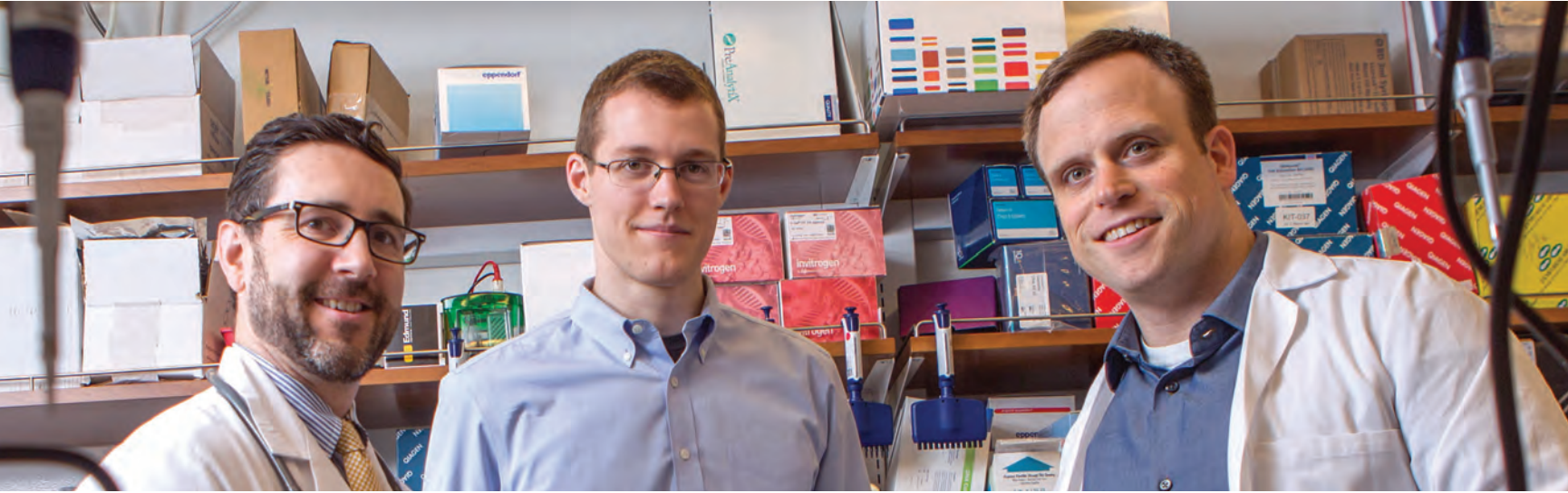


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VOLUME 16, NUMBER 3



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Thursday, October 5
San Diego, CA | Alumni Reception

Saturday, November 4
Boston, MA | Association of American Medical Colleges Reception

Thursday, December 7
Houston, TX | Alumni Dinner

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THE MAGAZINE OF
WEILL CORNELL MEDICINE
VOLUME 16, NUMBER 3



FEATURES

28 **CONCENTRATED EFFORT: MEDICAL STUDENTS CONDUCT ORIGINAL RESEARCH**

ANNE MACHALINSKI

The Areas of Concentration (AOC) program is the latest in a continuum of changes to the curriculum at Weill Cornell Medicine—which, like many of its peer institutions, has shifted away from a classroom-focused system for the early years of medical school. Begun in 2014, the AOC requires students to pick an area in which they'd like to gain in-depth knowledge, then complete original research related to it before graduation under the tutelage of a mentor. It includes a rare privilege: six months of dedicated time during which third-years focus on their scholarly investigations. "The more we can educate students in how to conduct original research," says Anthony Brown, PhD, director of medical student research, "the more likely our graduates will be to challenge the status quo, make advances in their fields, and become better doctors."

34 **'A TRULY EXTRAORDINARY UNIVERSITY': A CONVERSATION WITH MARTHA POLLACK**

Cornell's fourteenth president took office in April—coming from the University of Michigan, where her roles included overseeing the medical school. A Connecticut native and the second woman to serve as Cornell president, Martha Pollack, PhD, is a computer scientist with particular expertise in intelligent technology designed to help people with cognitive impairments. In a chat with Weill Cornell Medicine, she talks about Ithaca-NYC collaborations, her "listening and learning tour" of the University, the importance of public support for science, and more. "In Ithaca, we're a close-knit community of scholars, gathered in a special place that resonates deeply with alumni; in New York City, we are linked to the world's greatest city, offering unparalleled opportunities for our students and scholars," she says. "Weill Cornell Medicine is our largest footprint in the city, with a long history of providing high-quality patient care, making biomedical discoveries that translate to new therapies, and educating exceptional doctors and scientists."

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Cover photos by John Abbott

Published by the Office of External Affairs

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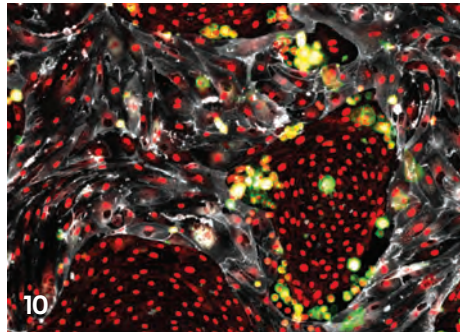
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**Weill
Cornell
Medicine**

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#WeAreWCM: Born in Iran, a 2017 PhD grad already runs her own lab

Weill Cornell Medicine (ISSN 1551-4455) is produced four times a year by Cornell Alumni Magazine, 401 E. State St., Suite 301, Ithaca, NY 14850-4400 for Weill Cornell Medicine. Third-class postage paid at New York, NY, and additional mailing offices. POSTMASTER: Send address changes to Office of External Affairs, 1300 York Ave., Box 123, New York, NY 10065.



Augustine M. K. Choi, MD
Dean of Weill Cornell Medicine

Weill Cornell Medicine: A Triple Threat for the Twenty-First Century

say it often because I believe it: Weill Cornell Medicine is a triple threat, poised as one of the nation's leading academic medical institutions. Our clinical enterprise is expanding its footprint into lower Manhattan, Queens, and Brooklyn, connecting more New Yorkers to our exemplary network of physicians.

Weill Cornell's funding from the National Institutes of Health has surged 30 percent over the last decade, advancing scientific inquiry that may yield groundbreaking treatments and cures. And students learning under modern medical and scientific pedagogies, with their fresh ideas and ingenuity, are helping to transform the healthcare landscape to meet tomorrow's needs.

Yet like all medical schools, we face considerable challenges to make good on this promise. The extent of future research support we can expect from the NIH is unknown. Competition for patients is fierce as physicians receive declining reimbursements for their services. Meanwhile, the foundation of U.S. healthcare coverage is in existential flux—with profoundly real import—as the Affordable Care Act remains central to our national politics.

These pressures require us to become even more efficient, to tie our missions to care, discover, and teach ever more tightly together. And that is a good thing; it puts Weill Cornell Medicine in a position of unique strength. My vision is that these missions become so seamlessly integrated that each deeply enriches and elevates the others: Our patients benefit from the most advanced care, informed by their doctors' research. Our scientists have collaborative relationships with our clinicians, providing them with access to data they need to pursue discoveries that will ultimately return the favor to those patients. Simultaneously, through mentorship and other innovative support and programs, we cultivate a pipeline of well-funded scientists who can continue to advance this integrated mission. Students learn from patients from the very beginning of their medical studies, and are encouraged to immerse themselves in research on the premise that it will ultimately make them more sophisticated doctors who will bring creative, evidence-based approaches to their future practices.

Already, there are examples of such integration on our campus, which you will read about in this issue. The capstone requirement of the new medical school curriculum, the Areas of Concentration program (AOC), is introduced within weeks of the White Coat ceremony and requires students to pick an area of focus—like global health, palliative medicine, or cancer biology—by eighteen months into their medical education. They then join a scientific research community to participate in division meetings and grand rounds; choose a mentor who works with them on a scholarly project; and spend six months on original research. The AOC exposes students to an academic culture of research, reinforcing its centrality to the day-to-day delivery of patient care, and provides a lens we believe elevates the art of medicine.

You will meet recent alumni, like Michael LeVine, PhD '16, an

instructor in physiology and biophysics and a junior fellow in Weill Cornell Medicine's HRH Prince Alwaleed Bin Talal Bin Abdulaziz Al-Saud Institute for Computational Biomedicine, who studies how certain proteins function. His work, started under the tutelage of Harel Weinstein, DSc, chairman of the Department of Physiology and Biophysics, continues with his mentor's support, and has the potential to affect the future of biomedicine. Innovative concepts like Bridge Medicines, which takes early scientific discoveries into the later stages of therapeutic development, offers complementary opportunities to up-and-coming faculty like LeVine. You can learn more about the company—a joint endeavor with our academic affiliates and investors—in the magazine's interview with its CEO, Bill Polvino, MD.

As Weill Cornell Medicine embarks on the next phase of its evolution, I am reminded that our excellence and our capacity to affect positive change on our patients and their families are not limited to New York. The collective influence of our community is felt in Qatar, Tanzania, and elsewhere, a powerful model that has extended our

At the heart of each of these endeavors is a shared ambition: to provide the very best care to our patients.

mission globally since our inception more than 100 years ago. Take Ida Scudder, MD 1899, who earned her medical degree as a member of Weill Cornell's first class, at a time when women were afforded few professional opportunities. Dr. Scudder later founded the Christian Medical College and Hospital in Vellore, India, to care for a community on the other side of the globe. More than a century later, our students are still helping to realize her mission, exemplified in third-year medical student Shobana Ramasamy, who spent a summer in Vellore studying how obesity affects quality of life.

At the heart of each of these endeavors is a shared ambition: to provide the very best care to our patients. By working together, there are no limits to the impact we can have. That is why I believe we need to reinforce the bonds between our clinicians, bench scientists, and colleagues from across Cornell University while exposing our trainees to the innovative collaborations those connections engender. We are striving to augment an already exemplary cadre of physicians and scientists by recruiting new and diverse talent, emphasizing mentorship across Weill Cornell Medicine, and providing other critical resources to ensure our students and faculty are successful. And at the same time, we are strengthening our relationship with partner NewYork-Presbyterian to continue our outstanding clinical enterprise while fostering a culture of entrepreneurship that will bring our discoveries to patients.

We have a powerful legacy upon which we can build. Our work, as ever, continues. ■

WorldQuant Initiative for Quantitative Prediction Established

A bold, new initiative made possible by a generous \$5 million gift from Weill Cornell Medicine Overseer Igor Tulchinsky will enhance the diagnosis and treatment of a variety of illnesses, including cancer, infectious diseases, and a range of neurological disorders.

Tulchinsky's gift, made through his company, WorldQuant, LLC, has established the WorldQuant Initiative for Quantitative Prediction at Weill Cornell Medicine, a biomedical research initiative that will function in collaboration with scientists and physician investigators at the Caryl and Israel Englander Institute for Precision Medicine and the Sandra and Edward Meyer Cancer Center.

The initiative aims to expand current strategies used in precision medicine by combining state-of-the-art molecular profiling technologies with advanced financial algorithms and computational methods, creating personalized disease and health models that will optimize treatment for patients.

Moving medicine forward



From left: Igor Tulchinsky, Christopher Mason, PhD, Olivier Elemento, PhD

“The use of quantitative prediction for patients represents an important new tool at Weill Cornell Medicine,” says Augustine M.K. Choi, MD, the Stephen and Suzanne Weiss Dean. “We appreciate Mr. Tulchinsky’s generosity, which will help us achieve new goals in the constantly evolving field of precision medicine.”

The program will be co-directed by Christopher Mason, PhD, the WorldQuant Foundation Research Scholar and associate professor of physiology and biophysics, and Olivier Elemento, PhD, the Walter B. Wriston Research Scholar and associate professor of physiology and biophysics. Mason and Elemento are long-standing collaborators and colleagues; with this gift, they plan to pioneer new algorithms and technologies that will broaden the scope of personalized medicine.

“This extremely creative gift will **accelerate and expand Weill Cornell Medicine’s approach to precision medicine**, providing new predictive tools that will lead to even better outcomes for patients.”

Jessica Bibliowicz
Chairman, Weill Cornell Medicine
Board of Overseers

To support critical research initiatives at Weill Cornell Medicine, please contact: Lucille Ferraro, Director of Campaign Planning and Strategic Partnerships, 646-962-9491 or luf2003@med.cornell.edu.

Gala Commencement Fills Carnegie Hall



This year's graduation ceremony in Carnegie Hall saw two debuts: it was the first time that Cornell University's new president, Martha Pollack, PhD, presided over the ceremony, and that Augustine Choi, MD, gave the Commencement address as dean of Weill Cornell Medicine. The event conferred degrees on some 275 students, including MDs (from both the New York and Qatar locations), PhDs, masters of science, and physician assistants. "Medicine is a lifetime commitment," Choi told the newly minted MDs. "As you go through your residency programs, you'll discover that finding compassion and ways to truly care for your patients are not things you can learn overnight. It is a life-long process. Continue to work at it every single day. It takes discipline, hard work, and perseverance to be the best doctor you can be—and to identify how you can have the greatest impact on the health and wellbeing of others."

In Pollack's address, she told the graduates that just as they have an obligation to deliver the finest care to their patients and to solve critical medical problems, they must also communicate the importance of their work to the public. "No matter how you apply your skills and knowledge in your careers," she said, "I urge you—urge you—to also use those abilities beyond your professional endeavors, and become advocates for scientific knowledge and rational thought in developing informed solutions for the problems we face as a society."



JOYOUS OCCASION: Berobered graduates and their loved ones at the ceremony (top). Above: Dean Choi addresses the crowd.

This spring also marked a milestone for Weill Cornell Medicine—Qatar: the Class of 2017, which comprised forty-five MDs, was the tenth to graduate from that location. As WCM-Q Dean Javaid Sheikh, MD, said at the Doha ceremony in early May: "A career in medicine is one of the most rewarding jobs that anyone can undertake. You now have the knowledge to heal people, to offer succor in their darkest hours, and to relieve suffering."

PHOTOS: AMELIA PANICO

Koretzky Is Vice Dean; Nathan Leads Grad School



GARY KORETZKY, MD, PHD



CARL NATHAN, MD

Immunologist Gary Koretzky, MD, PhD, formerly dean of the Weill Cornell Graduate School of Medical Sciences, has been appointed vice dean, focused on academic integration at Cornell University and Weill Cornell Medicine. In his new role, he will lead an initiative to strengthen the bridges between New York City and Ithaca by further aligning scientific and educational activities at WCM with those at Cornell Tech and the University's main campus. "Transforming outstanding research projects into world-class programs requires bringing scientists with complementary interests and skills together," says Koretzky, also the Frank H.T. Rhodes Distinguished Professor in Cardiovascular Biology and Genetics. Koretzky has been succeeded as dean by Carl Nathan, MD. A

leading voice for developing solutions to antibiotic resistance, Nathan will continue to serve as the R.A. Rees Pritchett Professor and chairman of microbiology and immunology. "Keeping my lab going at full speed and continuing to collaborate closely with my students and postdocs will not only ensure that essential research projects advance," Nathan says, "but that I stay intimately familiar with the educational and professional development needs of the very students we train in the Graduate School." David Christini, PhD, has been appointed vice dean of the Graduate School.

Rehab Medicine Gains Department Status

The Division of Rehabilitation Medicine has been elevated to full departmental status, with Joel Stein, MD, appointed chairman. "By establishing this department, NewYork-Presbyterian and Weill Cornell Medicine are showing their commitment to improving care for rehab medicine patients," says Stein, professor of rehabilitation medicine at WCM and the Simon Baruch Professor of Physical Medicine & Rehabilitation at Columbia University Medical Center. The department conducts state-of-the-art research and clinical care in subspecialties including interventional spine care, sports medicine, regenerative medicine, women's health rehabilitation, and stroke rehabilitation and recovery.

Stewart's Vice Dean Role Expands



MICHAEL STEWART, MD

Otolaryngologist Michael Stewart, MD, is taking on an expanded role in his position as vice dean—providing key strategic oversight of efforts to recruit, develop, and retain faculty while fostering a culture of diversity. The work augments his portfolio of institutional responsibilities, which includes guiding academic and clinical program development and directing global initiatives. Stewart is also chair of

the Department of Otolaryngology–Head and Neck Surgery and otolaryngologist-in-chief at NYP/Weill Cornell. Additionally, urologist Peter Schlegel, MD, has been appointed senior associate dean for clinical affairs. In his new role, Schlegel serves as the principal liaison between the Dean's Office, the Physician Organization, NewYork-Presbyterian, and clinical faculty.



SURGICAL SELFIE: After the *New Yorker* ran a much-lauded March 2017 cover illustration of four female surgeons, a Twitter campaign encouraged women to reproduce it in their own ORs. Among the first to answer the call was Heather Yeo, MD, assistant professor of surgery, the Nanette Laitman Clinical Scholar in Healthcare Policy and Research/Clinical Evaluation, and a surgeon at NYP/Weill Cornell. Clockwise from bottom: Yeo; physician assistant students Crystal Law and Maggie Morris; and MD-PhD student Anupriya Singhal '18.

Min to Head Physician Organization



ROBERT MIN, MD '90

Robert Min, MD '90, a pioneer in vascular interventional radiology, has been appointed president and CEO of Weill Cornell Medicine's Physician Organization, effective January 1. Additionally, Adam Stracher, MD, a renowned specialist in internal medicine and infectious disease, has been named chief medical officer of the physician organization and promoted to associate dean for clinical affairs. "As a physician, there are few things more worthwhile or exciting to be a part of than providing the absolute best care for our patients," says Min, who will continue as chairman of radiology and the John A. Evans, MD, Professor of Radiology at WCM and radiologist-in-chief at NYP/Weill Cornell. "That is our guiding mission, and it's an honor for me to be able to help extend that philosophy to our entire clinical enterprise." Among Min's chief priorities will be to leverage data from electronic health records to determine where the physician organization should expand next and what medical services to offer, with a focus on increasing patients' access to primary care and developing multispecialty practices.



WORK AND PLAY: Taking a break from offering health screenings to adults during a weeklong visit to Tanzania last spring, WCM-Q medical student Zaid Shahriri entertains a group of schoolchildren. Working on public health projects, he and his fellow students got a firsthand look at the challenges of delivering healthcare in a low-income environment. "Visiting Tanzania made me realize how fortunate we are to have access to very good healthcare services in Qatar," he said. "We saw people suffering very severely from diseases that are relatively easy and cheap to prevent with vaccinations."

Holzer Heads Pediatric Cardiology



RALF HOLZER, MD

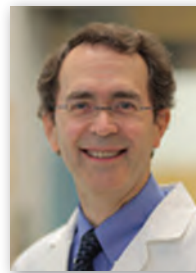
Ralf Holzer, MD, an expert in minimally invasive techniques to treat children and adults with congenital heart disease, has been named chief of the Division of Pediatric Cardiology at NYP/Weill Cornell and Weill Cornell Medicine and director of pediatric cardiac catheterization at the Komansky Children's Hospital. "Dr. Holzer is a renowned expert who is committed to innovative interventional techniques and

approaches to pediatric cardiology care," says Gerald Loughlin, MD, the Nancy C. Paduano Professor and chairman of pediatrics. Holzer joined WCM as a professor of clinical pediatrics in 2016, following his appointment two years earlier as medical director of cardiac catheterization and interventional therapy at the Sidra Medical and Research Center in Doha, Qatar.

Researchers Win Young Investigators Prize

Four WCM faculty have won the Pershing Square Sohn Prize for Young Investigators in Cancer Research. The award, which provides \$200,000 in yearly funding for up to three years, is given to New York-based scientists pursuing high-risk, high-reward research. The winners are Yimon Aye, PhD, assistant professor of biochemistry, who is analyzing two newly discovered proteins that may play a role in treating drug-resistant blood cancer cells; Juan Cubillos-Ruiz, PhD, assistant professor of microbiology and immunology in obstetrics and gynecology, who is investigating whether disabling stress sensors in immune cells may enhance the therapeutic efficacy of new types of vaccines for ovarian cancer; and two assistant professors in the Graduate School of Medical Sciences: Daniel Heller, PhD, who is building nanoparticles to develop personalized medicines that target tumor sites while avoiding healthy cells; and Richard White, MD, PhD, who is investigating how non-cancerous fat cells support cancerous melanoma cells during metastasis.

Heads of Research Named



HUGH HEMMINGS JR., MD, PhD

Hugh Hemmings Jr., MD, PhD, the Joseph F. Artusio Jr. Professor of Anesthesiology and chair of the department, has been named senior associate dean for research, and Todd Evans, PhD, the Peter I. Pressman Professor in Surgery and a professor of cell and developmental biology in surgery, has been named associate dean for research. Both will play key roles as WCM develops alliances with the biopharmaceutical industry and strengthens partnerships with NewYork-Presbyterian, Memorial Sloan Kettering Cancer Center, The Rockefeller University, Hospital for Special Surgery, Cornell Tech, and the Ithaca campus. "As a physician-scientist who has spent his career bridging the gap between discovery and clinical research, Dr. Hemmings is a perfect fit for the senior associate dean role," says Dean Choi. "Dr. Evans, with his deep history as a basic scientist in clinical settings, perfectly complements him."



TODD EVANS, PHD

TIP OF THE CAP...

George Alexopoulos, MD, the Stephen P. Tobin and Dr. Arnold M. Cooper Professor in Consultation Liaison Psychiatry and a professor of psychiatry and of psychiatry in integrative medicine, winner of the Legacies Award from Liferforce in Later Years.

Jessica Ancker, PhD, associate professor of healthcare policy and research, elected a fellow of the American College of Medical Informatics.

Ghazaleh Ashrafi, PhD, postdoctoral associate in biochemistry, winner of a Tri-Institutional Breakout Award for Junior Investigators.

Francis Barany, PhD, professor of microbiology and immunology, named a fellow of the National Academy of Inventors.

Himisha Beltran, MD, assistant professor of medicine and of medicine in urology, winner of a \$2 million, three-year Prostate Cancer Research Program Transformative Impact Award from the Department of Defense.

Jennifer Downs, MD '04, MS '11, the Friedman Family Research Scholar in Pediatric Infectious Diseases and an assistant professor of medicine and of medicine in microbiology and immunology, and **Marcin Imielinski, MD, PhD**, an assistant professor of pathology and laboratory medicine

and of computational genomics in the HRH Prince Alwaleed Bin Talal Bin Abdulaziz Al-Saud Institute for Computational Biomedicine, who each received a \$495,000 Clinical Scientist Development Award from the Doris Duke Charitable Foundation.

Bishoy Faltas, MD, assistant professor of medicine, winner of a \$610,000 Career Development Award from the Department of Defense.

Dan Landau, MD, PhD, assistant professor of medicine and of physiology and biophysics and a core member of the New York Genome Center, winner of the American Society of Hematology's Scholar Award for junior faculty.

Conor Liston, MD '08, PhD, assistant professor of neuroscience in the Feil Family Brain and Mind Institute and assistant professor of psychiatry, named a Rita Allen Foundation Scholar, which provides \$500,000 in research support.

Michael Stewart, MD, vice dean, chairman of otolaryngology, and a professor of healthcare policy and research, named president of the board of directors of the American Board of Otolaryngology.

FROM THE BENCH

Chinese Medicine Compound Fights Zika

A compound used in traditional Chinese medicine to lower blood pressure also strongly combats Zika virus infection of the brain and may protect against associated birth defects, a study published in *Cell Stem Cell* has found. The scientists screened more than 1,000 U.S. FDA-approved drugs and traditional medicines for their ability to block Zika infection in human fetal brain cells and ultimately identified hippastrine hydrobromide, an active ingredient of the plant *Lycoris radiata* (red spider lily). “We are very excited about this drug candidate, because we think it could be the first to be useful in treating Zika-infected patients, rather than just preventing infection,” says co-senior author Shuibing Chen, PhD, associate professor of chemical biology in surgery and of biochemistry, who collaborated with colleagues at Memorial Sloan Kettering Cancer Center. Zika is particularly damaging to the developing brain; it can cause microcephaly, a severe birth defect in which the brain fails to develop to normal size.

Clinical Trial Targets Progressive Prostate Cancer



SCOTT TAGAWA, MD, MS '10

NewYork-Presbyterian and Weill Cornell Medicine have begun the first clinical trial in the U.S. that uses a small molecule to treat prostate cancer that has spread and is no longer responding to hormonal therapy. The small molecule targets and binds to prostate-specific membrane antigen (PSMA)—a protein that is abundantly expressed in 85 to 90 percent of metastasized prostate cancers—and delivers precise radiation therapy intended to shrink the cancer, even in cases in which cells have yet to form a visible tumor on a bone or CT scan. The trial—which Scott Tagawa, MD, MS '10, the Richard A. Stratton Associate Professor in Hematology and Oncology and an oncologist at NYP/Weill Cornell, says “represents a new frontier in the treatment of metastatic prostate cancer”—primarily seeks to determine the highest dose of the drug that can be given without significant side effects.

Positive Review for Weight Loss Procedure



REEM SHARAIHA, MD

A new procedure that makes the stomach smaller without surgery is a safe and effective way to treat obesity and related conditions, a recent study finds. In *Clinical Gastroenterology and Hepatology*, a team led by Reem Sharaiha, MD, assistant professor of medicine and a gastroenterologist at NYP/Weill Cornell, explores endoscopic sleeve gastroplasty (ESG)—an incisionless, outpatient procedure in which instruments are guided from the mouth to the stomach, which is then stapled from the inside. The study followed ninety-one patients who underwent ESG; at the two-year mark, they'd lost an average of 20.9 percent of their body weight and had lower rates of hypertension and diabetes. Says Sharaiha: “With ESG, we're giving patients who are not eligible for surgery, or deemed to be too high risk for surgery, a new option for their care.”

New Material Enables Safer Abdominal Closure

A collaboration between a WCM surgeon and a biomedical engineer on the Ithaca campus has yielded a new tool for a challenging task: securely closing the abdominal wall without injuring the intestines. Surgery professor Jason Spector, MD, teamed up with David Putnam, PhD, to develop a material that's strong enough to protect the intestines from a needle puncture and bendable enough to insert through a small incision—but also quickly dissolvable in the body. As they and colleagues reported in *Acta Biomaterialia*, the answer was a compound made of polyethylene glycol (used in laxatives and personal care products) and dihydroxyacetone (a natural by-product of the breakdown of glucose). In their mouse-based study, the material replaced the plastic or metal retractors that surgeons typically

use to protect the intestines during closure—but which must be removed before the incision is completely sewn shut. They found that the device dissolved within three hours of surgery, leaving no scarring or signs of toxicity. The collaborators aim to replicate the results with further preclinical testing.

Synapse Malfunctions May Underlie Schizophrenia



ANJALI RAJADHYAKSHA, PHD

A molecular mechanism recently discovered in the brain cells of mice may underlie neuropsychiatric disorders such as schizophrenia and autism. In *Molecular Psychiatry*, a team led by senior author Anjali Rajadhyaksha, PhD, describes the effects of the reduced function of a calcium channel at synapses, the contact site essential for communication between neurons. “Our study suggests that if we can repair malfunctioning synapses in humans, we can reverse behavioral abnormalities and potentially treat specific symptoms, such as social impairment and anxiety, in patients with these neuropsychiatric disorders,” says Rajadhyaksha, associate professor of neuroscience in pediatrics and of neuroscience in the Feil Family Brain and Mind Research Institute and director of the Weill Cornell Autism Research Program.

New Method Detects Surviving Cancer Cells



GAIL ROBOZ, MD

In the *Journal of Molecular Diagnostics*, researchers describe a technique they developed that can better detect the cancer cells in acute myeloid leukemia that have survived chemotherapy. The approach—which they say works more sensitively and precisely than traditional microscopic observation—may point the way toward new personalized therapies. “Some patients can still have detectable levels of the disease way below the threshold of what we can examine under the microscope,” says co-author Gail Roboz, MD, professor of medicine and a hematologist at NYP/Weill Cornell. “It doesn't tell us enough information about what's going to happen with the patient. There could be substantial leukemia remaining.” To counteract that, the investigators developed a technique that scours patients' bone marrow samples post-treatment for genetic mutations—specifically, one called NPM1—that can serve as biomarkers for minimal residual disease.

Ketamine Ineffective for Post-Op Delirium



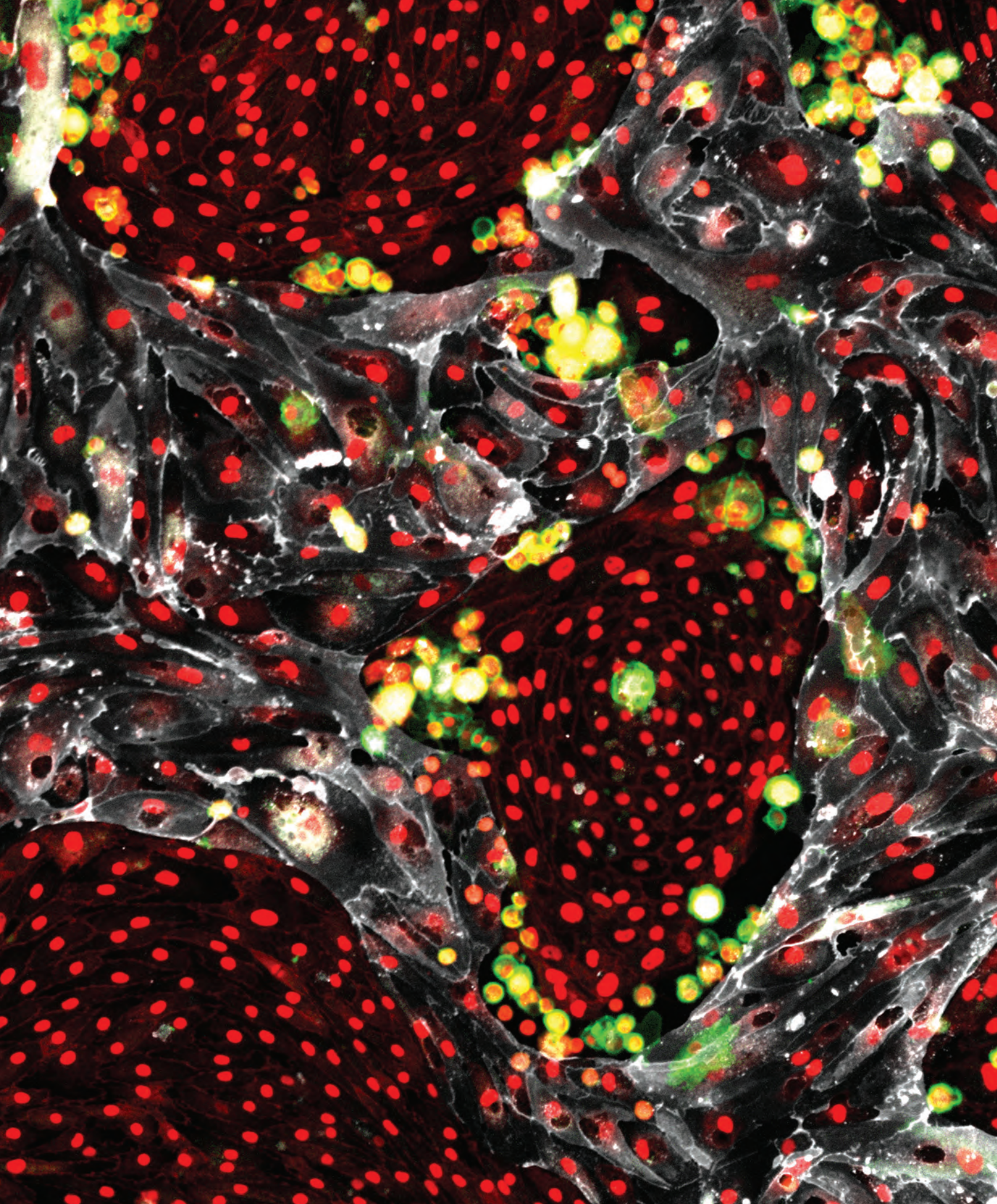
KANE PRYOR, MD

To lessen postoperative pain and reduce the need for opioid drugs following surgery, anesthesiologists often give patients low doses of ketamine during operations; recent research even suggests that it might alleviate postsurgical delirium and confusion in older adults. But a new study by anesthesiologists at WCM, Washington University, and the University of Michigan indicates that ketamine doesn't help on either front—and that older patients who receive it are in fact more likely to experience hallucinations and nightmares in the recovery room and for several days afterward. “Finding an agent that can prevent postoperative delirium is something of a holy grail in perioperative medicine because it is associated with complications and mortality after surgery, especially in the elderly,” says co-author Kane Pryor, MD, associate professor of clinical anesthesiology and of anesthesiology in clinical psychiatry. “Several smaller studies suggested that low doses of ketamine help reduce postoperative pain and delirium, and we've seen this lead to changes in practice over this last decade. But this study really challenges what has been a significant trend.” The work was published in the *Lancet*.

Blood Work

In a long-sought-after discovery, Weill Cornell Medicine researchers have developed a new way to generate healthy blood cells—potentially revolutionizing treatment of such diseases as blood cancers and sickle-cell anemia, as well as conditions like infections and excessive bleeding. In May, *Nature* published an article by senior author Shahin Rafii, MD, and colleagues. Working in a mouse model, they devised a way to convert the cells that line all blood vessels (called vascular endothelial cells) into abundant, fully functioning hematopoietic stem cells. Those stem cells, in turn, mature into platelets and white and red blood cells, which—if the findings are successfully translated into humans—could someday be transplanted into patients, yielding a lifetime supply of new, healthy blood cells. “This is a game-changing breakthrough that brings us closer not only to treating blood disorders, but also deciphering the complex biology of stem-cell self-renewal machinery,” says Rafii, director of the Ansary Stem Cell Institute, chief of the Division of Regenerative Medicine, and the Arthur B. Belfer Professor at Weill Cornell Medicine. The image at right shows the stem cells in green; the vascular niche cells, which help nurture the stem cells as they’re reprogrammed into the precursors of blood cells, are seen in gray.

PHOTO: RAPHAËLUS, PHD





'MACHINE' LEARNING: Michael LeVine, PhD '16 (left), and Harel Weinstein, DSc, with models of the molecular micromachines they're investigating

Form and Function

Michael LeVine, PhD '16, studies the brain's tiny 'molecular machines'—and ultimately aims to build them from scratch

Michael LeVine, PhD '16, grew up in Taunton, Massachusetts, a city about forty miles south of Boston. One of the oldest towns in the U.S.—founded in the 1630s—Taunton in recent decades has suffered through a very modern scourge: the staggering opioid epidemic that has devastated so many communities nationwide. As a high school student in the mid-Aughts, LeVine saw first-hand the societal costs of addiction. “I was friends with a lot of people who had drug abuse problems,” says LeVine, an instructor in physiology and biophysics and a junior fellow in Weill Cornell Medicine’s HRH Prince Alwaleed Bin Talal Bin Abdulaziz Al-Saud Institute for Computational Biomedicine. “That got me interested in what I could do to make a dent in this crisis.”

In college, LeVine gravitated toward psychology, thinking that if he learned about depression and how drugs impact behavior, he could eventually treat people with addiction disorders. But he soon realized that he was more interested in how drugs target mechanisms in the brain, so he began studying neuroscience, then shifted to molecular biology. He finally settled on biophysics, where he became fascinated by how certain proteins in the brain—each one 100 million times smaller than a human cell, and with its own function—receive and transmit chemical signals. LeVine now aims to help people with a wide variety of diseases and conditions: his research into the fundamentals of how these machines work could have broad implications beyond drug addiction, informing the development of targeted therapies for depression, brain injury, and more.

LeVine focuses on tiny machines called receptors, which reside in the membranes of brain cells; there, they interact with chemical information outside the cells, bind to that information, and bring those messages inside. Addictive drugs, like opioids, and drugs of abuse, such as hallucinogens, impact the brain and behaviors by interacting with receptors. Hallucinogens like LSD, for example, interact with the serotonin receptor, while opioids like heroin target the opioid receptor. “When you hijack the natural process of what receptors are meant to do, it can have far-reaching effects on the body,” LeVine says—adding that understanding exactly how receptors work could help clarify the mechanisms behind drug abuse and lead to better therapeutic agents to halt them.

As a PhD candidate, LeVine worked under Harel Weinstein, DSc, the Maxwell M. Upson Professor of Physiology and Biophysics and chairman of the department, who remains a collaborator and mentor. It was in Weinstein’s lab that LeVine, supported by a grant from the National Institute on Drug Abuse, made significant advancements in understanding how two chemicals that bind to the same receptor can have very different effects. He specifically looked at the serotonin 2A receptor, which typically binds to serotonin—a chemical in the brain that helps regulate mood—but can also bind to hallucinogens, which interfere with the brain’s natural communication processes. “Knowing that both serotonin and hallucinogens target the same receptor told us that these molecular machines are much

more complicated than they first seemed,” LeVine says.

Working with Weinstein, LeVine also advanced what scientists know about a phenomenon called allostery, without which proteins wouldn’t function. Allostery occurs in a protein when two parts of the molecule, separated by a significant distance, move in tandem because of unseen forces. To illustrate this, LeVine compares a receptor being activated to the process of flipping a light switch; the resulting action—the light turning on—occurs almost instantaneously, but relatively far away. The same thing happens in a protein. If a chemical signal binds to a receptor, an action occurs in a different part of the protein almost simultaneously. Without this form of communication, the molecular machines wouldn’t function, LeVine says. LeVine learned more about how this process works by using statistical mechanics, probability theory, and other computer modeling tools. “Michael is a genuine star in biophysical sciences—he is exceptionally talented and highly motivated,” says Weinstein. “His work represents a clear scientific evolution, and is an example of why it’s so important to have young, creative people in this field, who look at problems with a fresh perspective.”

The next step—one that LeVine and others are now pursuing—is to build a synthetic protein from scratch, a feat that would have great relevance in biomedicine and biotechnology because it would enable the development of more efficient and accurate medical tests and more targeted therapies. “Anyone who is trying to understand

‘Michael is a genuine star in biophysical sciences—he is exceptionally talented and highly motivated,’ says his mentor, Harel Weinstein, DSc. ‘His work represents a clear scientific evolution.’

how molecular machines work probably has the aspiration of building one of their own someday,” Weinstein says. “It’s definitely the future.” While there aren’t many success stories yet, in December 2014 researchers from UCSF and several other institutions reported in *Science* that they’d created a synthetic version of a type of protein called a transporter, which could move zinc from one side of the cell membrane to the other. “It was a simple machine,” LeVine says, “but it showed us that this could be done.” But building more complex machines likely won’t happen for many years, LeVine says. Among other things, the process will require highly advanced computer modeling, akin to the simulations that aerospace engineers run to ensure that a new plane will fly—and he acknowledges a great deal of trial and error lies ahead. “In the past, developing a new drug meant trying to break or disrupt the function of a molecular machine,” LeVine says. “But the ultimate goal is to build one that’s faster or stronger, or performs entirely new functions.” ■

— Anne Machalinski

Shining a Light

Nigerian-born radiation oncologist Onyinye Balogun, MD, is determined to make a basic cancer treatment more accessible to patients in the developing world

When Onyinye Balogun, MD, was a young girl, her father's only sister was diagnosed with breast cancer back home in their native Nigeria. Balogun had recently immigrated to the United States with her parents, but on a return visit the severity of her aunt's disease became clear. "She showed me her scars from the radiation treatment, and it left a big impact on me," recalls Balogun, now an assistant professor of radiation oncology at Weill Cornell Medicine and a radiologist at NYP/Lower Manhattan. "Her skin was really dark, and she had some open wounds."

Her aunt ultimately died of the disease, having only lived into her early forties—and that loss sparked in the future physician a fierce desire to spare other patients the same fate. "I have a vendetta," Balogun says. "Cancer took someone special away from me."

In the quarter-century since Balogun's aunt passed away, radiation technology has become safer and more precise, early diagnosis has become easier, and death rates for many cancers have fallen precipitously. But those gains have been largely confined to wealthy western countries, and in much of the world, cancer remains a death sentence. Balogun has long been haunted by the idea that patients like her aunt are dying when they might be saved by access to modern treatments—and when she arrived at Weill Cornell Medicine in 2015, she found herself in a position to help change that.

Today, through a partnership with the International Cancer Expert Corps (ICEC)—a Washington, DC-based nonprofit established in 2013 to improve cancer care in the developing world and in underserved communities in high-income nations—Balogun is creating a Weill Cornell hub of global outreach for cancer treatment. She has already visited the former Soviet republic of Armenia, where she is implementing a curriculum to train medical staff at the National Center of Oncology. Later this year, she plans to travel to the central African nation of Gabon to help set up a breast cancer training program.

Historically, when it comes to providing medical aid to less developed nations, communicable diseases like malaria and HIV have attracted more funding, time, and effort from international healthcare providers. But in 2011, the United Nations called for a new focus on non-communicable diseases, which are responsible for two-thirds of deaths worldwide each year. "That carries a lot of weight," says Silvia Formenti, MD, chair of radiation oncology and the Sandra and Edward Meyer Professor of Cancer Research at Weill Cornell Medicine, radiologist-in-chief at NYP/Weill Cornell,

and an ICEC board member. Despite the U.N.'s decree, funding to combat these diseases remains inadequate, she says, but "what we can do, through our work, is to go to those countries and help them use the resources and expertise that we can provide them." Noting that Balogun was recently awarded a \$35,000 competitive grant from the Department of Radiation Oncology to support her international outreach, Formenti adds, "We'll do whatever we can to support her and help her realize this dream."

The disparities Balogun hopes to confront are stark—especially when it comes to radiation therapy, which more than half of all cancer patients require at some point during their illness. "In New York City alone, we have at least seven centers where you can get radiation therapy," Balogun notes. "In developing countries, they

'In New York City alone, we have at least seven centers where you can get radiation therapy. In developing countries, they may have one, if that.'

may have one, if that. About twenty-seven African countries have no radiation therapy services whatsoever—and there are millions of people in each of those countries. Radiation is good for helping to reduce pain; what do they do for palliation? There are some cancers you cannot cure without radiation; what do they do for a cure?"

Some obstacles to radiation therapy are common across the developing world. In addition to a shortage of equipment, many countries have no insurance system, forcing patients to pay hefty expenses out of pocket. There are rarely enough qualified physicians, medical physicists, or radiation therapists. And when radiation equipment exists, the technology is often decades old. "In Armenia they were still using machines from the Soviet era," Balogun says. "In Nigeria, I realized that their machine had been commissioned back in the Eighties—it was a cobalt machine rather than a modern linear accelerator. But it's a matter of money. A linear accelerator costs millions of dollars."

Balogun and her colleagues at ICEC are approaching manufacturers about offering radiation equipment at a discount to developing countries, establishing long-term payment plans, or creating affordable versions of their devices for use in places where the cost would otherwise be prohibitive. Meanwhile, she says, each country has its particular challenges. Something as basic as reliable electricity—a



TREATMENT TOOL: Onyinye Balogun, MD, with a CT machine in the Stich Radiation Oncology Center at NYP/Weill Cornell; she uses it to take images of cancer patients that will help shape their therapeutic plans.

rarity in some sub-Saharan countries—can affect the availability of radiation treatment, Balogun says, and it may make sense to delay upgrading to newer technology, which is more vulnerable to power supply disruptions. Volatile political situations can also affect cancer care; in fact, Balogun was forced to postpone her Gabon trip, initially planned for September 2016, because of instability following an election. The delay has been frustrating, but she's hopeful she'll be able to go before the end of this year. She also plans to return to Armenia and launch a training program in gynecologic oncology, and will set up a weekly teleconference with doctors in both countries, so she

can continue to advise them from her base in New York.

Throughout her travels, Balogun often reflects on her aunt's case. If she'd had access to early screening, if her radiation treatment had come sooner and been delivered by better-trained medical staff, perhaps the outcome might have been different. "If she were in a developed country, would she have survived?" Balogun wonders. "I do think about that from time to time. I've met a number of women who remind me of my aunt and that I have to keep going, keep pushing. I couldn't save her, but maybe I can save them." ■

— Amy Crawford

Immersive Experience

Grad student-run mentorship program lets NYC high schoolers do hands-on research



PAYING IT FORWARD: Stephanie Mach (right), a student at Brooklyn Technical High School who serves as a docent at the New York Hall of Science, working on a tech-driven project on cancer diagnosis with WCM grad student Gabriele Campanella, her volunteer mentor in the Weill Cornell Science Immersion Program.

Last fall, Stephanie Mach met once a week in grad student Gabriele Campanella's lab to write and edit computer code and pore over statistical data. They kept at it for two and a half months, sitting side by side for hours at a time. Their goal was to create, as a diagnostic aid, an algorithm capable of pairing high-definition images of cancer cells with genetic mutations normally associated with them.

For Campanella—a second-year student in physiology, biophysics, and systems biology at Weill Cornell Graduate School of Medical Sciences—Mach provided a second set of eyes as Campanella worked to further his research into how to best use technology to help diagnose and treat cancer. But for Mach, the collaboration was something even more special: a rare opportunity to gain hands-on research experience in an academic laboratory as a high school junior.

A student at Brooklyn Technical High School, Mach worked with Campanella through the Weill Cornell Science Immersion Program (WCSIP), a partnership between Weill Cornell Medicine and the New York Hall of Science, an interactive science museum in Queens. Founded in 2014, the mentorship program brings New York City high school and college students into the lab with a grad student or postdoc for two hours a week for ten weeks. "The goal was to create a rich extracurricular science program to help open students' minds to the possibility of a career in STEM," says neuroscientist Ali Cohen, PhD '17, who co-created the program with pharmacologist Sara DiNapoli, PhD '17. "In particular we wanted to involve students from underserved communities who might have fewer opportunities to get involved in hands-on science."

The program is open to students age sixteen or older who work as Hall of Science "Explainers"—docents who teach visitors about exhibits. Over the course of their ten-week experience, WCSIP mentees receive guidance in developing and performing an experiment with their mentors, interpreting the results, and presenting their work. Last year, they researched the molecular mechanisms of cell death, neuromuscular diseases, and the diagnosis and treatment of Alzheimer's. Students and mentors used new computational technologies to help accrue more data related to these critical areas of cancer research to add to scientists' global pool of knowledge. "Getting the Explainers into the lab opens up a whole new experience," says Cohen. "Our program allows students to really immerse themselves in science—learning research techniques, reading scientific literature, and then presenting their own research."

The program's current coordinators—grad students Chenura Jayewickreme and Clair Geary, who took the reins from Cohen and DiNapoli last year—match mentors and mentees based on shared interests and scheduling availability; at the end of each session they solicit feedback with the aim of improving the program. Since last year, WCSIP's organizers lengthened its duration and gave mentors more extensive training on what to expect and how to interact with mentees. Now, their major focus is expanding the program so more students can benefit from it: twelve mentor-mentee pairs participated in 2015, and in 2016 there were seventeen. About 85 percent of mentees come from underserved minority communities and might not otherwise have access to immersive science programs, say the program's

'If a student has never had early opportunities to see how exciting and valuable research can be—and to see that they can be successful at it—he or she may shy away from the sciences,' says program organizer Chenura Jayewickreme. 'We don't want that to happen.'

leaders, who note that such early lab experiences can make the difference when it comes to deciding whether to pursue a career in the STEM fields. "If a student has never had early opportunities to see how exciting and valuable research can be—and to see that they can be successful at it—he or she may shy away from the sciences," says Jayewickreme. "We don't want that to happen. We need more young scientists."

Getting early, hands-on exposure to research was a major attraction for Mach, who plans to pursue a career in life sciences and has been taking high school courses in organic chemistry, chemical engineering, and forensic analysis. "What stood out to me about the program was its flexibility and opportunity for personal STEM exploration," she says. "The information Gabriele was working with was intimidating, but working in his lab was the intellectual challenge I was searching for." And while WCSIP is primarily designed to aid the young students, it has some fringe benefits for mentors: Campanella, for one, says WCSIP has helped make him a better scientist. "Every time I explain my ideas," he says, "it gives me a deeper understanding of them." ■

—Erica Cirino

New Lease on Life

Interventional radiologist David Madoff, MD, uses a pioneering procedure to save a nonagenarian liver cancer patient



David Madoff, MD

In spring 2013, Manhattan resident Jeri Bloome was ninety-two years old but had the energy of someone decades younger. She peppered her schedule with tugboat rides on the East River, strolls along the Brighton Beach boardwalk, lunches in Chinatown, and visits to the Metropolitan Museum of Art with her husband of more than half a century. Bloome was also enjoying the company of their only child, a daughter who had recently moved from Southern California into her parents' spacious Upper East Side apartment—and had brought along her three perpetually hungry, early-rising cats.

A retired cosmetic buyer for a department store, Bloome was in superb health. So she and her husband were puzzled when, one evening, she spat up an ounce of blood. In the next few days, the



ABBOTT

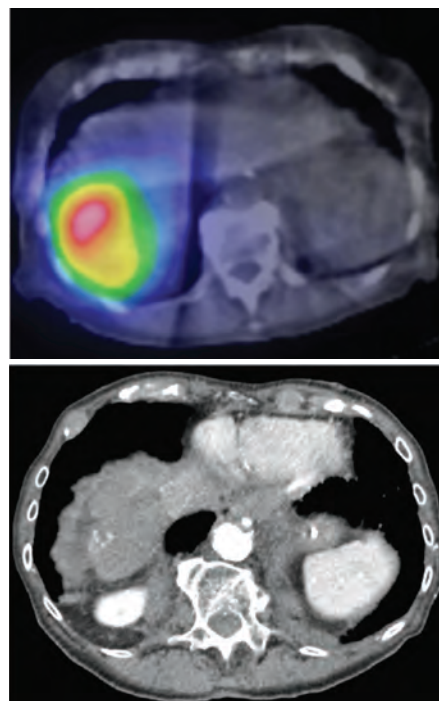
couple consulted a bevy of specialists at Weill Cornell Medicine including a geriatrician, an ENT, and two gastroenterologists. The culprit turned out to be a baseball-sized tumor that had ruptured through Bloome's liver. "I had never been sick—really sick," says Bloome. "Now, all of a sudden, I had liver cancer."

Bloome's outlook seemed dismal; her physicians predicted she had less than a year to live. Due to her advanced age and the particulars of her condition, she wasn't a candidate for surgery or liver transplant—and because of the rupture, she wasn't able to try other treatments. Then David Madoff, MD, a professor of radiology and vice chairman for academic affairs at Weill Cornell Medicine, offered her new hope: radioembolization, a nonsurgical procedure that targets liver tumors with radioactivity delivered through the arteries. While more than 20,000 people in the U.S. have been treated with radioembolization since the FDA approved it in 1999, Madoff says that when he performed the procedure on Bloome in April 2013, she was the first patient with prior tumor rupture ever to undergo it. The treatment—which was so minimally invasive that Bloome walked home later that day—was successful, and four and a half years later she remains cancer free. "The procedure was amazing—I didn't suffer at all," she says, adding, "Dr. Madoff saved my life."

More than 700,000 people worldwide are diagnosed with primary or metastatic liver cancer each year. In the U.S., about 40,700 new cases of the disease will be detected in 2017, according to the American Cancer Society—and the incidence has been on the rise, more than tripling since 1980. This is partially due to a high rate of a key risk factor for liver cancer—hepatitis C virus—among Baby Boomers, suggests a recent report published in *CA: A Cancer Journal for Clinicians*. Soaring rates of obesity and type II diabetes have likely contributed to the increase as well.

Rupture, though rare, is one of the most life-threatening conditions linked to liver cancer. As many as 67 percent of patients die within thirty days of the organ rupturing, according to a paper that Madoff and colleagues published in the January/February 2016 issue of *Clinical Imaging*. Survival depends on age, overall liver function, the extent of the disease, and presence of other conditions such as cirrhosis—liver damage that can be caused by, for example, excessive alcohol consumption or hepatitis. "When a tumor ruptures, it can spread outside the liver," says Madoff, an attending physician at NYP/Weill Cornell, "which is obviously a very, very bad thing."

Radioembolization is a two-step procedure typically performed under moderate sedation, with the patient remaining semi-conscious. An interventional radiologist first inserts a catheter into an artery through the patient's groin and threads it toward the liver. After examining the labyrinth of arteries that supply blood to the liver and tumor, the physician injects the vessels with a tiny, harmless dose of radioactivity to see if it stays inside the liver and does not spill into the bowel or lungs. If the test run reveals no spillage, the patient is approved for the actual treatment, which occurs about a week later. Then, a much higher dose of radioactive



GREAT OUTCOME: Imaging after Bloome's procedure (top) shows radioactivity at the site of her tumor; (left) four years after the treatment, only a small area of calcification remained. Opposite page: Bloome (right) at home during her twice-weekly physical therapy session.

particles is placed inside the blood vessels feeding the tumor. They embed themselves in the tumor and irradiate it from the inside out, sparing surrounding tissue.

Because Bloome's tumor and liver capsule were not intact, potential spillage of the particles—which in large amounts could theoretically inflame the abdomen's inner lining—particularly concerned her doctors. But the test run showed no leaks, so Madoff went through with the main procedure, a decision bolstered by Bloome's overall vitality and enthusiasm for the treatment. Says Bloome: "I just had confidence that he was going to cure me." She and her husband, Marc—a World War II veteran and entrepreneur who accompanies his wife to every doctor's appointment

**'The procedure was amazing—I didn't suffer at all,'
Jeri Bloome says, adding, 'Dr. Madoff saved my life.'**

and knows the smallest details of her medical history—appreciated Madoff's can-do approach. "A problem and a solution were presented to us at the same time," says Marc Bloome. "And of course we had to go for it." Madoff has been monitoring Bloome—who is now ninety-seven—with CT scans to make sure the cancer isn't coming back, something that he considers unlikely. "This case," he says, "is one where I would say that we completely cured the patient of a potentially incurable disease."

Bloome soon returned to her active lifestyle—doing strength and balance training twice a week, going to Broadway shows, dining at her favorite French restaurant, and taking long walks with her husband. In short, she says, "I feel wonderful." ■

— Agata Blaszczyk-Boxe

Community Chest

By uniting Weill Cornell Medicine's heart disease scientists, the Cardiovascular Research Institute aims to spearhead new treatments

Though medicine has made important strides in treating cardiac patients in recent years, there's still no cure for cardiovascular disease—a broad group of disorders that claim nearly 18 million lives around the globe annually, a number that the World Health Organization predicts will grow to almost 23.6 million by 2030. In this country alone, about 2,220 people die from heart failure, heart attacks, heart valve problems, and other cardiac conditions every day—or one every 40 seconds. “Cardiovascular disease remains the number-one killer,” says Geoffrey Pitt, MD, PhD, the Ida and Theo Rossi Distinguished Professor of Medicine at Weill Cornell Medicine and a cardiologist at NYP/Weill Cornell. “It’s a growing concern in the medical community, particularly as the population ages. People are living longer, and the risk of many cardiovascular diseases increases with age.”

Pitt has dedicated his career to battling this all-too-common cause of death and disability. In addition to treating patients and heading his own studies, he now directs the Cardiovascular Research Institute (CVRI), headquartered on the fifth floor of the Belfer Research Building. The institute was formed last year to bring top

that control electrical signals in cells—lead to cardiac arrhythmia, a serious condition that affects more than 14 million people in the U.S. alone. “When there are problems in these ion channels, people can have irregular heart rhythms,” he explains. “That can cause things like palpitations, fainting episodes, even sudden death.” Pitt, whose lab is based in the CVRI’s Starr-Greenberg Program in Arrhythmia Biology, believes if he can figure out how mutations in these proteins occur, innovative therapies might be developed to correct these abnormal heartbeats. And he hopes that CVRI will help fuel that potential breakthrough; though its members will pursue their own studies, Pitt expects that gathering them in one location will spark partnerships that speed discoveries.

Previously, cardiovascular research was spread among various departments at Weill Cornell Medicine; CVRI now serves as a hub for those studies throughout the institution. “Anytime you have researchers in the same environment, there are more opportunities for them to bump into each other and have informal collaborations and interactions—and that leads to formal collaborations and interactions,” says Pitt. “You bring two people together with different areas of expertise, and suddenly you have an exciting research project that applies the strengths of both investigators.”

To foster that kind of open environment, there are no walls between Pitt’s CVRI lab and that of his neighbor, David Christini, PhD, vice dean at the Graduate School and professor of biomedical engineering in medicine, who has also spent the last two decades examining heart arrhythmias. In November, Christini moved his seven-person research group to the Belfer Building after Pitt invited him to join the institute. He was drawn by the opportunity to be part of “a critical mass of cardiovascular scientists” working in close proximity every day, meeting regularly to brainstorm ideas.

For Christini, one area of interest is a type of arrhythmia called atrial fibrillation, an irregular and often rapid heart rate that can increase the risk of stroke, heart failure, and other complications. But, he says, because atrial

‘Anytime you have researchers in the same environment, there are more opportunities for them to bump into each other and have informal collaborations and interactions—and that leads to formal collaborations and interactions.’

scientists together to expand research at Weill Cornell Medicine that could improve heart health. Over the next four years, Pitt plans to recruit as many as five new principal investigators at the faculty level, who will lead about sixty scientists working in the institute’s labs. They’ll explore promising fields like cardio-oncology—which studies the connections between cancer and heart disease—and regenerative medicine, which aims to restore damaged parts of the heart after an injury like a heart attack.

Pitt’s own laboratory is focused on one key area: understanding how dysfunctional ion channels—proteins



Geoffrey Pitt, MD, PhD

fibrillation is a complex disorder, it's hard to study in humans due to the difficulty of imaging inside the heart—or in lab animals, which often poorly represent the clinical condition. So he gathers reams of patient data to create computer models to illuminate the underlying nature of the fibrillation. “We use that to understand patterns of the arrhythmia,” says Christini, “and to better understand how that information might help inform therapy.” He adds that this could potentially improve interventions like ablation—a technique that intentionally scars small areas in the heart that are causing the rhythm problem—by allowing doctors to better localize the procedure. Pitt hails this mathematical approach as a potentially useful tool in other CVRI studies down the road, while Christini points out that a physician-scientist like Pitt can offer invaluable insights based on experience treating patients. “He and his team are another group of scientists, with a slightly different research angle,

to bounce ideas off of,” says Christini. “That kind of dialogue is what helps ideas mature and expand.”

Pitt also expects there to be more frequent back-and-forth between CVRI's researchers and other cardiologists and cardiovascular surgeons. Not only can physicians provide suggestions for future projects, he says, they can refer patients to scientists for possible inclusion in their studies. For instance, Pitt plans to soon start a clinic for inherited cardiac disorders, aiming to study families in the hope of learning the underlying genetic causes of these ailments. In turn, those results could aid doctors in developing more precise treatments and preventive strategies in the future. “The research that we're doing at the bench will hopefully inform the clinicians, and the clinicians will bring interesting cases to the researchers,” he says. “We hope there will be translations in both directions.” ■

— Heather Salerno



Ida Scudder, MD 1899

Dr. Scudder's Legacy

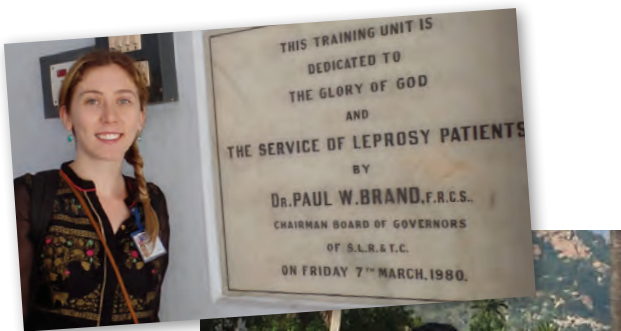
A hospital in India founded by one of Weill Cornell Medicine's first female alumni is a 'transformative' destination for today's global health students

The tale of the “three knocks in the night” has become legend in the medical community of Vellore, India, and beyond. Visiting her missionary parents in 1890 after graduating from a Massachusetts women's seminary, Ida Scudder watched helplessly as, one after another, three men sought aid for their wives, who were in mortal danger during childbirth. Scudder's physician father was willing to attend them—but their husbands, following strict religious and cultural prohibitions against women being seen by unrelated males, refused the aid. Scudder, having no medical training, could do nothing. The next morning, she was devastated to learn that all three young mothers had died.

For Scudder, those three knocks were a call from God. She abandoned her presumed path—marriage and children in the U.S.—and ultimately joined Cornell Medical College's first class, earning an MD in 1899. Returning to Vellore, she went on not only to treat thousands of patients but to found nursing and medical schools for women (which became coed in the 1940s), a thriving mobile clinic system, and a medical center and teaching hospital that has grown into one of the largest and most respected in South Asia. As one book on American missionaries notes: “In many ways, she was to India in her time what Mother Teresa was three decades later.”

Over the past 118 years, millions of patients and their families have benefitted from Scudder's legacy. But it wasn't until a decade ago that her alma mater connected with the institutions—run under the umbrella of what is now known as Christian Medical College (CMC)—that Scudder nurtured in Vellore, a city of more than a half-million people in the southeastern state of Tamil Nadu. Accepting an invitation to visit CMC in 2006, Madelon Finkel, PhD, professor of healthcare policy and research and director of the Office of Global Health Education, was struck by the tireless dedication of its staff, many of whom are CMC alumni. “I immediately fell in love with the place,” says Finkel, who now serves as secretary of the board of CMC. “There was something about it that I can't describe. It was magical. I went as a jaded New Yorker, but I came back changed.”

In addition to establishing a successful screening program for cervical cancer at CMC, Finkel has sent numerous students to do research and clinical work there. As she puts it: “I tell them, ‘I can't explain in words what you're going to experience, but you will be transformed. You'll become a more compassionate individual and a more compassionate physician. You'll see diseases that people shouldn't necessarily get or die of, but they do. You'll see things that may be upsetting—but you'll also see the dedication of physicians who literally come back after dinner every night to continue seeing patients. The city of Vellore is chaotic—there are people, traffic, and animals in the streets at the same time—yet when you enter



UNFORGETTABLE EXPERIENCES: Seen in images from their time in Vellore are (from top) Madelon Finkel, PhD (at right); Shobana Ramasamy '19; Bella Vishnevsky, MD '17; and Rachel Rosenthal, MD '17 (at left).

PHOTOS: SCUDDER, CHRISTIAN MEDICAL COLLEGE; ALL OTHERS PROVIDED



HEALTHY HAVEN:
Christian Medical
College's busy main
hospital (at left) and
family medicine clinic

the medical center, it's an oasis of calm.' "

Rising second-years have spent summers in Vellore doing public health research, while fourth-years have gone on four- to six-week clinical rotations. The latter group includes Rachel Rosenthal, MD '17, who went there during her last semester at WCM and is now a pediatrics intern in Los Angeles. "I had this idea of what a more 'developing' part of the world would be like, but the main medical center has every specialty you can imagine," she says. "It's a huge complex, and thousands of patients flow in and out every day. The volume, compared to what I was used to, was almost unfathomable." In addition to shadowing mentors in child and adolescent psychiatry at the hospital, Rosenthal spent time in the mobile clinics that treat patients in rural areas outside Vellore. "The community program was unlike anything I'd experienced—the way they were meeting patients in their homes, schools, or other gathering places to provide long-term monitoring for chronic illnesses, without placing the significant burden on patients of having to come into the hospital," says Rosenthal. "Seeing how diseases we have here—hypertension, diabetes, some childhood illnesses—are managed in different settings that have access to different levels of resources was really educational."

Like Rosenthal, Bella Vishnevsky, MD '17, was drawn to attend WCM in part because of its strong global health offerings. Now an anesthesiology intern at Duke, she has vivid memories of her time in Vellore, including making house calls in rural villages and impoverished urban neighborhoods. During her time in the main hospital's anesthesiology department, she was struck by how the physicians—well aware that their patients often pay out of pocket—were careful to prescribe the most affordable drugs. "It's great to see how you can provide amazing care while keeping in mind a cost-efficient practice model," says Vishnevsky, who also shadowed oncologists treating a high volume of patients.

When Shobana Ramasamy '19 spent a summer doing public health research as a rising second-year, her experience was distinct from that of most visiting students. With family roots in the same Indian state, she grew up speaking Tamil and could communicate

with the patients she met while shadowing physicians and conducting research into clinical measures of how morbid obesity—a skyrocketing problem in the region—impacts quality of life. "It helped them feel comfortable enough to open up to me," she says of her language fluency. "It was more than just, 'Here's a physician,' it was, 'Here's someone who can help facilitate my care.' That was a beautiful gift to have."

Since Finkel first visited Vellore, she has returned annually to continue her cervical cancer work, which she has published in the *Asia-Pacific Journal of Clinical Oncology* and presented at global health conferences worldwide. In October, WCM will—for the first time—host the annual Dr. Ida S. Scudder Humanitarian Oration, co-sponsored by the Office of Global Health Education and the CMC Vellore Foundation. (The speaker is Roger Glass, MD, PhD, associate director for international research at the NIH and director of its Fogarty International Center.) And this summer, Finkel hosted

'I had this idea of what a more "developing" part of the world would be like, but the main medical center has every specialty you can imagine,' says Rachel Rosenthal, MD '17. 'It's a huge complex, and thousands of patients flow in and out every day. The volume, compared to what I was used to, was almost unfathomable.'

a professor from CMC, Reena George, MD, who was researching the early history of medical education in Vellore. "It's wonderful that this connection could be renewed," says George, head of CMC's palliative care unit. "From an intercultural, interdisciplinary perspective, it's good when the strength and resources of two institutions in very different contexts come together to understand healthcare needs and delivery. You realize that wherever you practice, there is not just one way of doing things. Wherever we work, there are always new things to discover, as we try to blend creativity, competence, and compassion to serve our patients." ■

—Beth Saulnier

Discovery Zone

A conversation with Bridge Medicines CEO William Polvino, MD



William Polvino, MD

Last spring, veteran pharmaceutical executive and entrepreneur William Polvino, MD, was tapped as CEO of Bridge Medicines, a company established in October 2016 to further development of drugs nurtured by the Tri-Institutional Therapeutics Discovery Institute. The Tri-I TDI, as it's known, is a nonprofit that brings together Weill Cornell Medicine, Memorial Sloan Kettering Cancer Center, The Rockefeller University, and Takeda Pharmaceutical Company Ltd. to support investigations into promising therapeutics pioneered by investigators on the three campuses. Headquartered in the Belfer Research Building, Bridge Medicines is a collaborative effort by the TDI partners and two investment firms, Deerfield Management and Bay City Capital.

Polvino has more than a quarter-century of experience in pharma, having held senior positions at firms such as Merck and Wyeth and served as president and CEO of Veloxis Pharmaceuticals and Helsinn Therapeutics. An alumnus of Rutgers Medical School, he trained in internal medicine at Massachusetts General Hospital and did a fellowship in clinical pharmacology at the NIH.

It's early days for Bridge Medicines, but how is it going so far?

It's wonderful. We're extensively reviewing the portfolio of molecules that are maturing out of the Tri-I TDI and meeting a number of the promising investigators at the three institutions to develop

closer ties and let them know about the resources available at TDI and Bridge Medicines. So I spend a lot of my time walking back and forth across the street; it's only two blocks, but I know every crack in the sidewalk.

Why are enterprises like Bridge Medicines and TDI essential to today's drug-development pipeline?

Almost all drugs get their start from a discovery or invention, often in a university setting. But for many investigators, aspects of drug development are costly, time-consuming distractions from what they're best at. TDI and Bridge Medicines put the skill of a biotechnology or pharmaceutical company on the campuses of three great institutions. This enables a fast path and high level of communication between inventors—the clinicians and scientists who are brilliant at what they do—and people who have devoted their careers to navigating the drug development, regulatory, and clinical trial paths.

Could you describe how Bridge Medicines takes TDI into subsequent steps of drug development?

By the time a product leaves TDI, the molecule is essentially defined and its pharmacology has been demonstrated to be active in a relevant animal model. Bridge Medicines picks up from there; we manufacture a sufficient quantity of drug at high purity, with quality controls in place such that it can be used to open an investigational new drug (IND) application, which is filed with the FDA to enable you to do clinical studies. Our job, in short, is to move a drug from the candidate stage to the IND stage, and hopefully into early clinical trials as well. We view TDI and Bridge Medicines as a relay race, where the second runner has to be at full speed when the first one hands off the baton. Everything is on a clock defined by the patent law, which provides a fixed amount of time during which you can recover the costs of transforming an invention into a new medicine. That clock starts ticking the day you file the invention patent—even though you may be years away from a product—and it continues to run whether or not you're making progress. So if something is not moving forward, it's losing value.

How does Bridge Medicines fit into twenty-first century academic medicine? Why would bench and translational scientists want to be part of it?

Bridge Medicines is a revolution. It's something that has never existed before—a pre-fueled racecar, if you will, ready to go with the inventions as they come out of academia, and funded to do the work. I've been a CEO for two other companies and have raised several hundred million dollars in my career; it is extremely time consuming and you can't move projects forward as quickly as you



DRUG DEVELOPMENT: Researchers at work in the Tri-Institutional Therapeutics Discovery Institute (Tri-I TDI)



'Bridge Medicines is a revolution. It's something that has never existed before—a pre-fueled racecar, if you will, ready to go with the inventions as they come out of academia, and funded to do the work.'

would like, simply because there's no gas in the tank. And Bridge Medicines, by design, is extremely lean—at full capacity it will be in the neighborhood of twenty employees—with a focused mission on a finite period of the drug-development path.

What particular areas, types of drugs, or diseases will Bridge Medicines focus on, if any?

It's a broad vision, looking across therapeutic classes. Our only requirement is that because the move from TDI to Bridge Medicines is a change from a not-for-profit to a for-profit environment, we have a responsibility not only to patients but to our shareholders to develop products that ultimately return a profit.

In an era when drug costs are a major issue, can Bridge Medicines help lower prices?

Definitely. This is a collective goal of both TDI and Bridge Medicines. We are keenly focused on taking only the cream of the crop of drug candidates, keeping our staffing small and controlled, and thus managing overhead. Our goal is to move programs as rapidly as we can and ultimately launch them into new companies or as assets into existing companies. We intend to leverage our expertise to focus on the experiments and scientific steps that are most critical to deciding whether something has a probability of making it all the way.

Could you summarize Bridge Medicines' criteria for choosing promising drugs?

We have a strong team of scientific advisers who look at candidates from a perspective of: Is it possible to manufacture it? Will it be very expensive? Do the science and the clinical program look strong? And do we have a strategy to address any gaps? Some of these considerations will be purely economic; we have to balance investment versus likelihood of success. The challenge and thrill at Bridge Medicines is

that sometimes we're working in completely innovative spaces, where we have the potential to develop a drug that may be a first-in-class molecule for a target no one has approached before.

What particular strengths do the Tri-Institutions bring to this?

There's a tremendous amount of intellectual capability at all three, and I'm impressed by the spirit of collaboration among them. Oftentimes one investigator will point to another at a neighboring institution and say, "You should speak to him or her, since we're working together."

How might Bridge Medicines broaden New York City's biotech sector, to create the kind of thriving industry that exists in Boston?

That is a key focus. Ultimately Bridge Medicines should be spinning out companies over time, and we expect and hope they will help develop a much more vibrant biotechnology and pharmaceutical hub here. Plus, I'm a diehard Yankees fan, so I love a bit of competition with Boston.

You're an MD trained in internal medicine. Why did you choose a career in pharmaceuticals?

I grew up loving math and science and seriously considered a career in chemistry or biology; I pursued medicine because I loved the patients. But I found it frustrating that you'd often get to a point where you could manage symptoms, but patients weren't making much fundamental progress in terms of getting better. People ask me if I miss clinical care, and on a certain level I do—but I also see what I do as an aspect of patient care. If I can help someone discover a new drug or treatment, then I've impacted the lives of far more patients than I would ever have been able to see personally. ■

— Beth Saulnier

TRAVIS CURRY

Southern Exposure

Veteran ob/gyn Rebekah Gee, MD '02, leads Louisiana's Department of Health

Rebekah Gee, MD '02, is the top doctor in a state with some of the nation's most serious health problems. Since January 2016, Gee has led Louisiana's health department—working to improve outcomes and promote wellbeing in a state that has long been ranked at or near the bottom on such measures as obesity, infectious diseases, infant mortality, childhood poverty, smoking, and rates of cancer and heart disease. “I’ve always been drawn to places that need help,” says the ob/gyn. “Part of why I like working in Louisiana is that it has some of the greatest challenges.”

As secretary of the state's Department of Health, Gee oversees an enterprise with some 5,000 employees and an annual budget of \$14 billion at a tumultuous time for American healthcare policy. Early in Gee's tenure, she oversaw implementation of the state's Medicaid expansion, which enrolled more than 350,000 adults in its first six months. But as Congress threatens to eliminate provisions of the Affordable Care Act and the future of federal healthcare subsidies becomes increasingly uncertain, such gains run the risk of sliding backward. “My policy approach is that I'll do the best I can for the largest number of people, and reduce harm,” she says. “But in my view, healthcare is a right. This is the wealthiest country on Earth, and there's no reason why this great nation can't provide basic primary and preventive healthcare to its people. To me, it's an embarrassment that we're even debating it.”

Gee's passion for medicine stems in part from personal tragedy: when she was sixteen, she lost her mother to breast cancer. “I was fortunate to be exposed to kind, compassionate physicians who alleviated her suffering and allowed her to die with grace and dignity, and that was a powerful example,” she says. “I also knew I wanted to be in a profession where I could be of service to others—where every day, I'm definitely helping someone. And medicine is the pre-eminent example of that.” After earning an undergraduate degree in American history and an MPH from Columbia, she matriculated at Weill Cornell Medicine, where her formative experiences included conducting research as a medical student. “She was enthusiastic, hardworking, keenly intelligent, and driven to really make a difference as a doctor,” says one of her mentors, Joseph Fins, MD '86, the E. William Davis Jr., MD, Professor of Medical Ethics, under whom Gee conducted research on palliative care. “She saw medicine as not only the care of individual patients but of society. She was bright, earnest, and idealistic, but at the same time focused on how the levers of policy could be pulled to achieve what might be lofty goals.”

Gee says she garnered many of her administrative skills by osmosis, as the only child of a prominent leader in higher education.

Her father, E. Gordon Gee, JD, EdD, is currently president of West Virginia University; he previously led Brown, the University of Colorado, Vanderbilt, and Ohio State. “I grew up as a fly on the wall, watching someone who was leading a big organization in a very political role,” says Gee, a Utah native. “To some extent, that type of job is in my DNA.” When she took the post as secretary, her dad advised her “to have nerves like sewer pipes”—meaning that she should let the negative parts flow through her and not take them to heart. It's been sound advice for navigating a highly visible administrative position in a political era when civility is often in short supply. “Things become very personal; it's no longer just policy disagreements, but vicious attacks on individuals—and frankly, that's on both sides of the aisle,” says Gee, whose résumé includes serving on the U.S. Health and Human Services transition team under President Barack Obama. “But I'm running the equivalent of a Fortune 500 company that's half of our state budget, so I have to be willing to be the target.”

After a residency in ob/gyn at Harvard, Gee earned an MS in health policy research from Penn as a Robert Wood Johnson Clinical Scholar. It was during that time that another life-altering

'In my view, healthcare is a right. This is the wealthiest country on Earth, and there's no reason why this great nation can't provide basic primary and preventive healthcare to its people.'

tragedy struck her family. While riding a Vespa scooter with her husband—an endocrinologist whom she had wed just eighteen months earlier—they were struck by an SUV. Her husband died after two weeks in a coma; Gee narrowly survived, suffering eighteen broken ribs, a fractured femur, and a temporarily paralyzed left arm, among other injuries. She spent three months in a wheelchair and had to learn to walk again. “I've had multiple surgeries, I've been in an ICU and a rehab hospital, I've had home healthcare—so I certainly understand the patient experience.” Gee says. “And I'll tell you, I learned to appreciate nurses in a way that I didn't before, because when you're a patient, your nurse is your hero. It certainly informs how I think about patients and what's important to them.”

Gee met her second husband, an attorney and Louisiana native, while visiting New Orleans for a jazz festival. She eventually relocated there and took a position as director of the state's Birth Outcomes Initiative, during which she spearheaded a campaign to end elective deliveries before thirty-nine weeks of gestation—which required driving all over the state to convince often-skeptical obstetricians with her evidence-based argument about the negative



COMMUNITY CARE: Rebekah Gee, MD '02 (clockwise from top left), in her official portrait; with Louisiana State University President F. King Alexander, PhD (left), and Nicole Lurie, MD, assistant secretary for preparedness and response at the U.S. Department of Health and Human Services, being interviewed by the media during a major flood in 2016; with Louisiana Governor John Bel Edwards (right) and then-Director of Homeland Security Jeh Johnson during the same flood; and at an emergency preparedness exercise

outcomes associated with the practice. Those and other efforts ultimately led, she says, to statewide drops of more than 85 percent in early elective deliveries, of 25 percent in infant mortality, and of 10 percent in admissions to the neonatal ICU. She later served as the state's director of Medicare and Medicaid before being named secretary by Governor John Bel Edwards, a Democrat.

Now a mother of five, with three stepchildren and four-year-old twin daughters, Gee lives in New Orleans and commutes an hour and a half to the capital in Baton Rouge. She stills sees patients ("not as much as I like to, but I think it's important")—something she insisted on when taking the job. Gee notes that while she'd never be taken for a native Louisianian, she has tremendous affection for the state—and especially for New Orleans, which she describes as a

mash-up of her two favorite foreign cities, Paris and Havana. Plus, she says, her outsider status has its advantages. "Sometimes if you've grown up and lived in a system your whole life, it's more difficult to see the flaws," she says. "Not being from here, I can see the snags in the wool—I can call them out and work to change them." Fins, her medical school mentor, lauds Gee as a prime example of why he's in academic medicine, calling her precisely the sort of national healthcare leader that Weill Cornell Medicine aims to train. "Too often, policy is driven by expediency," he says. "But if you start with a conceptual frame that respects and values people, it can help point your compass to an ethical North Star—and Rebekah always had a good compass." ■

—Beth Saulnier

Concentrated EFFORT

Weill Cornell Medicine's future physicians now enjoy a rare privilege in medical school: months of protected time for original research

BY ANNE MACHALINSKI

PHOTOS BY JOHN ABBOTT

On a Tuesday in early June, just days before summer break, dozens of third-year medical students gathered in the Belfer Research Building to present findings from independent research projects they'd been working on since February. One student compared the use of palliative care in oncology in the U.S. and India; another presented findings on a promising biomarker that might allow physicians to track the progression of a pediatric brain tumor; and a third described her investigations into whether large polyps are a risk factor for metastatic colorectal cancer.

The poster session was the culmination of the first part of a six-month, dedicated research block that all Weill Cornell Medical College students now participate in during their third year. Begun in 2014, this capstone requirement is called the Areas of Concentration (AOC) program. It requires students—with the exception of MD-PhDs—to pick an area in which they'd like to gain in-depth knowledge, then complete original research related to it before graduation under the tutelage of a one-on-one mentor. “The more we can educate students in how to conduct original research,” says Anthony Brown, PhD, an associate professor of cell and developmental biology and the director of medical student research, “the more likely our graduates will be to challenge the status quo, make advances in their fields, and become better doctors.”

The AOC is the latest in a continuum of changes to the curriculum at Weill Cornell Medical College—which, like many of its peer institutions, has shifted away from a classroom-focused system for the early years of medical school. Today, medical educators generally accept that students should be exposed to clinical work as early as possible. Protected research time, a relatively new concept in medical education, is also considered a benefit for physicians-in-training. Although many schools only require a few weeks or months, often broken up by other coursework, Weill Cornell Medical College—which previously didn't require any research at all—opted to add six months. Students now do four months of research in the spring of their third year and two in the fall of their fourth, then report their work in a scholarly paper. “As a med student, I've sometimes felt like I'm memorizing all this information and just trying to retain as >





Colin Ogilvie '18 (center left) and Marta Dzyadyk '18 (center right) with mentors Harjot Kaur Singh, MD (left), and Laura Kirkman, MD

'Students look at this as a breath of fresh air in what is an otherwise very stressful curriculum,' says Anthony Brown, PhD, director of medical student research. 'They take advantage of what is essentially a giant block of unstructured time, and enjoy the process of creating knowledge.'

much as I can," says Marta Dzyadyk '18, who presented research on beneficial microbes that live in the gastrointestinal tract. "But the AOC program allowed me to ask a research question and think a little more creatively. I loved being in a basic science lab and taking ownership of my project."

Professor of Medicine Andrew Schafer, MD, who is the program's director, stresses that in no way is the AOC intended to pressure students to choose a specialty prematurely, or push them into full-time research. Instead, he says, it gives med students a chance to do what PhD candidates have been doing all along: thinking about the big picture, and creating—rather than just absorbing—knowledge. "A lot of medicine today ends up being very technical," he says, "but we want all of our graduates, including doctors going into clinical practice, to maintain a scholarly and scientific perspective in their careers." This means continuing to ask fundamental questions that might advance clinical standards; working with scientists to translate promising research into improved treatments for patients; and maintaining strong ties with a scholarly scientific community, like the one that the AOC program invites students to join. "Medical school is the perfect time to ingrain this out-of-the-box way of thinking," Schafer says, adding that the AOC also builds confidence, grounds students in the fundamentals of the research process, and strengthens their CVs, giving them a boost when they apply for fellowships and residencies.

AN EVOLVING EDUCATIONAL LANDSCAPE

Introduced in the first weeks of medical school, the AOC program starts by linking students with one of four "exploratory advisers": Brown (who works with students wanting to focus on laboratory research); Mark Pecker, MD, clinical professor of medicine (clinical research); Madelon Finkel, PhD, professor of clinical healthcare policy and research (global and public health, health policy, and population research); and Schafer, who takes students who are undecided. As students work through their foundational science classes, they periodically meet with their adviser to pinpoint their choice from a list of about fifty areas of concentration including nanomedicine, communication disorders, geriatrics, and addiction medicine. Their adviser also helps them find a faculty mentor, who will work with them on the scholarly project they propose in the fall of their third year. Brown notes that after having completed twelve months of clinical clerkships, most students are ready to slow down and think creatively—a reprieve that the research block, which begins in February, provides. "Students look at this as a breath of fresh air in what is an otherwise very stressful curriculum," he says. "They take advantage of what is essentially a giant block of unstructured time, and enjoy the process of creating knowledge."

For Sydney Ariagno '18, a Dallas native who came straight to medical school from her undergraduate studies at Washington University in St. Louis, the AOC program was a major reason she chose to attend Weill Cornell Medical College. She conducted neuropsychology research in college, studying biomarkers that turn



Vince Raikhel '18 (center) with mentors Susan Ball, MD (left), and Milagros Silva, MD

up in the blood of pediatric patients after a concussion to see how they correlate with cognitive function later on. At Weill Cornell Medical College, she decided to try basic science research, to learn new skills and see if she enjoyed the process. Schafer guided her toward cancer research; then Brown introduced her to her eventual mentor, David Lyden, MD, PhD, the Stavros S. Niarchos Professor in Pediatric Cardiology at Weill Cornell Medicine and a pediatric neuro-oncologist at Memorial Sloan Kettering Cancer Center. After learning about his work on exosomes—microparticles released by tumor cells—she knew she'd found the right fit. "Dr. Lyden's research interests are very much in line with what I was hoping to focus on," says Ariagno, who plans on going into pediatrics or pediatric oncology after graduation. "Our meeting went so well that I didn't need to consider working with anyone else."

The project Ariagno focused on during her research block—which she has extended into a full year, after which she'll return to her medical studies—is on medulloblastoma, the most common malignant pediatric brain tumor. Along with Lyden and co-mentor Praveen

Raju, MD, PhD, an assistant professor of pediatrics at Weill Cornell Medicine, Ariagno is looking at whether exosomes released by this tumor could be detected by a blood test—not only to diagnose it, but to monitor whether it has grown or spread after treatment. "This is a really collaborative project; I get to work with both of my mentors equally," says Ariagno. "Dr. Lyden's lab is focused on general cancer biology and the mechanisms of cancer progression, and Dr. Raju focuses on medulloblastoma and brain tumors. It's been illuminating to see both the broad and more narrow questions play out in the research, and consider how this lab-based work could lead to a safer, non-invasive way of diagnosing and monitoring kids with this type of tumor."

While AOC leaders say it's too early for a comprehensive assessment of the program's benefits, it seems to be paying off. This year, five third-year students, including Ariagno, received Howard Hughes Medical Institute fellowships, each providing \$32,000 to support a year of research. Two more third-years received other prestigious fellowships, one from the Sarnoff Cardiovascular Research Foundation >



Andrew Schafer, MD (left), with students Caitlin Gribbin '18 (center) and Aditi Gupta '18

'We can't take full credit for this increase,' AOC director Andrew Schafer, MD, says of the rising numbers of fellowship winners, 'but we did get students to start thinking about research early, made them aware of these opportunities, helped them with their applications, and urged them to apply. This is an early indicator of success that shows we're on to something.'

and another from the Doris Duke Charitable Foundation. In the past, only one or two students per year were likely to receive such honors, Schafer says. "We can't take full credit for this increase—but we did get students to start thinking about research early, made them aware of these opportunities, helped them with their applications, and urged them to apply," he says. "This is an early indicator of success that shows we're on to something."

SHOOTING FOR THE STARS

While many incoming students are unsure about their future specialty, Tim Donahoe '19 stands out for his singular focus: he wants to be an astronaut. Even before he matriculated, he outlined what he hoped to do in aerospace medicine and reached out to Weill Cornell Medicine's three astronaut alumni. He also identified a faculty mentor: Christopher Mason, PhD, an associate professor of physiology and biophysics who is one of the lead investigators of the NASA Twins Study, which studies how long-term space flight affects the human body (in astronaut brothers Scott and Mark Kelly) and is developing new technology for DNA diagnostics in space. After Mason eagerly took him under his wing and they brainstormed a research outline, Donahoe set up a meeting with Schafer to describe his plan. "He was a little surprised, because no student had visited him yet—and I came in with this whole plan

that I was super excited about,” says Donahoe. “But he was also extremely supportive, and within a month the school launched an aerospace medicine and space genetics area of concentration.” The summer before his third year, Donahoe spent a week shadowing an astronaut who’s also a physician at the Johnson Space Center—an experience facilitated by Ellen Baker, MD ’78, a veteran of three space missions. Now, he’s deciding whether to spend his upcoming research block studying genomic changes in astronauts during space flight or comparing zero-gravity exercise regimens—knowledge that’s meant to elucidate what would happen to the human body on a long-duration mission to Mars, for example.

While such research may seem distant from the practice of medicine on Earth, it provides practical insights for future doctors, says Eugene Carragee ’18, an aspiring anesthesiologist who also is pursuing an aerospace AOC. “Learning what happens when someone goes into space, and the compensatory mechanisms that kick in because of a micro-gravity environment, has helped me understand much better how the body works and how the organ systems interact with one another,” says Carragee ’18, who is working with Mason on the Twins Study. “I see this in-depth knowledge as a bridge between what I’ve done in this concentration and what I’ll pursue as a specialty.”

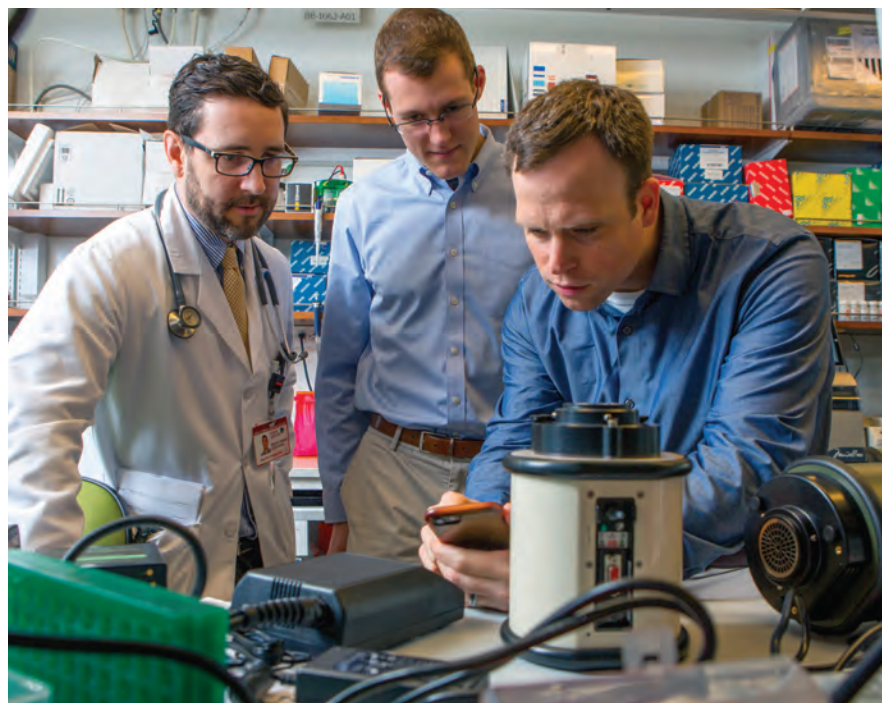
JOINING A RESEARCH COMMUNITY

When AOC leadership unveiled the program in 2014 after a long planning process, Schafer feared it would be challenging to find faculty willing to participate. But he had the opposite problem: there was a rush of volunteers. Among them was Harjot Kaur Singh, MD, an assistant professor of clinical medicine who leads the infectious diseases AOC with Laura Kirkman, MD, the William Randolph Hearst Foundation Clinical Scholar in Microbiology and Infectious Diseases. The pair welcomed six students by inviting them to participate in division meetings and to share their work at a gathering two days after the poster session. “We thought this was a great opportunity—not only for students to showcase what they’ve done, but also for the infectious diseases group to offer mentorship, support, and advice,” Singh says.

For Dzyadyk, the third-year student who studied gut microbes as part of the infectious diseases AOC, the program’s biggest benefit has been developing close relationships with her mentors at Memorial Sloan Kettering Cancer Center: Eric Pamer, MD, an infectious diseases physician, and Miriam Torchinsky, MD, PhD, a fellow. Both not only guided her through her research, but shared details about their professional paths and advised her on topics like identifying her own interests and choosing a specialty. Says Dzyadyk:

“Graduating from medical school, we’ll earn an MD—but there’s still so much more to learn about medicine, ourselves, and what we want to do in our careers.” Vince Raikhel ’18 had a similarly powerful mentorship experience—halfway around the world. After spending two months shadowing a palliative care physician in New York, he spent six weeks doing the same in Vellore, India. (For more on the Christian Medical College program in Vellore, see page 22.) From both, he learned the importance of slowing down to get to know the patient and involving families in the medical decision-making process, an experience he calls “very inspiring.”

In addition to faculty mentorship, a key part of the AOC is that students help and support each other. At biweekly meetings during the research block, groups of seven to ten students brainstorm solutions to research problems, with a faculty facilitator on hand to offer advice. Natalie Wong ’18 needed that peer input—as well as guidance from her mentor, Heather Yeo, MD, an assistant professor of surgery and the Nanette Laitman Clinical Scholar in Healthcare Policy and Research/Clinical Evaluation—when she realized that her proposed project wasn’t going to work out. Wong originally set out to study complications related to colorectal cancer screening procedures using a massive national database, but realized that the dataset was missing a lot of variables that she needed to do the correct analysis. So, working with her mentor, she shifted to another question, for which the data was more helpful: are large polyps a risk factor for metastatic colorectal cancer that has spread to the lymph nodes? Physicians working with Yeo’s group are keenly interested in the answer, which could impact clinical practice. Says Wong, who’s continuing her research this fall: “Hitting roadblocks and working through them has been an important part of my experience.” ■



Eugene Carragee ’18 (left) and Tom Donahoe ’19 with mentor Chris Mason, PhD (right)



'A Truly Extraordinary

In a conversation with *Weill Cornell Medicine*, Cornell University's new president talks about Ithaca-NYC collaborations and more

PORTRAIT BY ROBERT BARKER

Martha Pollack, PhD, Cornell's fourteenth president, took office in April; she came from the University of Michigan, where she'd served for seventeen years in several roles including dean of the School of Information and provost, a position that included overseeing the university's medical school. A native of Stamford, Connecticut, Pollack holds an undergraduate degree from Dartmouth and a doctorate in computer and information science from Penn. She and her husband, Ken Gottschlich, a jazz musician and engineer, have two grown children. Cornell's second female president, Pollack succeeds Elizabeth Garrett, who passed away in March 2016. >

University'



You have spent your first months in office on a self-described listening and learning tour of the University. What are the most important things you have learned so far, both about Cornell in general and Weill Cornell Medicine in particular?

In my first 100 days at Cornell, I have sought out as many students, faculty members, and staff as possible, on our Ithaca and New York City campuses. I've spoken with alumni living around the globe. I'm learning what matters most to our community



'ONE CORNELL': Pollack with Dean Augustine M.K. Choi, MD, at her first Weill Cornell Medicine commencement in May. Opposite page: Pollack chatting with students and faculty on the Ithaca campus (top) and getting a laboratory tour from Michael Foley, PhD, director of the Tri-Institutional Therapeutics Discovery Institute.

as I formulate my vision and priorities. These discussions have reinforced my view that Cornell is a truly extraordinary university, unrivaled in the scope and excellence of our teaching, research, and outreach.

We are distinguished by our land-grant mission of “knowledge for the public good,” and by our long-standing commitment to diversity and inclusion—Cornell has been open to women, minorities, and international students from its founding more than 150 years ago. Cornell is also the only institution that bridges upstate and downstate New York. In Ithaca, we're a close-knit community of scholars, gathered in a special place that resonates deeply with alumni. In New York City, we are linked to the world's greatest city, offering unparalleled opportunities for our students and scholars. Weill Cornell Medicine is our largest footprint in the city, with a long history of providing high-quality patient care, making biomedical discoveries that translate to new therapies, and educating exceptional doctors and scientists.

What makes Cornell unique among the Ivies?

As a member of the presidential search committee told me, Cornell is an Ivy League school with a Big Ten heart. Coming from the University of Michigan, I have found that to be a very fitting description. We stand out in higher education as the only Ivy League university with a land-grant mission. Cornell is defined by several key traits: the highest possible academic quality, a commitment to core liberal arts and professional education, and outreach and engagement for social good—values embodied by our Ithaca programs, as well as those at Weill Cornell Medicine and Cornell Tech.

Ensuring diversity was an integral part of your role as provost at Michigan. How are you applying that commitment to Cornell University?

With Ezra Cornell's founding pledge of “any person . . . any study,” Cornell has shown a deep, abiding commitment to diversity from day one. It is an extraordinary vision when you consider the social landscape of 1865, and today Cornell continues to be a national leader in establishing an inclusive campus climate.

Cornell has an active University Diversity Council, which includes two administrators from Weill Cornell Medicine and advances the university's strategic goals for faculty, student, and staff diversity. This work extends to colleges and units through a framework we developed called *Toward New Destinations*, which fosters grassroots initiatives in support of our core principles of composition, engagement, inclusion, and achievement. As president, I hope to double down on extending this legacy, fostering a climate that embraces differences and provides rich opportunities for learning from those differences.

I am also taking a strong stance on Cornell's commitment to free speech. We are a community where all voices may be heard and where the dignity of all individuals is protected. A diverse community includes everyone and is the foundation for the free exchange of ideas.

You have credited mentors in your life for cultivating you into a successful leader. How are you encouraging mentorship at Cornell, and why is it important for student and faculty development?

Like many undergraduates, I began college unsure of my career trajectory. I liked math and thought that would be my major. For an elective requirement, I took an anthropology course and loved it. I went to the professor with a crazy idea for a dual major in math and anthropology. After some



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conversation, I ultimately landed on linguistics as blending my interests in the sciences and humanities. That conversation changed my life, setting me on a path to become an academic, to work with students and do my best to inspire them, and I remain indebted to that professor, who became my undergraduate adviser.

As with many facets of Cornell, the key ingredient is our faculty. At the Merrill Presidential Scholars luncheon—when outstanding seniors honor both a faculty member and a high school teacher who influenced them—I spoke to students who credit our professors with sparking their passion for discovery and learning. And I have heard stories from countless alumni about Cornell mentors who transformed their lives. It's a thread that unites faculty across Cornell—from introductory classes in Ithaca to a Cornell Tech open studio in which students present their work to professors and industry mentors, or a WCM clinical setting—this desire to give our students a world-class education.

Your background is in computer science, particularly intelligent technology designed to help people with cognitive impairments. Given your knowledge and experience in this area, how do you think technology can contribute to improving human health?

My background includes algorithmic work on plan recognition and plan formation—how a computer or robot can form a plan to achieve certain actions. I wanted to use that work to benefit people directly, through assistive technology, and one of my projects involved working with people with serious cognitive impairment from illness or injury. We used sensor technology and AI algorithms to analyze the steps they used in carrying out a task, and that information helped us understand their executive functioning. >



PHOTOS: TOP, JASON KOSKI; BOTTOM, STUDIO BROOKE

'I am discovering an abundant interest by faculty, students, and staff in building synergies between our upstate and downstate campuses. There is a major—and growing—flow of information, people, ideas, and opportunities in both directions.'

Cornell researchers are demonstrating many other ways that technology can contribute to improving health. At Cornell Tech, students earning a Technion-Cornell dual master's in health tech are honing their technological skills and knowledge to meet the needs of the healthcare system. Also at Cornell Tech, the Small Data Lab—directed by Professor Deborah Estrin, PhD, who is also a public health professor at WCM—creates apps that use private data traces to provide insights and assist individuals with health-related decisions.

The HRH Prince Alwaleed Bin Talal Bin Abdulaziz Al-Saud Institute for Computational Biomedicine at



Weill Cornell Medicine is also doing interesting work with mathematical modeling and large-scale data analysis to deal with complex medical problems—for instance, by studying genomes and physiological systems. Many other WCM institutes are immersed in advanced technologies. And all of this work contributes to the WCM mission by enhancing the quality of patient care and the value of research.

We are hearing a lot about the importance of strengthening and expanding collaborations between Cornell's campuses. Why are these bridges, especially between Ithaca and New York City, so important for Cornell and for this moment in higher education?

This month, we will dedicate the Cornell Tech campus on Roosevelt Island. It's an exciting moment for Cornell to be at the forefront of New York City's evolving ecosystem for tech entrepreneurship. Cornell's growth on Roosevelt Island is underpinned by decades of work in New York City—primarily by

Weill Cornell Medicine, which, with its ties to New York-Presbyterian and other top-flight facilities, is part of a robust scientific corridor known for innovative clinical care and research. I expect we'll see many joint projects by WCM and Cornell Tech researchers in areas like bioinformatics and health technology. At the same time, many of our Ithaca colleges and schools offer academic and research programs in the city, and Cornell Cooperative Extension delivers knowledge to residents across the five boroughs.

I am discovering an abundant interest by faculty, students, and staff in building synergies between our upstate and downstate campuses. For example, the Hinge Project supports Ithaca-based faculty, primarily from the humanities, policy, and social sciences, who want to teach or conduct research in New York City. As vice dean focused on academic integration, Gary Koretzky, PhD, helps to foster collaborations in genetics, computational biology, and data sciences. Weill Cornell Medicine is currently expanding its rural residency program with partners in Ithaca. There is a major—and growing—flow of information, people, ideas, and opportunities in both directions.

You have spoken of the need for evidence to shape both science and public policy, and for the public to support scientific ways of evaluating evidence. How will you lead Cornell's efforts to both drive national dialogue and advocate for public policy that's grounded in evidence?

You don't have to be a scientist to recognize how important it is to use solid evidence rather than simply ideology to make decisions about public policy—or about your own individual beliefs. Cornell and other colleges and universities have an important role to play in promoting evidence-based reasoning. We do that, first of all, in the way we educate our students. Our faculty emphasize the value of critical thinking, clear written and oral communication, and reasoned, respectful debate. Cornell also disseminates knowledge beyond our campuses—through outreach programs like Cooperative Extension, by making faculty expertise available to the media, and by conducting research and publicizing research results. Our democracy depends on informed, reasoning citizens, and in an age of media overload, higher education must combat the tendency to accept unsubstantiated assertions as truth.

What do the current uncertainties around federal funding for research in science and medicine mean for the future of research and our society?



strengthen government-university partnerships if we wish to continue to advance American science, serve the public good, and educate and train the next generation of thinkers required to move our nation forward.

Cornell has dramatically expanded its global reach in recent decades on a variety of fronts, including Weill Cornell Medicine’s affiliations with medical schools and clinics worldwide. How important is this global focus for Cornell?

Through our Global Cornell Initiative, Vice Provost Laura Spitz is doing a brilliant job to coordinate efforts, develop standards, and nurture innovation in international engagement. Our undergraduates have a wealth of opportunities for global learning. In graduate and professional student education, we attract top minds from the international community. Weill Cornell Medicine–Qatar is a pioneer of medical education, improving patient care, biomedical research, and

Following World War II, the federal government began investing heavily in its research and development partnership with American universities. This enduring partnership has yielded discoveries that have improved millions of lives around the world; trained leaders in science, technology, engineering, and mathematics; and bolstered the United States economy and defense. Innovations such as the Internet, treatments for deadly chronic diseases, and deeper understandings of genetics, plant sciences, artificial intelligence, and more arose from university research.

Cornell is very much a part of that scenario—home to more than 100 interdisciplinary research organizations and programs, major research centers such as the Atkinson Center for a Sustainable Future and the Cornell Lab of Ornithology and two national research centers, the Cornell High Energy Synchrotron Source and the Cornell NanoScale Facility. Weill Cornell Medicine is a research powerhouse that attracted more than \$120 million in National Institutes of Health funding last year in support of life-saving discoveries.

Cuts to federal funding pose a significant threat to our ability to sustain this research infrastructure, harming America’s stature as a leader in technological and economic advancement. We must renew and

quality of life in the Mideast.

We also bring a global perspective to our research and outreach mission. In dozens of countries, Cornell faculty and students lead projects to improve human health, fight inequality, and develop new energy solutions. We translate these findings for the direct benefit of resource-starved developing nations, allowing families access to a better, more prosperous life. We are growing our historic partnership with China, adding research and academic programs that produce a tremendous exchange of knowledge. In India, South America, Europe, Australia, Africa—all over the map—Cornell partners with institutions on globally engaged education and research.

I predict we’re going to see our global presence continue to expand. Cornell has the smartest faculty in the world, and as with many things at Cornell, we’re going to let the faculty lead us on these new frontiers. ■

MEETING & GREETING:

Pollack (clockwise from below) at Cornell’s Employee Assembly; at the Ithaca campus’s Commencement ceremony in May; and touring a “clean room” at the Cornell NanoScale Facility in the College of Engineering.



PHOTOS: TOP, JASON KOSKI; BOTTOM, LINDSAY FRANCE/CORNELL MARKETING GROUP

NEWS OF MEDICAL
COLLEGE AND GRADUATE
SCHOOL ALUMNI



Dear Alumni,

Albert Einstein has been on my mind a lot lately. The first time he came to my attention was watching the recent National Geographic biopic on him, “Genius.” Then, a few weeks later, the newspapers carried a story about two giant black holes enveloping one another and causing the space-time continuum to wiggle like a bowl of Jell-O—something, apparently, that Einstein’s General Theory of Relativity had predicted. Lastly, I had the privilege of attending Weill Cornell Medicine’s 2017 Commencement ceremony. The ceremony was held in Carnegie Hall, and I got to mingle with deans and overseers in the green room—where, to my surprise, there was a picture of Einstein, in formal attire, among photos of famous musicians.

I don’t pretend to understand most of what Einstein derived; certainly, the mathematics is well beyond me. But at college, I spent some time thinking about his theories and how he came to them. I explored his concept of the “thought experiment” and his oft-quoted remarks that imagination is more important than formal education. And of course, I tried to wrap my head around concepts like time stopping or a person shrinking as you approach the speed of light. Even harder for me was the notion that space and time are linked—that there is an arbitrary “arrow” propelling our concept of time in one linear direction, and that concept is convenient but very likely flawed. But what I tried most to wrap my head around was his grand and bold attempt to have a unified theory that explained all of Newtonian and atomic physics, as well as electromagnetism and gravity. This man thought big, and he remains a giant in my mind.

So what a nice surprise to see him benignly looking at me from the wall of the green room in Carnegie Hall. It brought to mind my own long-past youth, thoughts about his greatness and grand scale, and the potential of the young people about to come on the stage.

The ceremony was genuinely inspiring. The graduates were diverse in gender, ethnicity, and aspiration, which demonstrated how far the Medical College has come with respect to being representative of our society. And the ceremony was held the day after the Medical College bestowed the Alumni Award of Distinction on a graduate from 1973—making me wonder which of our new graduates crossing the stage will be an awardee some forty years from now.

Commencement day was a beautiful late spring gift: sunny, warm, and clear, with New Yorkers dressing for the weather. I took the occasion to walk from my hotel to Carnegie Hall to enjoy the weather and the excitement that is New York. And on the way I thought about the challenges the Medical College has in preparing these young people for the next fifty years of their professional lives.

Intoxicated by the weather and walk, what a timely surprise it was to see Einstein in tails on the wall backstage. A thought of his that has always stuck with me from my undergraduate days reverberated in my head as I walked out with the faculty to the stage: “There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle.”

I invite you to contact me regarding your thoughts about the Alumni Association and its mission.

Stuart Mushlin, MD '73
President, Weill Cornell Medical College Alumni Association
stuartmushlin@icloud.com



'DO NO HARM': MD graduates take the Hippocratic Oath at 2017 Commencement.

1950s

Bernie Siegel, MD '57: "I think there should be a course on spirituality and religion as part of the curriculum, to prepare us for caring for people with various perspectives about god, religion, guilt, shame, and blame. and also to understand why god made the world the way it is, with disease and difficulties of all sorts."

Michael Stone '54, MD '58: "I received a prize for the best paper of 2016, "treatment of Borderline Patients from the contextual Perspective," in the journal *Psychodynamic Psychiatry*. Recently, I finished an epilogue for the paperback edition of my book *The Anatomy of Evil*, which will be coming out soon. I'll be giving lectures about serial killers and mass murderers in Buenos Aires in September. My wife and I are patrons of the Metropolitan Opera and attended the gala for the Met's 50th anniversary."

Gordon Douglas, MD '59: "Three years ago my wife, Sheila, and I, together with several Princeton faculty members, started a program called Princeton Studies Food to bring together faculty, post-docs, graduate

and undergraduate students, and alumni to stimulate interest and focus on this critical issue, and eventually to create a vibrant research and educational program. Through annual conferences, undergraduate courses, and smaller discussion groups, we address how to feed a growing population while reducing greenhouse gas emissions, reducing fresh water use and pollution of fresh and salt water, protecting biodiversity, improving our health, eliminating suffering of animals, and maintaining jobs in the developing world."

1960s

Ronald Rankin, MD '68: "I am finally retiring from the practice of radiology. My wife of 50 years and I will be moving to Coeur d'Alene, ID, in the autumn after selling our ranch in Utah. I have loved radiology and seen massive changes in my 45 years of practice. I met my wife at Weill Cornell Medicine, where she worked in the microbiology department; we were introduced by a classmate, **Bob Koehler, MD '68**. By sheer coincidence, both he and another classmate, **Bob Herwick**

'I am finally retiring from the practice of radiology. My wife of 50 years and I will be moving to Coeur d'Alene, ID, in the autumn after selling our ranch in Utah. I have loved radiology and seen massive changes in my 45 years of practice.'

— Ronald Rankin, MD '68



GOWNED UP: Cornell President Martha Pollack, PhD (left), greets Ricardo Ramirez, PhD '17, and his toddler, who's dressed for the occasion.

'64, MD '68, and I all went to the same high school in New Jersey and ended up at the same medical school. Bob Koehler was my best man."

Alan Lockwood '65, MD '69, is emeritus professor of neurology and nuclear medicine in the Jacobs School of Medicine and Biomedical Sciences at the University of Buffalo and a senior scientist at Physicians for Social Responsibility. His latest book, *Heat Advisory: Protecting Health on a Warming Planet*, will be released in August from MIT Press. It details the symptoms of climate change and their medical side effects, shows how climate change is affecting global ecosystems, and describes the increased risk for certain infectious diseases including malaria, dengue fever, West Nile, and Lyme.

1970s

Eric Thomas, MD '70: "I am really pleased and somewhat surprised that I expanded my practice at this point in my career by adding mid-level providers. New adventures—new procedures—rejuvenation! Best wishes to all."

Richard Lynn, MD '71: "Just returned from a most nostalgic and memorable evening at Olin Hall on May 11. I had the honor of being invited by Dean Choi to speak at the annual salute to scholarship night, as an alum and a member of the Alumni Association Board. This was to faculty, donors, students, and guests in the gym of Olin Hall. Before the talk, Margrit and I went to see my freshman dorm room, #303. It is now an office, but it was open and the person asked if I wanted to see the room. It was exactly the same (minus the bed and our desk). The adjoining bathroom was literally unchanged from 1967. I had the privilege of introducing this year's Hockstein Award recipient, **Ranjodh Singh, MD '17.** Dr. Singh graduated from the University of Pittsburgh Honors College with both his BS in neuroscience and his BPhil in history and philosophy of science. He is an investigator in several research projects in Weill Cornell Medicine's Department of Ophthalmology. After completing an internship year at Montefiore, he will pursue an ophthalmology residency at Wills Eye Hospital in Philadelphia. In the audience that night was Harvey Klein, MD, chief resident in medicine 1969–70 [and

now the William S. Paley Professor of Clinical Medicine at Weill Cornell Medicine], **Jack Richards, MD '53** (a tutor and attending for us), **Stanley Birnbaum, MD '55** (ob/gyn), and **Kathy Foley, MD '69** (neurology), among other donors and faculty and students. It was very nostalgic for me, especially to represent our class."

Lawrence Ehrlich, MD '72: "After practicing ophthalmology for nearly 40 years, the last 18 in Rhode Island, I have retired. My wife, Diana, and I have moved to Florida, in the Sarasota area. We are enjoying the community and making new friends. Last year I took up golf for the first time. I'm a real duffer, but I'm having a great time. I have two daughters, both with successful careers in NYC. All in all, I have had a wonderful medical career and now a wonderful retirement. My best wishes to all our classmates."

Gerard LaSalle, MD '73, a physician, sculptor, filmmaker, and author, has received an option from Heyou Media—a new media company founded by actor and filmmaker Tom Skerritt—on his novel *Widow Walk*. The first in a five-book historical saga, *Widow Walk* is an award-winning story of a frontier family set in the tumultuous early days of the Pacific Northwest, when American settlers, indigenous peoples, and American and British armies vied for supremacy.

Stuart Mushlin, MD '73, is partially retired, now just teaching house staff at Brigham and Women's Hospital, where he is the master clinician in internal medicine and Primary Care. His book *Playing the Ponies and Other Medical Mysteries Solved*, which recounts cases and lessons from 40 years of practicing internal medicine, was released in March 2017.

John Quatromoni, MD '73: "My eldest son, Sam, is an attorney in Manhattan. My middle son, Jon, is completing his third year of vascular surgery training at Penn. My youngest, Ben, is a professional sailor who recently won the St. Petersburg, FL, to Havana, Cuba, Regatta."

Vincent de Luise, MD '77: "I have retired from the clinical practice of ophthalmology. I still teach at Yale, at the Music and Medicine Initiative at Weill Cornell Medicine,

and at the American Academy of Ophthalmology, and am developing a rubric of humanities education for health professionals."

Tom Hopp, PhD '77: "I am currently the president of the Northwest Chapter of the Mystery Writers of America, the nation's pre-eminent mystery writers' organization. The MWa presents the Edgar Awards for outstanding mystery fiction each year. I write medical mysteries and thrillers. Two of my most recent novels are *The Smallpox Incident* and *Rainier Erupts!* After decades in the biotechnology industry, I presently act as a consultant on several protein chemistry projects."

Connie Baum Newman, MD '78, has been recognized by the Endocrine Society for her leadership and commitment to the organization. She has chaired the Special Programs Committee and developed several medical education programs. Selected to chair the Endocrine Society Clinical Practice Guidelines on the Management of Cholesterol, she will continue to be active in the organization.

Nina Ramirez, MD '78: "I hope this note finds the class of 1978 in good health. I continue my life as a consultant in allergy-immunology for adults and children and in pediatric pulmonology. I am fortunate to have reached a time in my career to be using life-changing targeted biologic therapies for those suffering from severe asthma and atopic dermatitis. It is gratifying to help people breathe better and stop itching. I am program director for the 2017 Residents' Forum at our annual Allergy Society Conference and am looking forward to delivering one of the lectures. This year I will become president-elect of the Florida Allergy Asthma and Immunology Society; my reign of terror as president starts in 2018. I have been blessed beyond measure and just returned from a medical mission trip (my fifth) to the Dominican Republic with a large group of volunteer doctors, dentists, residents, and medical students serving the underserved. Thanks to my education at Weill Cornell Medicine, I can without reservation say that life is grand."

'I have been blessed beyond measure and just returned from a medical mission trip (my fifth) to the Dominican Republic with a large group of volunteer doctors, dentists, residents, and medical students serving the underserved.'

— Nina Ramirez, MD '78

1980s

Carolyn Heyward Grosvenor, MD

'80: "i will be going on a medical mission trip to ghana in July with global health outreach, the short-term missionary arm of the christian medical & Dental association. i've been to ecuador, honduras, and nicaragua, and four times to haiti. the trip to ghana will be my first to africa. i also started volunteering at our local Rescue mission Free medical clinic. i'm thinking about retiring in three years and relocating to the carolinas. i've had enough of upstate new York snow."

William Hahne, MD '83: "i've owed Weill cornell medicine an update for quite a while now. i have been in the pharmaceutical industry since 1986, having left a surgery program at emory after three years due to chronic hepatitis B. i was treated in 1986 with an experimental agent that made me a quadriplegic (but ultimately cured the hepatitis!). i recovered over several years and unexpectedly recovered the ability to walk with braces and returned to work at glaxo in 1987. my first project there was an investigational new drug for a compound now known as Zofran (ondansetron). i worked

in positions of increasing responsibility at merrell Dow (then marion merrell Dow, then hoechst marion Roussel) before leaving to become vice president of clinical research and then vice president of R&D at eisai inc. there i was responsible for updates to a receipt and the approval of a ciphex. i worked at other companies and have garnered experience in clinical oncology and immunotherapy, and worked on clinical development programs for targeted therapy and immunotherapy as a consultant at celgene, Lion Biotechnologies, and seattle genetics. i'm currently vice president of clinical research at Bio-Path holdings, an mD anderson spinoff. i have three adult children, all graduated from college. i currently reside in Portland, OR, with my wife (re-met after many years having been an item in college) and welcome contacts on LinkedIn."

Marshall Partington, MD '83: "i'm having fun balancing my seattle aesthetic plastic surgery practice with setting up a hand surgery training program in nepal, teaching mindfulness meditation to house staff, and singing in the threshold choir at our hospice. i believe the best antidote to pervasive physician burnout is to find meaningful work through and beyond our sacred careers. i would love to collaborate with colleagues on strategies to best heal ourselves."

Christopher Gribbin, MD '84, was named the 225th president of the medical society of new Jersey at its annual meeting in may; he has served as a member of its board of trustees since 2010. he practices diagnostic and interventional radiology at Robert Wood Johnson hospital and saint Peter's university hospital, where he has taught medical students, residents, and fellows for more than 25 years. he is clinical associate professor of radiology and chair of the clinical competency committee for the interventional radiology fellowship at Rutgers Robert Wood Johnson medical school. in addition, he is co-chief of interventional radiology and co-founder of the Pediatric multidisciplinary Vascular clinic at saint Peter's university hospital.

David Haughton, MD '84: "i will be

PROUD DAUGHTERS: Esther Chung, MD '17, and her two girls celebrate Commencement.



leaving all work in medicine (pediatric emergency medicine and the politics of medicine) as of October 29, 2017, finally fulfilling my life plan of becoming a full-time artist. I will be having two shows of my work this year, both at the Visual Space gallery in Vancouver, Bc. The first, which opened May 11, was 'Bad guys ii: an exploration of the Face of evil.' The second, in September 2017, will be '40 Views of Mount Baker: homage to Hokusai.' or you can view the paintings at www.haughton-art.ca."

Susan Hirsch, MD '84, and Bruce Hirsch, MD '82, celebrated their 35th wedding anniversary on safari in South Africa—"truly a magical experience." Son Eric, 29, will be starting as a professor of anthropology at Franklin and Marshall College; Zach, 26, continues as a reporter for North Country Public Radio in Plattsburgh, NY; Jake, 21, is a senior at Columbia University.

Lisa Lavine Nagy, MD '86, reports that the Environmental Health Center of Martha's Vineyard, where she practices, will be featured on the PBS program "White House Chronicle" and in an upcoming documentary on chronic illness.

Levon Nazarian, MD '86, is the 2017 recipient of the American Institute of Ultrasound in Medicine's Joseph H. Holmes Clinical Pioneer Award, which honors individuals who have made significant contributions to the growth and development of medical ultrasound.

Theresa Rohr-Kirchgraber, MD '88, was given a 2017 Trustee Teaching Award, established by the Indiana University Board of Trustees to recognize outstanding teaching and to emphasize the primacy of learning and of learners in the medical school. She was also awarded first place at the Academy of Women's Health Congress on Women's Health in April 2017 for her research poster, "Save a Life: Emotional Distress and Physician Suicidality, the Impact of Credentialing." She is active in Women4Change Indiana and will serve as an ambassador for the group. Rohr-Kirchgraber is chair of the Governance Committee and a member of the Annual Meeting Committee for the American Medical



DR. SELFIE: Cindy Parra, MD '17, captures the moment with Emilie Williamson, MD '17 (center), and Carlene Bryan-Alexis, assistant registrar.

Women's Association and looks forward to the 2018 meeting in Philadelphia. She has recently become the North American representative to the Medical Women's International Association (mWIA) and will play a key role in its 100th anniversary meeting, to be held in New York City in March 2019.

1990s

Christine Frissora '85, BA '86, MD '90: "my son, Scott Rodeo Jr., Cornell Arts & Sciences '18, is captain of the Cornell triathlon club. He placed third in the West Point triathlon 2017 and is preparing for his first Iron Man in Toronto. Sarah Rodeo, Vassar '17, will be attending the Yale School of Divinity and Institute of Sacred Music. I am still here at Weill Cornell doing colonoscopies. I have always been an avid reader. A few years ago, I was struck by Ernest Hemingway's biography and read a book about how he wrote. He cut words, sliced everything down to the most bare meaning. Chose the single best word. The fewest words. Last year I took a course at Juilliard, 'Poetry and Performance.' At the time, I was going through a tennis

'I'm having fun balancing my Seattle aesthetic plastic surgery practice with setting up a hand surgery training program in Nepal, teaching mindfulness meditation to house staff, and singing in the Threshold Choir at our hospice. I believe the best antidote to pervasive physician burnout is to find meaningful work through and beyond our sacred careers.'

— Marshall Partington, MD '83



CONGRATULATIONS ARE IN ORDER: As family and friends cheer from the balcony, the Class of 2017 files into Carnegie Hall.

tournament—a novice—but my partner was strong and if i kept the ball in play we got the point. still, i was fraught with anxiety, being the weaker player. i started writing poems full of imagery: slice the ball, cut the ball, close the point. choose the best shot, the same way hemingway chose the best words and cut the unnecessary. all of this is described in my book, *Beyond Onomatopoeia*."

Daniel Jones '86, MD '90, is president of the society of american gastrointestinal and endoscopic surgeons, whose 6,000 members are focused on minimally invasive surgery.

Harland L. Cook Jr., PAC '98, a certified physician assistant, was recently awarded a certificate of added Qualifications in cardiovascular and thoracic surgery from the national commission on certification of Physician Assistants, a distinction earned by meeting licensure, education, and experience requirements and passing a national exam. he is employed at columbia st. mary's hospital and the medical college of Wisconsin, both in milwaukee.

2000s / 2010s

C. Anthony Lim, MD '05: "i recently transitioned from my faculty position in pediatric emergency medicine at Jacobi medical center to the director of pediatric emergency medicine and the short-stay unit at mount sinai Beth israel hospital."

Virginia Pedicord, PhD '10, recently accepted a grant from the Wellcome trust and a faculty position at the university of cambridge and the sanger institute. she welcomes visitors anytime to cambridge, uK.

Daniel Agarwal, MD '13: "i finished my ophthalmology residency this June from the university of arizona. i am pursuing a medical retina fellowship at cleveland clinic's cole eye institute starting in July."

Fahad Pervez, MD '14, chief resident at scott air Force Base family medicine program, will be stationed at Doverafb starting in august 2017. he and his wife have a beautiful 2-year-old son, and they are expecting a daughter this summer to join them as they move back to the northeast.

#WeAreWCM

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We want to hear from you!

Keep in touch with your classmates.

Send your news to Chris Furst:
cf33@cornell.edu

or by mail:
Weill Cornell Medicine
401 East State Street
Suite 301
Ithaca, NY 14850



ALUMNI

'45 MD—Forrest C. Eggleston of mechanicsburg, Pa., november 7, 2016; professor of thoracic surgery, head of the Department of surgery, and director of christian medical college in l udhiana, india; trained more than 100 surgeons; after retirement, created foundations for aIDs treatment; veteran; avid fly fisherman; tennis player.

'47 MD—Thomas W. Caldronney of newport news, Va., January 30, 2017; pediatrician; partner in children's clinic; assistant clinical professor of pediatrics at the medical college of Virginia; opened a cerebral palsy clinic; veteran; traveler; sports fan; golfer; active in professional affairs.

'47 MD—Charles LeMaistre of houston, t X, January 28, 2017; associate dean and professor of medicine, university of texas southwestern medical school; professor of behavioral science and second president of the university of texas mD anderson cancer center; chancellor, university of texas system; first chair, nasa-nih advisory committee on Biomedical and Behavioral Research; senior attending staff member, Parkland memorial hospital; medical director, chest Division at Woodlawn hospital; member of the advisory committee on smoking and health; former professor of preventive and community health medicine, emory university school of medicine; former senior assistant surgeon, us Public health service; former assistant professor of medicine, Weill cornell medicine; veteran; author; active in community, professional, and alumni affairs.

'47 MD—Fletcher H. McDowell of new York city, april 23, 2017; pioneering neurologist; Winifred masterson Burke Professor of Rehabilitative medicine and associate dean at Weill cornell medicine; founder of the american society of neurologic Rehabilitation; established the Burke medical Research institute; ceo and medical director, Burke

Rehabilitation hospital; worked with mit to develop interactive robots to aid in therapy; former physician-in-charge of the cornell neurological service at Bellevue hospital; veteran; author; member of the national stroke association and united cerebral Palsy Research; active in professional affairs.

'49 BA, '52 MD—William L. Craver of canandaigua, nY, February 1, 2017; retired thoracic surgeon; former chief of medicine, genesee hospital; retired colonel, us army Reserve; enjoyed golf and baseball; avid new York Yankees fan.

'48 BA, '52 MD—Ralph B. Moore Jr. of Wilmington, n c, november 23, 2016; pediatrician. Phi Delta theta.

'54 MD—Richard Bigelow of salt lake city, ut, october 30, 2015; internal medicine physician; veteran; pianist; organist; supported the utah symphony and other local musical organizations; painted in the style of Jackson Pollock.

'55 MD—Ronald S. Romig of Pinehurst, n c, January 25, 2017; general surgeon; staff member of Reading hospital and medical center; veteran; outdoorsman; fly fisherman; traveler; active in professional affairs.

'57 MD—William C. Black of hackensack, nJ, april 25, 2017; internist and nephrologist; served 45 years at hackensack university medical center (formerly hackensack hospital) in various leadership positions, including chief of the Renal hypertension Division, where he established and supervised Bergen county's first renal dialysis unit; chair of the Department of medical education, chair of the Department of Research, and senior vice president of medical administrative affairs; instrumental in establishing and co-chairing a nationally recognized annual pediatric conference now in its 35th year; instructor in medicine, tulane university medical school; clinical associate professor of medicine, new Jersey college of medicine and Dentistry; president of the

nephrology society of new Jersey; consultant to the committee on medical education of the medical society of new Jersey; active in his church community; lover of opera, mystery novels, travel magazines, and—most of all—his family. alpha Zeta.

'65 MD—Betty Ann Ward of guilford, ct, september 30, 2016; emergency medicine physician at middlesex memorial hospital's shoreline campus; trained in cardiothoracic surgery; knitter; traveler; active in community and professional affairs.

'98 BA, '04 MD—Daniel T. McMennamin of new York city, march 16, 2017; clinical instructor in psychiatry at nYu and an attending psychiatrist at lenox hill hospital; specialist in adult psychiatry, psychopharmacology, and addiction psychiatry; struggled with metastatic uveal melanoma. samples of his disease were donated for scientific study at msKcc to support research that may one day yield a cure. Per his request, a visiting lectureship in his name has been endowed at Weill cornell medicine.

FACULTY

Murray Dworetzky, MD, of new York city, may 20, 2017; allergist and immunologist; clinical emeritus professor of medicine, Weill cornell medicine; director of Wcm's training program in the Division of Allergy and immunology from 1961 to 1968; physician-in-charge, new York hospital allergy clinic; researcher; published more than 40 scientific papers; former president of the american academy of Allergy, asthma and immunology and recipient of its Distinguished service and special achievement awards. his last published piece, a 2008 letter to *JAMA* about his observations of failed smallpox inoculations during his time as a us army doctor, led the journal to dedicate its issue to the disease and its prevention.

We Are WCM

Iranian-born stem cell biologist Faranak Fattahi, PhD '17—honored as the Graduate School's student Commencement speaker last spring—landed a coveted fellowship at UCSF, where she already runs her own lab



#WeAreWCM

“I grew up, went to college, and got a master’s degree in Iran, where I was exposed to stem cell research—the concept that these cells have the ability to give rise to almost every cell type in the body—and I realized how powerful it can be in disease studies and regenerative medicine. But because of sanctions, access to reagents and other research tools is very limited in Iran, so I decided to pursue my PhD in the U.S., where the majority of pioneering work has been done. I picked Weill Cornell Medicine in particular because of the collaborative, vibrant community it has with Sloan Kettering and Rockefeller, which would give me great opportunities to pursue my research.

“My work at UCSF is focused on using stem cells to study diseases of the peripheral nervous system, the network of nerve cells that interact with every organ in the body and regulate many processes. I’m concentrating on the system that innervates the gastrointestinal tract; it’s complex and we know very little about it, especially in humans. My goal is to use stem cells to understand the mechanisms of diseases such as gastroparesis, in which nerve cells in the stomach degenerate; patients can’t eat or digest properly, and it’s very painful, but current

treatments are not very effective.

“Due to the challenges of doing research in Iran, I had to plan my experiments far in advance. But that training taught me how to think, and it has saved me a lot of time—especially since, working with stem cells, you tend to do long-term experiments, and if you do something wrong it could set you back months.

“Here in the U.S., I get a lot of questions about Iranian culture; people are curious about it, which is great. Because of the way it is portrayed in the media, many people are surprised that women in Iran have access to so many opportunities in the sciences. In fact, in colleges in Iran, women are pursuing biological subjects in disproportionate numbers.

“I do feel pressure that as an immigrant I’m representing a larger community. I think that’s something that every person who is a minority has to deal with, but I’ve never thought of that as a negative thing. I get to dispel people’s misconceptions, to open their eyes to things they didn’t think about, and I think of that as a privilege. Diversity in general is a good thing; it helps you solve problems, because it brings together people who have different ways of thinking.” ■

ABBOTT



Furthering Research Through Charitable Giving

JOHN ABBOTT

Peter Pressman, MD, and his wife, Peggy, share a long history with Weill Cornell Medicine. For more than 35 years, they collaborated in his medical practice, offering breast cancer patients the most advanced surgical treatments available to manage the disease. In 2013, a generous donor helped establish a professorship in Peter Pressman's name. The couple, who contributed funding for the professorship, recently expanded their support of Weill Cornell Medicine with two separate charitable gift annuities totaling \$200,000.

“ Gift annuities allow us to contribute now and, in return, receive fixed regular payments that help bolster our retirement income,” says Peter Pressman, a retired breast surgeon. “Philanthropy is a personal choice, but assuring excellence in patient care and research has always been a priority for us. ”

The Peter I. Pressman, MD, Professorship of Surgery was awarded in 2014 to Todd Evans, PhD, vice chair for research and chief of the Division of Research in the Department of Surgery.

“Through research, we will continue to improve the lives of patients,” says Peter Pressman. “And through charitable giving, we can all support the important work being done at Weill Cornell Medicine.”

By creating a legacy gift to benefit Weill Cornell—which relies on charitable gifts, large and small—the Pressmans hope to set an example for others who would like to make a difference.

“Anyone can be a philanthropist,” says Peter Pressman. “There are many creative ways that make it easy to give.”

Gift Annuity Rates* for one person

Age	Rate
90+	9.0%
85	7.8%
80	6.8%
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70	5.1%
65	4.7%
60	4.4%

*Rates as of July 2017, for one person. Rates for two people are also available. Please contact us for more information. Minimum gift is \$10,000.

For more information, please contact our planned giving specialists at (646) 962-9567 or at plannedgiving@med.cornell.edu.

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