S. take up residence in Olin Hall. For many, the trip to New York City is the first time they've flown on an airplane or even left their home state. All are members of underrepresented minorities or are somehow disadvantaged—they may be from a low-income family or have a disability. Over the next two and a half months, through a program called Gateways to the Laboratory, they get an immersion in biomedical research, conducting their own investigations and observing all manner of clinical activities. "It's an intense program—I call it a ten-week sprint," says Ruth Gotian, administrative director of the Tri-Institutional MD-PhD Program and de facto den mother to the Gateways students. "They're scrubbing into surgeries. They get hands-on tours of the anatomy lab. They go to the cath lab and the Hospital for Special Surgery. They do ob/gyn oncology. They get to see all of that."

Students can apply to Gateways for the summer following their freshman or sophomore years; more than 150 hopefuls vie for the fifteen spots. "We're looking for those diamonds in the rough," Gotian says. "They all have great grades, so we're looking for someone who has that passion, that spark—given the right training, they'll make a difference in this world." Participants get free travel and a $4,300 stipend, minus the cost of housing. In addition to their research and clinical experiences, they're prepped for the MD-PhD application process, from tips on writing a scientific CV to a mock MCAT exam. According to Gotian, more than 20 percent of Gateways alumni ultimately pursue either a PhD or an MD-PhD. "If you also include the MD," she says, "it's close to 90 percent."

Currently, there are seven Gateways alumni in the Tri-Institutional MD-PhD Program (with three more accepted for next year). They include Tanya Williams, an African American who grew up in Rockland County and attended in 2002, the summer after her sophomore year at Emory University. "I loved the experience," says Williams, now in her fifth year of MD-PhD studies. "It was definitely a big reason why I decided to go to the Tri-Institutional Program, and it was influential in my decision to pursue MD-PhD training in general." Williams worked in the Rockefeller University lab of Donald Pfaff, PhD, exploring the neurobiology behind sexual behaviors and aggression in a mouse model by looking at estrogen receptors in the hypothalamus. "Unlike a lot of other summer research programs, you actually get exposure to clinical studies," she says. "Another thing that's nice about Gateways is that it's an early program. A lot of the other programs I looked at tended to take students after their junior year, which is sort of late in terms of trying to make sure this is something you want to get into."

Gateways was founded in 1993 in response to a demand from the NIH to increase the diversity of MD-PhD programs nationwide. At that time, there were only a few MD-PhD students who were members of underrepresented minority groups, which was widely perceived to be a serious problem. The challenge became how to address it. Says Gotian: "Instead of saying, 'There are not enough qualified people applying,' we decided to train them and therefore make our own pipeline." Olaf Andersen, MD, notes that the Tri-Institutional Program had just a handful of minority students when he became the director in 1996. "And now," he says, "about 25 percent of the student body are members of underrepresented minority groups."

Because the Gateways students are young, each is matched with a "big sib," a current MD-PhD student who serves as a mentor. On top of their Tri-Institutional experiences, they are shown some of the allures of the city, from a Yankee game to a taping of David Letterman's TV show to offerings on Broadway and at the Apollo Theater. At the end of the summer, the program pays for one parent of each student to travel to New York so they can view the final research presentations. "That is the highlight of the summer," Gotian says. "You look in the eyes of the parent when they see their eighteen- or nineteen-year-old child in front of an auditorium with all these faculty and students listening to them. It doesn't matter if they don't understand one word. They know that everyone is paying attention. And if their child is getting that after ten weeks of research, what would happen if they focused on a whole PhD?"

Class Schedule

A timetable for MD-PhD training

Summer Before Year 1
First lab rotation; Careers in Biomedicine lunch discussion series with faculty from the three institutions

Year 1
First-year Medical College curriculum, plus Frontiers in Biomedical Science I; Introduction to Clinical and Translational Research; Tri-Institutional Ethics course; research lunches, where students meet new faculty

Summer After Year 1
Second lab rotation; Careers in Biomedicine lunch discussion series

Year 2
Second-year Medical College curriculum, plus Frontiers in Biomedical Science II; Step 1 of U.S. Medical Licensure Examination (USMLE); Introduction to Medicine for Clinical Investigators

Summer After Year 2
Third lab rotation

Year 3
Complete graduate course requirements; begin thesis research

Years 4–5
Thesis research

Year 6
Submit and defend thesis; return to Medical College

Year 7
Submit internship applications; take Step 2 of USMLE; graduate in May

(Based on a seven-year program of study)

melanoma. For the Westchester County native, the benefits of her doctoral work have more than outweighed the drawbacks of the four-year interruption to her medical studies. "Ultimately, the thesis research made me more prepared for what I'm doing now," Rizzuto says, speaking during a break from her surgery rotation. "Of course, I've forgotten certain details and facts that I had memorized four years ago, but I can memorize them again. I feel more mature and confident. Also, I've learned how to think and approach questions, and that seems to be making this experience better than I could have imagined it being earlier."

Rizzuto is still debating what to do after graduation, contemplating postdoctoral research and which residency to pursue—but, she notes, such questions plague third-year med students everywhere. "I did an elective in pathology and enjoyed it, so I'm considering that, but I also like patient interactions," she says. "It's going to be a hard decision. I came to the program because I wanted to be a doctor and see patients, but I also wanted to do research. Now I want to find something that I love clinically before I commit to anything. Whatever happens, I think both experiences will be very valuable to me."

Rizzuto's uncertainty about how much of her career to dedicate to research and how much to patient care is a common conundrum for students in MD-PhD programs, which were first funded by the National Institutes of Health in 1964 to fill a void resulting from marked advances that were being made in both basic science and clinical medicine. "There was a sense that although you could certainly do research if you had a medical degree and you could work on clinical problems if you had a PhD, there was a missing link," Andersen says. "The intent was to educate individuals who would be fully qualified to practice medicine and also fully conversant with the language and techniques of the laboratory—who would live up to this idea that 'chance favors the prepared mind.' Most MD-PhD students want not just to practice medicine or to be bench scientists but to contribute to the evolution of medical knowledge."

Matthew Albert, MD, PhD, who did a residency in clinical pathology after graduating from the program in 2000, epitomizes that bench-to-bedside approach. At Institut Pasteur in Paris, the former Brown University chemistry major is overseeing clinical trials on both bladder cancer and hepatitis C. "My way of doing research is completely influenced by my MD-PhD training," says Albert, who heads a tumor immunology lab that includes several researchers based in Cairo. "The way I have identified the scientific questions that we work on is through clinical problems. We start at the bedside with observations about pathogenesis and try to reduce that to experiments that can be tested in vitro. Then we develop small-animal models to test those ideas, all the time trying to bring it back into the clinical space for diagnostic or treatment purposes."

One challenge for a program as lengthy and individualistic as the MD-PhD—whose candidates scatter to labs around the three institutions in their third year of training—is instilling a sense of cohesion. The program leadership tries to foster unity through events like a welcome barbecue and a student-run retreat; Andersen notes that each incoming class (which matriculates the Monday after the Fourth of July) bonds

during the summer before medical school orientation, taking the Careers in Biomedicine discussion series and living together in Olin Hall. "Our class was pretty tight knit, and that has kept up," Rizzuto says. "We meet for lunch on a regular basis, and the program underwrites a get-together each semester. Also, one of the senior residents on my current rotation was a member of my initial med school class. If anything, we get the benefit of knowing more people."

Albert sums up his experience in the program as "schizophrenic"; he struggled to integrate the two fields of study in the days before the problem-based curriculum, when medical education was far more didactic. "It's difficult to find perspective—you feel like you're being pulled in two directions," he says. "The reward systems in the MD track versus the PhD track are very different, which made the training more challenging than not—although now, nine years out, I would absolutely do it again. It has been incredibly helpful for my career to have both skill sets." His advice to current students is simple: have fun. "If you're crazy enough to enter an MD-PhD program, someone along the way has taught you how to defer gratification really well," he says. "But I want students to realize that this doesn't always have to be the way you live your life. At a certain point it needs to become enjoyable—so take a step back and figure out what makes you happy."

But even considering the demands of the program, its students—who, admittedly, must have formidable time-management skills to get this far academically—are able to nurture other interests. Patel was elected a student overseer and served as co-director of a student-run community clinic. Rizzuto is an avid runner and enjoys playing the piano. When Williams isn't studying ovarian steroid influences on the expression and distribution of opiate receptors in the hippocampus, she's pursuing her love of dance—jazz, hip-hop, and tap. "And I can do that locally, which is what's wonderful about being in New York City," she says. "I definitely was looking into that when I was choosing MD-PhD programs, because I wanted to be in an environment that would facilitate my outside interests."

On a visit to New York last winter, Albert had lunch with current MD-PhD candidates and shared an anecdote from his student days, when he had just returned to the clinics after finishing his doctorate. He says that the story illustrates the way that dual-degree holders differ from MDs. "My PhD mentor, Bob Darnell, is himself an MD-PhD and a neurologist, and I timed my neurology clerkship with his being on service," Albert recalls. "We had a difficult patient with unidentified encephalitis, and we sat around as a team with Lisa DeAngelis, the head of neurology [at Sloan-Kettering]. I walked away from grand rounds realizing that Bob, who probably spends 90 percent of his time in the lab, has committed to a life of discovering what is unknown, whereas Lisa has spent her life trying to know what is known. And that's the difference between MD-PhD training and being an MD." In short: While it doesn't help a patient to ask questions that don't have answers, it can be helpful to approach a difficult medical problem with the same mindset you use to approach a problem in the lab.

Andersen has a similar take on the subject. As he sees it, there are three stages of insight; the first is the "what," the factual database that future doctors must master. Then there's the "how," the causes and treatments of disease. What distinguishes a physician-scientist from a physician, he says, lies in the "why." "Not everyone asks themselves that," he says. "Many people are happy with the 'what' and the 'how.' But MD-PhD students are people who say, 'I want to understand the underlying mechanisms. I'm not satisfied with the status quo.'" ●

Tanya Williams

'Most MD-PhD students want not just to practice medicine or to be bench scientists but to contribute to the evolution of medical knowledge.'

Notebook

News of Medical College and Graduate School Alumni

Dear fellow alumni:

I would like to take this opportunity to report to you the efforts that the Alumni Association has made in two major areas: alumni outreach and alumni-student relations.

In terms of reaching out to alumni and to make it easier for you to stay in touch with your alma mater, we have upgraded our website (http://weill.cornell.edu/alumni). You will find it more convenient to keep up with Alumni Association events around the country as well those that take place at the Medical College. There is also a photo gallery of past events. Please use the site to update us on your contact information as well as submit news for the "Notebook" section of *Weill Cornell Medicine*.

The new Alumni Directory has been completed and will soon be shipped to those who have ordered it. We are working on an electronic directory that we hope will soon be online. In the meantime, you can find your classmates and friends via the Weill Cornell Medical College Alumni page on Facebook.

I had the opportunity to attend the "Cornell in the Capital" event in Washington, D.C., on April 3. President David Skorton, MD, invited ethics professor Joseph Fins, MD '86, to join him and several other distinguished scholars from Ithaca to discuss and debate today's challenging economic climate. Several Weill Cornell alumni attended, and we had a most enjoyable evening.

You should have received Save the Date notices for the Boston Area Alumni & Friends Reception on June 16. Formal invitations will follow shortly. Dean Antonio Gotto and I are looking forward to seeing all of you. Come find out what is going on at the Medical College, meet up with old friends, and make some new ones!

In my Fall 2008 column, I mentioned that Paul Miskovitz, MD '75, was spearheading a new Alumni-to-Student Knowledge (ASK) program to provide opportunities for first- and second-year students to meet alumni in small groups for dinner and to hear about their career choices and experiences. The first session, focusing on radiology, took place on February 24; a second, with emphasis on dermatology/plastic surgery/otolaryngology, was held on March 24. The students greatly appreciated these informal evenings, and the alumni enjoyed them as well. The meetings are being videotaped so they can be shared with students in Qatar. If you would like to participate, please contact the Alumni Office.

The Alumni Association has launched a new initiative to help our students by providing them with stethoscopes in their first year. Your contributions will be greatly appreciated and donors will get special recognition at the White Coat Ceremony.

The next couple of months will be very busy at Weill Cornell, with Convocation and Commencement scheduled for June 1 and 2. A special dinner will be held on June 1 to honor the 2009 Alumnus of Distinction, John Ross, MD '55. All alumni are invited; if you would like to join us, please notify the Alumni Office. I will also represent the Alumni Association at Commencement in Doha, Qatar, to welcome their new graduates to our community. We are currently working with some of the Qatar alumni to strengthen connections between students and alumni.

Looking forward to seeing many of you in Boston!

With warmest regards,
Hazel Szeto, MD '77, PhD '77
President, CUWMC Alumni Association
hhszeto@alumni.weill.cornell.edu

Hazel Szeto, MD '77, PhD '77

JOHN ABBOTT

ABBOTT

1950s

Harold J. Ellner '50, MD '53, published *The Best of Wit's End: Medical Humor at Its Brainiest*, a compilation of humor from *Diversion*, the "magazine for physicians at leisure." For several decades, the last page of the magazine held a monthly contest for doctors to contribute puns, one-liners, and parodies. Under the pseudonym "Icarus," Dr. Ellner edited the "Wit's End" page for fifteen years. The book is available from Xlibris.

Bernie Siegel, MD '57: "Despite being a surgeon, I have run support groups for cancer patients for thirty years and established ECaP, Exceptional Cancer Patients, to help empower patients and teach them survival behavior. There is self-induced healing. I have found that parenting is probably the most significant health issue in our lives. Those who grow up loved have a fraction of the health problems of the unloved. My book on parenting, *Love, Magic & Mudpies*, tells how to raise children to feel loved, be kind, and make a difference. I have written many more books including one on loss, *Buddy's Candle*, to help people deal with the loss of a loved one—something medical school never taught me. For anyone interested in connecting and reading my books and articles, see my website: http://www.berniesiegelmd.com. I do a lot of speaking to medical students and greatly enjoy educating them about patient care and the mind-body connection. Carl Jung interpreted a dream and made a correct physical diagnosis ninety years ago. (I have never met a medical student who was told that while in medical school.) From my work with dreams and drawings by patients, I also see the communication and information available through symbols, the language of the body, and the wisdom of the unconscious. My wife, Bobie, and I live outside of New Haven, CT. We have five children, eight grandchildren, four cats, and two dogs—the latter being good for our health too."

1960s

Kenneth G. Swan, MD '60: Paul J. Hirsch, MD, chairman of the Edward J. Ill Excellence in Medicine Foundation, announced that Kenneth G. Swan will receive the Edward J. Ill Physician's Award at a ceremony on May 6, 2009, at the

'I do a lot of speaking to medical students and greatly enjoy educating them about patient care and the mind-body connection.'

— Bernie Siegel, MD '57

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'We have aged well, and are even more pleasant a group than we used to be.'

— Joan Gerring '64, MD '68

Hyatt Regency Princeton. The award is presented annually to a New Jersey physician who merits recognition for distinguished service as a leader in the medical profession and in the community. Dr. Swan has been a professor of surgery at the New Jersey Medical School in Newark since 1976. A trauma surgeon, he began the Trauma Service at University Hospital, which achieved Level I designation in 1980. As chairman of the New Jersey Committee on Trauma, he implemented the American College of Surgeons Advanced Trauma Life Support Program in New Jersey and has been course director and national faculty since 1980. Dr. Swan entered the U.S. Army Medical Corps in 1968 and served three tours as a combat surgeon in Vietnam. In 1973, he assumed his current position in New Jersey and transferred to the Active Reserve. Promoted to colonel in 1977, he commanded the 322nd General Hospital, USAR, Picatinny Arsenal for five years. He returned to active duty in 1991 and served as a combat surgeon in Operation Desert Storm. He retired in 1998. His awards include the Legion of Merit, the Bronze Star with two Oak Clusters, and the Air Medal. Badges he wears designate him a combat medic, master parachutist, and flight surgeon, as well as HALO, Air Assault, and Special Forces qualified.

Samuel H. Greenblatt, MD '66: "In May 2009 I will become the historian of the American Association of Neurological Surgeons and a member of the association's board ex officio. I plan to improve the accessibility of the association's archives."

Joan Gerring '64, MD '68: "On October 24, 2008, our med school class gathered at the Petaluma Restaurant in New York City for our 40th Class Dinner. We traveled from places including Maine, Texas, California, and Iowa. **Dave, MD '68**, and Bev **McCormick** '67 arrived for the reunion dinner despite great hardship and destruction to their Galveston home suffered during the recent hurricane. We started with a cocktail reception at which we all reminisced about past years at the medical school and more recent years of work and family life. It was a great pleasure to see familiar faces, and it was very easy to get reacquainted. After a while we sat down to an excellent Italian meal, and after dinner everyone stood up in turn to talk about important memories of Cornell Med, friendships in common, and current life events. Our most common concerns are about children, grandchildren, work, and retirement. Although many of us are facing retirement, only **Jerry Graff, MD '68**, and **Bob Ketchum '64, MD '68**, are completely retired, and both are enjoying their freedom a lot. Bob has become a tree farmer and is an expert in redwood forestry. The following people attended: **Arnie '64, MD '68**, and Helen **Andersen**, **Harold, MD '68**, and **Gaye Carlson, MD '68**, **Lois Copeland '64, MD '68**, Joan and Bob Gerring, **Ed '64, MD '68**, and Rona **Goodman**, **Paul '64, MD '68**, and Jill **Goldstein**, **Jerry Graff, MD '68**, **Mike, MD '68**, and Christine **Gyves**, **Terry, MD '68**, and Elizabeth **Hensle**, **Bob '64, MD '68**, and Janice **Herwick**, **Lee, MD '68**, and Marge **Johnson**, Bob and Sandy Ketchum, David and Bev McCormick, **Allen Nimetz '64, MD '68**, **Ron, MD '68**, and Carol **Rankin**, **Carl '64, MD '68**, and Alison **Ravin** '67, and **Bob, MD '68**, and Kathy **Reidy**. It was a great evening, the best so far. We would love to see more of our class in five years. We have aged well, and are even more pleasant a group than we used to be."

1970s

John E. Nees '70, MD '74: "I now work for Strax Rejuvenation, a fourteen-doctor plastic surgery group in Fort Lauderdale, FL. I just made my annual trip to Asia, Peru, and our family vacation home."

1980s

Iris Granek, MD '80: "Last summer I was appointed chair of the Dept. of Preventive Medicine at Stony Brook University Medical School, where I am also active in medical student education."

David A. Haughton, MD '84: "Among the many exciting visits I have had with friends this year, I was pleased to meet with George Brant at my home recently. George is the executive director and founder of Gallery 110. He and his wife, Lauren, drove up from Seattle, and I was able to show them examples from the entire arc of my art career to date: pen and ink drawings

(1975–87), etchings (1987–90), watercolors (predominantly 1986–96), and acrylic paintings (1994–present). An artist himself, George is knowledgeable about paint materials and methods, having helped develop the oil paints of Daniel Smith Inc. As a gallery owner and director of many years, he has great insight into artists and their psychological motivation. I look forward to working with him for many years to come. I will have two shows at Gallery 110 this year. The first will be a solo show from April 2 to April 25 of the *Kindertotentanz* etchings. My second solo show, at the end of September, features new paintings from *Ships, Mountains, and the Sea IV* and *Paintings of the Wind*."

Walter A. Klein, MD '87: "It was a lot of fun seeing the classmates who attended our reunion. However, I cannot believe that so many of you didn't come. Didn't you have any fun while you were at Cornell? Cornell helped us become who we are, and our classmates helped shape that experience. I hope that we can show a little more school spirit next time."

Answorth Allen, MD '88, was honored at the American Foundation for the University of the West Indies awards banquet at the Pierre in New York City on January 29. He is an associate attending orthopaedic surgeon at the Hospital for Special Surgery, specializing in shoulder, knee, and elbow surgery, and an associate professor of clinical orthopaedic surgery at Weill Cornell Medical College. Dr. Allen is a team physician for the New York Knicks basketball team and a former team physician for the New York Mets. He is also an orthopaedic consultant for the West Indies Cricket Board of Control and St. John's University. He served as medical director to the NBA Players Association and is the former team physician for the Long Island Rough Riders soccer team. Dr. Allen was also an assistant team physician for the New York Saints lacrosse team and the New York State Racing Association. At one time, he was a staff physician for the New York State Athletic Commission and the Hunter Mountain Ski Sports Center. While in Pittsburgh, he was assistant team physician for the University of Pittsburgh and assistant company physician for the Pittsburgh Ballet Theatre. He is the author of numerous articles and book chapters on shoulder, knee,

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'Our beautiful son Owen enjoyed his first Christmas and being spoiled by his grandparents.'

— Philip Peters, MD '00

and elbow problems. His website is http://www.answorthallenmd.com.

1990s

Montgomery C. Brower, MD '94: "With my wife, Emily, and 9-year-old son, Gabe, I live in the Boston area where I maintain a solo forensic psychiatry practice focusing on consultation and expert witness testimony. I've also taken up visual art, working primarily in pastel portraiture. The big picture is love and finding serenity on a spiritual path of recovery. We see a lot of **Peter Weinstock, MD-PhD '98**, and his family, who live nearby. **Darren Orbach, MD '98**, and family are also in our neck of the woods. Best to all."

Jose Ramirez, MD '94: "Regards from Florida. Married to Pearl and with three wonderful children. Recently took up the role of pediatric EM fellowship director at Arnold Palmer Hospital for Children in Orlando, FL. It is also great having classmate **Henry Park, MD '94**, here in Orlando practicing dermatology at the VA; he and his wife, Ann, have three beautiful daughters. It's great when the kids get together."

2000s

Amy E. Abbot, MD '00: "After completing my orthopaedics residency at Columbia in 2006, I spent the next year doing a fellowship in sports medicine at UMass Memorial Medical Center. From there I went into private practice, but was recently invited to return to UMass as an assistant professor with a focus in sports medicine. I continue to row competitively, and I return to New York City on a regular basis to see friends and soak up the city."

Philip Peters, MD '00: "My wife, Jen, and I are happy to announce the birth of our beautiful son, Owen Tai Peters. Owen enjoyed his first Christmas and being spoiled by his grandparents. I work as an infectious disease physician at the Centers for Disease Control and Prevention on HIV research and prevention."

Bradford S. Hoppe, MD '03, joined the University of Florida Proton Therapy Institute. Dr. Hoppe, a radiation oncologist and assistant professor at the University of Florida, specializes in treating lymphoma, lung cancer, and prostate cancer. He was a Mortimer Lacher Clinical Lymphoma Fellow during his residency at Memorial Sloan-Kettering Cancer Center, and conducted research in molecular biology at Stanford University's Cancer Biology Research Laboratory and in immunology at Professor Edgard Santos University Hospital of the Federal University of Bahia Medical College in Salvador, Brazil.

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In Memoriam

'38 MD—Walter T. Carpenter Jr. of Huntington, NY, October 23, 2008; pediatrician.

'42 MD—Katherine Swift Almy (Mrs. **Thomas P. '35, MD '39**) of Hanover, NH, November 26, 2008; retired associate professor of clinical psychiatry, Dartmouth Medical School; chief of medicine, Dartmouth Medical School clinical program; medical staff officer, United Nations; taught at Cornell Medical College; active in community, professional, and alumni affairs.

'45 MD—Byron E. Howe Jr. of Glens Falls, NY, February 15, 2009; physician.

'46 MD—Bruce A. Allison of Kalispell, MT, September 19, 2007; general practitioner; treated Babe Ruth at Bellevue Hospital during his final illness; veteran; active in civic, community, and professional affairs.

'44 BA, MD '46—Frederick N. Bailey of Maplewood, NJ, formerly of Upper Montclair, NJ, December 25, 2008; medical director, Chubb Insurance Co.; also operated a private practice; veteran; active in alumni affairs. Delta Tau Delta.

'46 MD—Donald L. Burnham of Bethesda, MD, July 27, 2008; psychoanalyst; director of research, Chestnut Lodge; researcher, Nat'l Inst. of Mental Health; editor, *Psychiatry*; active in community and professional affairs.

'48 PhD—John E. Wilson of Chapel Hill, NC, February 12, 2009; retired professor of biochemistry, University of North Carolina, Chapel Hill; assistant in biochemistry, Cornell Medical College; active in land and wildlife preservation.

'50 MD—Nancy Rankin Helfrich of St. John, VI, January 23, 2009. Husband, **Harry M. Helfrich Jr., MD '50**.

'47 BA, MD '51—Robert L. Hirsch of Rye, NY, March 20, 2009; former medical director, Greater New York Blood Program. Sigma Alpha Mu. Wife, Lillian (Levine), BS Nurs '47.

'51 MD—Mary Wilber Jensen of Redding, CT, formerly of Scarsdale, NY, April 1, 2009; worked at New York Hospital; volunteer, Greenacres School library; active in community and religious affairs.

'51 MD—Harold V. Liddle of Salt Lake City, November 30, 2008; thoracic surgeon; practiced at the Rumel Chest Clinic, LDS Hospital, and Primary Children's Medical Center; clinical professor of surgery and faculty member of the Resident Training Program in Thoracic and Cardiovascular Surgery, University of Utah College of Medicine; completed his residency in thoracic surgery, Los Angeles Children's Hospital; veteran, U.S. Naval Air Corps; master gardener; active in community and professional affairs.

'53 MD—Stanley E. Goodman of Westport, CT, October 15, 2008; surgeon; veteran; active in community and professional affairs.

'58 MD—John P. Donohue of Melbourne Beach, FL, September 4, 2008; urologist; professor and chair, Dept. of Urology, Indiana University School of Medicine; veteran; author; active in civic, community, professional, and religious affairs.

'59 MD—Daniel W. Adams of North Canton, OH, March 12, 2009; obstetrician/gynecologist; partner, Stark County Women's Clinic; chairman of the Ob-Gyn Department, Aultman Hospital; chief resident, New York Hospital; member, Continental Gynecologic Society; U.S. Air Force veteran; sailor; built train and wooden boat models; active in civic, community, and professional affairs.

'66 MD—I. Ira Mason of New York City, December 29, 2008; physician.

'67 MD—William M. Kamell of Canandaigua, NY, October 16, 2008; orthopaedist; established Canandaigua Orthopedic Associates and Finger Lakes I.M.E. Associates; U.S. Air Force flight surgeon in Vietnam; active in professional and religious affairs. Wife, Sylvia (Bancroft), BS Nurs '65.

'70 MD—Capt. (Ret.) Harold W. Ward Jr. of San Diego, CA, October 20, 2008; Captain in the U.S. Naval Reserves; retired from University of California, San Diego; worked on stress management for Navy SEALs; researched Alzheimer's, University of California San Diego School of Medicine; studied personality traits required for Mars exploration for the U.S. government; veteran; sailor; active in community and professional affairs.

'72 MD/MNS—John B. Coombs of Gig Harbor, WA, January 19, 2009; associate vice president for medical affairs, vice dean for regional affairs, and first holder of the Theodore J. Phillips professorship in family medicine, University of Washington Medical School; pediatrician and family doctor; established Obstetrical Access Clinic, Pierce County, WA; established Pediatric Sexual Abuse Clinic, Mary Bridge Children's Hospital; director, Tacoma Family Medicine Residency; VP, medical affairs, MultiCare; active in civic, community, and professional affairs.

'69 BA, MD '73—Nicholas G. Ward of Seattle, WA, October 28, 2008; professor emeritus, Dept. of Psychiatry, University of Washington; psychiatrist, University of Washington Medical Center and Harborview Medical Center; received University of Washington Distinguished Teaching Award; author; active in community and professional affairs. Tau Kappa Epsilon.

'89 BS, MD '94—Lance Peters of Ithaca, NY, formerly of Penfield, NY, December 26, 2008; orthopedic surgeon; specialized in joint replacements; practiced in Binghamton, Ithaca, and Auburn, NY; active in alumni affairs. Sigma Alpha Epsilon.

Doctor of Letters

Essay collection showcases WCMC-Q's literary talent

The benefits and perils of nuclear medicine. Why audiences love *Casablanca*. The cultural and commercial phenomenon that is Oprah Winfrey. A hospital stay, seen through the eyes of an elderly patient. The "ethereal soul" of Emily Dickinson. These topics, and twenty-two others, are explored in the first-ever book of essays by students from Weill Cornell Medical College in Qatar (WCMC-Q). Entitled *Qira'at (Readings)*, the volume was published last fall; it features the finest student essays from the past four years. In addition to their work in first-year writing seminars, students produce essays in a variety of courses—ethics, psychology, biology, even math. "The purpose was to show the diversity of writing in the medical school," says Alan Weber, an assistant professor of English on the Qatar campus. "I'm not sure that even our faculty understands the wide range of writing that is going on."

The works in *Qira'at* were chosen via a contest judged by writing faculty from Qatar and Ithaca. The first-prize winner was Tasnim Kalife '10, whose essay "Rieux: A Willing Victim of Abstraction" addresses the dilemmas faced by a doctor in Albert Camus's novel *The Plague*. Judges called it "an exemplary work of literary criticism that tackles a question of medical ethics from the point of view of a fictional character who adopts the defense of abstraction to deal with his inability to stop an uncontrollable, incurable disease." Second place went to Marwa Saleh '13 for an essay on how stem cell research is viewed in the Islamic world, while Anayah Sarkar '10 took third for an exploration of the ethics of withholding medical information from adolescent patients, based on experiences from her clinical training.

WCMC-Q printed about 2,000 copies of the soft-cover volume, which has been distributed to students and will be sold at Qatari bookstores. "Students can see a model of writing from peers who may be only two years further into the program," Weber says, "so it gives them the sense that they can do it—they can actually write like that." It took nearly a year to produce the book, which is dedicated to Qatar's first lady, Her Highness Sheikha Mozah Bint Nasser Al-Missned. Follow-up editions with new essays are planned to be published every two to four years. "It demonstrates that writing is important to the future of medical education," Weber says. "Writing is a form of discovery and exploration. It's not just transcribing your ideas; it's a way to learn. Many of the skills that you learn in writing can be directly applied to the practice of being a doctor."

Profits from the sale of Qira'at *will go to the Qatar National Cancer Society, an organization that campaigns to raise awareness of and funds for cancer education and research.*

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Medical arts: After her third year at Weill Cornell, Zina Semenovskaya ’09 took time off to travel to India and Africa to conduct research and do medical work, including designing first-aid kits for the Impact India Foundation. (Here, a health worker distributes the kits in a small village north of Mumbai.) She also practiced her favorite hobby: photography. For a gallery of Semenovskaya’s work, see page 30.