

A woman with dark hair, wearing a camouflage-patterned cap and a short-sleeved shirt with vertical stripes in red, blue, green, and white, is clapping her hands. She is smiling and looking to her right. The background is a blurred outdoor setting with green foliage and a building.

# weillcornellmedicine

VOLUME 16, NUMBER 4

## Bright Futures

In Haiti, the WCM-affiliated GHESKIO clinic has revolutionized HIV treatment, prevention, and education in the developing world



# Alumni Welcome New Students to Campus

On August 17, the Weill Cornell Medical College Alumni Association hosted its fourth annual Welcome Reception for the Class of 2021 during new-student orientation week. The event introduced the next generation of Weill Cornell Medicine physicians to the alumni network and welcomed them to campus. New students had the opportunity to engage with alumni and faculty from graduating classes dating back to 1964.

Dr. Natasha Leibel, MD '98, vice president of the Alumni Association, gave a warm welcome to the first-year medical students. She shared the Alumni Association's history, highlighting the many ways in which the association engages and supports the institution and its students.

## Join us for our next event!

To get involved with the Alumni Association, please visit our website at [alumni.weill.cornell.edu/programs-events](http://alumni.weill.cornell.edu/programs-events) or contact Clara Sharp, Director of Alumni Strategy and Engagement at (646) 962-9484 or [clc2016@med.cornell.edu](mailto:clc2016@med.cornell.edu).



THE MAGAZINE OF  
WEILL CORNELL MEDICINE

VOLUME 16, NUMBER 4



## FEATURES

### 26 A 'LAZARUS EFFECT': REVOLUTIONIZING HIV/AIDS CARE IN HAITI

HEATHER SALERNO

Years ago, when many of the longtime patients at the Weill Cornell Medicine-affiliated GHESKIO clinic in Haiti were first diagnosed with HIV/AIDS, doctors expected them to die within twelve months due to a lack of available drugs in that impoverished country. But in 2003, the clinic obtained funding to start a free treatment program for the disease—and over the next year, more than 1,000 people became among the first in any developing nation to receive lifesaving anti-retroviral therapy. The program has proved highly successful: a study in the *New England Journal of Medicine* has reported that more than two-thirds of those patients were still alive a decade later. Says GHESKIO director Jean Pape, MD '75, the Holtzmann Professor of Clinical Medicine: "These people have gone from certain death to actually leading a fairly normal life."

### 34 DIGITAL ED: MED STUDENTS EMBRACE EDUCATIONAL TECHNOLOGY

AMY CRAWFORD

From the classroom to the clinic to the anatomy lab, technology is playing an increasingly important role in medical education. Online teaching modules enable students to digest information in advance of a lecture—the so-called "flipped classroom"—and facilities like surgery's Skills Acquisition & Innovation Laboratory (SAIL) and the Margaret and Ian Smith Clinical Skills Center offer simulators and other equipment to enhance learning. As faculty note, such new tech appeals to the millennial generation, those digital natives who always seem to have a smartphone in hand. "This new breed of students," says Yoon Kang, MD, the Richard P. Cohen, MD, Associate Professor of Medical Education, "clearly expects things to be technology-based."

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Cover photos by Bahare Khodabande

Published by the Office of External Affairs

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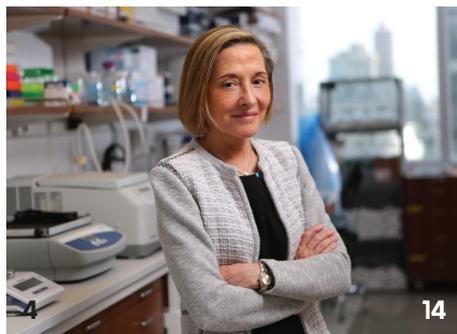
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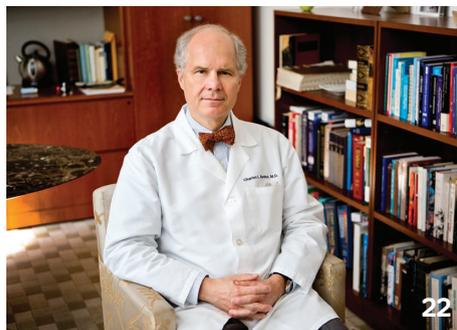


**Weill  
Cornell  
Medicine**

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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**

## An Exciting Time and Place

**W**hen I joined Weill Cornell Medicine in 2013 as head of the Weill Department of Medicine, I was drawn to this outstanding institution's energy, growth, and vision for the future. I saw that while opportunities were shrinking at many academic medical centers in the face of declining federal funding and decreasing paylines for grants, the opposite was happening here. It was—and still is—an exciting place to be.

After I officially assumed the role of dean in January, I made it my mission to propel Weill Cornell Medicine ever forward—to help the institution continue to pursue innovative approaches to medicine and reinforce the promising initiatives that preceded me. This has meant making changes big and small in how we educate our students; pushing to further integrate diversity into all aspects of our work; and finding new ways to positively influence health and medicine around the globe.

The most obvious change in our new curriculum, launched in 2014, is a condensed pre-clinical studies period of eighteen months and an added six months of protected research time. This change reinforces the role of science in clinical practice and, we hope, will instill in our future doctors the drive to think creatively over the course of their careers. But as you'll see in our story on using new technology to facilitate learning, we've made some other changes that—while more subtle—are already generating enthusiasm among our students and reinvigorating faculty pedagogy. For example, in some courses we've introduced the so-called "flipped classroom," in which time that would be spent on the fundamentals of

a concept is freed up for other activities, such as speaking with patients who have the disease students are studying. In other courses, faculty now dedicate time to delve deeper into medical topics from a strong humanitarian orientation. All of these changes encourage thoughtful, well-rounded future physicians who will approach medicine more holistically. Equally exciting, these approaches encourage self-reflection, so doctors instinctively view themselves and their patients with greater awareness and understanding. This enhanced understanding of themselves and their patients will, we hope, reduce our students' risk of burning out as they advance in their careers.

Another area in which our curriculum, as well as our research and clinical missions, is becoming more deliberate is engagement with diversity. We all know that doctors offer the best care when they are able to empathize with their patients, whether or not they share similar backgrounds or life experiences. A student-run class, described in this issue, addresses this need by exposing participants to members of medically underserved minority groups. As students gain knowledge and awareness of diverse populations, we expect their future patients to experience improved physician encounters.

This will bring more underserved communities into the healthcare system and keep them there as these relationships grow.

As we're training physicians to understand the diverse roster of patients that they'll treat, we're also actively recruiting a diverse body of students and faculty. A multicultural student body and workforce allows us to bring together the best minds in the world to solve problems and make discoveries that wouldn't be possible without unconventional ideas born of diverse experiences. These perspectives include new ways of approaching problems, and they are exciting. Our Gale and Ira Drukier Institute for Children's Health—with newly arrived Drukier Director Virginia Pascual, MD, recruited as the Ronay Menschel Professor of Pediatrics—is dedicated to the study of disease in pediatric patients. These patients are best served by treatments based on how illness develops in children their own age, rather than by protocols adapted from research on adults. While approaches like these benefit our patients here in New York, they also have a positive impact on the larger community.

Weill Cornell Medicine has long had a global focus. Through our location in Qatar, we have trained more than 300 doctors; many have done residencies in the U.S. and returned to their homelands in the Gulf, becoming faculty members at Weill Cornell Medicine-Qatar and raising the quality of care in the region. As an institution

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**After I officially assumed the role of dean, I made it my mission to propel Weill Cornell Medicine ever forward.**

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of higher learning, we are uniquely positioned to use our resources not only to improve the health of people abroad, but to create meaningful partnerships in which doctors enhance their knowledge and skills and stay in their communities to foster positive change. There are numerous examples of our collaborations with physicians in Eastern Europe, Southern Africa, and Haiti reaping such successes. As you will read in our cover story, a collaboration between our Center for Global Health, Haiti's Ministry of Health, and the nonprofit GHESKIO clinic has offered free HIV/AIDS care since 2003. Today, Haitians who previously had no access to antiretroviral drugs—and would likely have died in about twelve months—live relatively normal lives. But there's more work to be done, on HIV and other diseases there and elsewhere, and we are now exploring projects in China that would extend our impact to Asia.

Of course, it is essential to advance new approaches here at home. Our new neighbor, Cornell Tech, has just opened across the East River. I fully expect the work there, in collaboration with Weill Cornell Medicine and our partner NewYork-Presbyterian, will prove exceptional, as together we leverage the most exciting discoveries in technology to improve the lives of New Yorkers—and all of us. ■

# Ruben Family Gift Establishes Science to Industry Bridge Fund



With a new gift of \$5 million, Lenore Ruben, Weill Cornell Medicine Overseer Richard Ruben and wife Amy Ruben, and Shelly and Dr. Howard Kivell have established the Selma and Lawrence Ruben Science to Industry Bridge Fund. The fund honors the late Selma and Lawrence Ruben, parents of siblings Lenore, Richard, and Shelly.

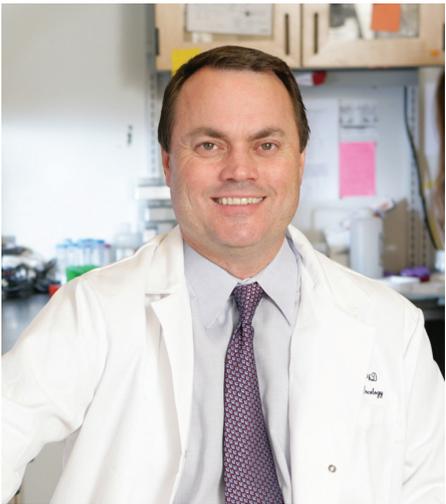
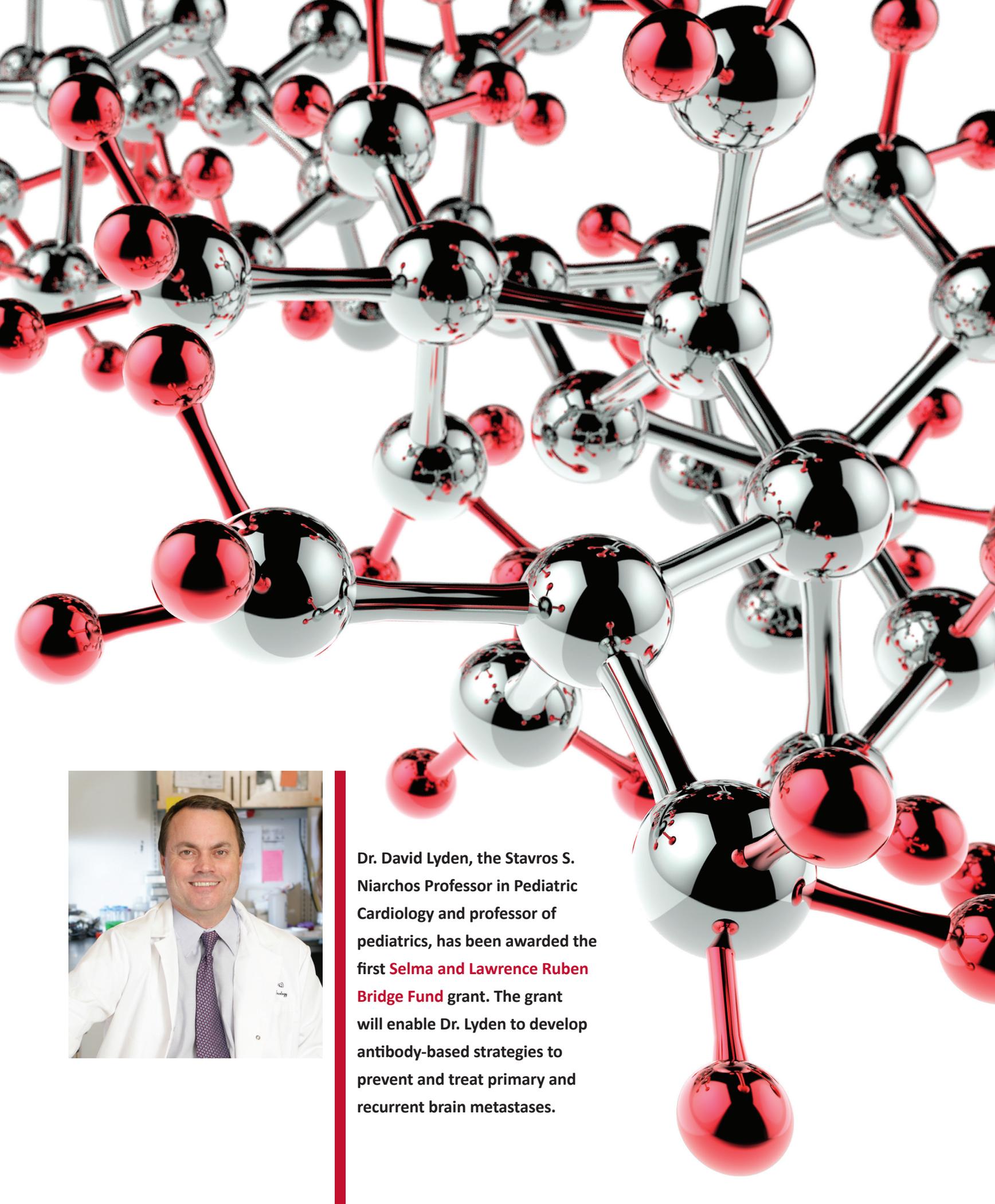
Organized under the three-year-old Daedalus Fund for Innovation, the Selma and Lawrence Ruben Science to Industry Bridge Fund will provide funding to span the development gap between promising research ideas and partnership with industry to develop clinical treatments.

The fund will distribute two research awards annually for 20 years. These awards will have a significant and long-term effect on researchers' ability to advance innovative ideas with the potential to transform patient care.

"We continue to be amazed by the generosity and dedication of the Ruben family," says

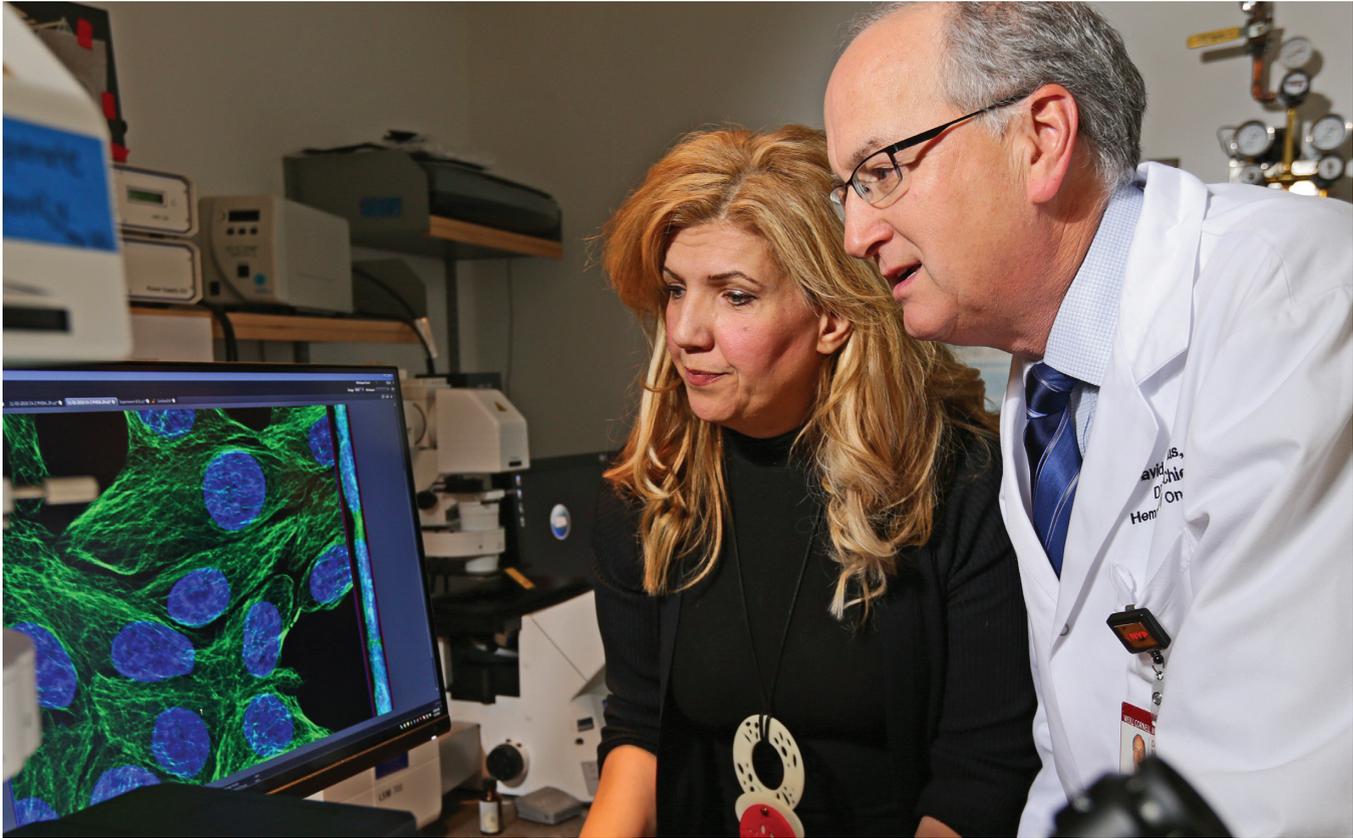
Dr. Augustine M.K. Choi, the Stephen and Suzanne Weiss Dean at Weill Cornell Medicine. "This gift is a tremendous step toward our innovation and entrepreneurial goals here at Weill Cornell. The Ruben family legacy is an incredible example of how deeply philanthropy can impact an institution and its patients."

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



Dr. David Lyden, the Stavros S. Niarchos Professor in Pediatric Cardiology and professor of pediatrics, has been awarded the first **Selma and Lawrence Ruben Bridge Fund** grant. The grant will enable Dr. Lyden to develop antibody-based strategies to prevent and treat primary and recurrent brain metastases.

## \$45 Million Grant Renews CTSC for Third Term



**COLLABORATIVE WORK:** CTSC researchers Evi Giannakakou, PhD (left), professor of pharmacology, and David Nanus, MD, the Mark W. Pasmantier Professor of Hematology and Oncology in Medicine and chief of hematology and medical oncology at NYP/Weill Cornell

Weill Cornell Medicine has received a \$45.3 million renewal grant from the NIH to continue funding its Clinical and Translational Science Center (CTSC) until 2022. A multi-institutional consortium, the CTSC also includes Memorial Sloan Kettering Cancer Center, Hospital for Special Surgery, Hunter College School of Nursing, and the Ithaca campus's Meinig School of Bioengineering, among other institutions. Led by program director and principal investigator Julianne Imperato-McGinley, MD, it's considered a leader in national efforts to bring institutions together and remove barriers that typically separate investigators and physicians by discipline. According to Dean Augustine M. K. Choi, MD, the CTSC “exemplifies how institutions can come together, despite being in different places and having different leaders and institutional cultures, to work on innovative collaborations that benefit patients.”

The CTSC was established in 2007 with a \$49.6 million NIH grant—the largest federal grant ever made to Weill Cornell Medicine—and renewed with the same amount five years later. One of sixty such programs nationwide, it has granted \$10.3 million in seed funding for high-risk pilot studies related to such diseases as cancer, diabetes, cardiovascular disease, and obesity—enabling researchers to obtain nearly \$20 million in outside funding to continue their work. It has also hosted more than 300 seminars and workshops on topics ranging from grant-

writing to working with the FDA, and trained and mentored 1,200 early-career scientists. Its educational and community-based efforts—in partnership with 120 organizations in New York City—include a program that uses theater to teach research ethics, and another that provides free health screenings in medically underserved communities.



JULIANNE IMPERATO-MCGINLEY, MD

In the next five years, the CTSC will increase its focus on creativity and entrepreneurship—in particular, tapping the potential of 3D printing, which facilitates the creation of medical device prototypes, anatomical models, surgical training tools, and more. “Disruptive thinking that challenges the status quo and rewards innovation is a hallmark of the technology industry that the architectural and engineering sectors have caught onto,” says Imperato-McGinley, who is also associate dean for translational research and education, the Abby Rockefeller Mauzé Distinguished Professor of Endocrinology in Medicine, and chief of the Division of Endocrinology at WCM and NYP/Weill Cornell. “We need to challenge ourselves to think differently in medicine as well, and give ourselves the space to come up with new ideas and devices—and remember that in the end, this innovation will benefit patients.”

PHOTOS: TOP, JOHN ABBOTT; BOTTOM, JOYCE ANDERSON

## Elemento Named Director of Englander Institute



OLIVIER ELEMENTO, PHD

Olivier Elemento, PhD, a renowned computational biologist and leader in the field of computational genomics and biomedicine, has been named director of the Caryl and Israel Englander Institute for Precision Medicine. Under Elemento's leadership, the institute's investigators will expand their focus, taking the precision medicine methodology they pioneered in cancer and applying it to other areas including cardiovascular disease, lung disease, diabetes, and neurological disease. A core member of the institute since its inception, Elemento is the Walter B. Wriston Research Scholar and an associate professor of physiology and biophysics and of computational genomics in computational biomedicine. "Ultimately, instead of simply giving the same treatment to every patient with what seems to be the same disease, we try to truly understand how disease in each patient is special—what's specific about it, what's driving it," says Elemento, who is also associate director of the HRH Prince Alwaleed Bin Talal Bin Abdulaziz Al-Saud Institute for Computational Biomedicine and co-leader of the Genetics, Epigenetics, and Systems Biology Program in the Sandra and Edward Meyer Cancer Center, "and then use this information to help personalize treatment strategies."

## TIP OF THE CAP...

**Olaf Andersen, MD**, professor of physiology and biophysics, honored with the Bert I. Shapiro Award from the National Association of MD-PhD Programs for his work as director of the Tri-Institutional MD-PhD Program and his accomplishments as association president.

**Frank Chervenak, MD**, chairman of obstetrics and gynecology and the Given Foundation Professor of Obstetrics and Gynecology, winner of the Presidential Award from the International Academy of Perinatal Medicine for his outstanding contributions to international perinatal medicine.

**Richard Granstein, MD**, chairman of dermatology and the George W. Hambrick Jr. Professor of Dermatology, winner of the Award of Excellence from the Association for Psychoneurocutaneous Medicine of North America.

**Matthew Greenblatt, MD, PhD**, assistant professor of pathology and laboratory medicine, and **Michael Satlin, MD, MS '12**, assistant professor of medicine, who won Young Physician-Scientist Awards from the American Society of Clinical Investigation.

**Mark Lachs, MD**, the Irene F. and I. Roy Psaty Distinguished Professor of Clinical Medicine and a professor of medicine, named to a two-year term as president of the American Federation for Aging Research.

**Catherine Lord, PhD**, director of the Center for Autism and the Developing Brain and professor of psychology in psychiatry and pediatrics, winner of the Rhoda and Bernard Sarnat International Prize in Mental Health from the National Academy of Medicine.

**Gregory Sonnenberg, PhD**, assistant professor of microbiology and immunology, winner of the inaugural Young Investigator Award from the Society for Mucosal Immunology.



**CITY LIGHTS:** President Martha Pollack (center) with Dean Augustine Choi, MD (right), and his wife, Mary Choi, MD, associate professor of medicine

## WCM Reception Honors President Pollack

Martha Pollack was formally inaugurated as Cornell's fourteenth president in a ceremony on the Ithaca campus in late August. Several weeks later—the day after the new Cornell Tech campus on Roosevelt Island was dedicated—the University's New York City-based schools, colleges, and programs honored her with a reception in the Belfer Research Building. "As a university, we are committed to the essential value of the liberal arts on the one hand, and of world-class professional studies in multiple disciplines on the other—and we believe there is a really important synergy between them," Pollack said in her remarks. "We treasure knowledge for its own sake, and we eagerly pursue applications of knowledge that positively impact the world." The event, during which Dean Choi praised Pollack as "the perfect person to lead our university," drew some 250 attendees.

## Fitzgerald to Head Center for Global Health



DANIEL FITZGERALD, MD

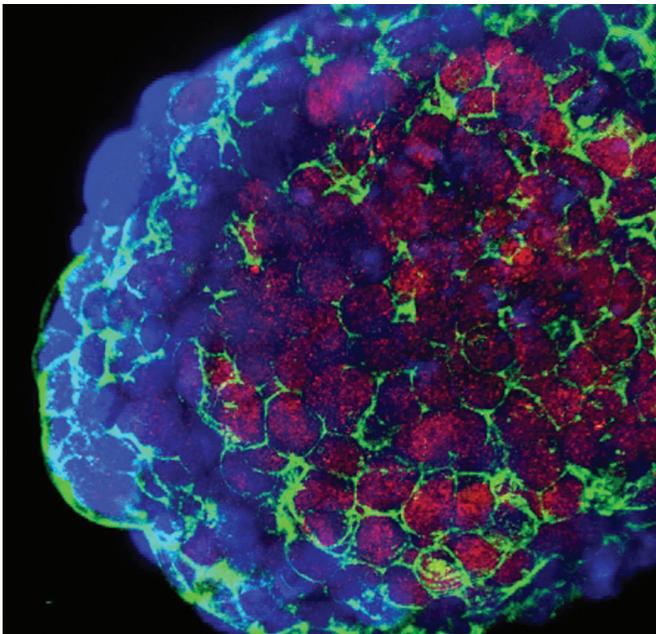
An international leader in infectious diseases has been named director of Weill Cornell Medicine's Center for Global Health. Daniel Fitzgerald, MD, has devoted his career to investigating the development, prevention, and treatment of HIV/AIDS and tuberculosis in developing nations. On the WCM faculty for fifteen years, he has served as co-director with the center's founder—Warren Johnson, MD, the B.H. Kean Professor of Tropical Medicine, who will now focus on training and mentoring junior faculty and fellows—since 2009. Under Fitzgerald's leadership, the center will strengthen relationships with key international partners including the Weill Bugando School of Medicine in Tanzania, the Haitian Study Group on Opportunistic Infections and Kaposi's Sarcoma (GHESKIO) in Haiti, the Federal University of Bahai's School of Medicine and the Oswaldo Cruz Foundation/Brazilian Ministry of Health in Brazil, the BJ Medical College in Pune, India, and Weill Cornell Medicine-Qatar. It will also continue to expand translational research opportunities and train the next generation of physician-scientists committed to improving health around the world. "We really have a dream team of young faculty members here at Weill Cornell Medicine," says Fitzgerald, adding, "We have an amazing opportunity to foster them and help them grow to their fullest potential."

## NYP/Weill Cornell Gets Trauma Verification

The American College of Surgeons' Committee on Trauma (ACS COT) has verified NYP/Weill Cornell as a Level I Adult and a Level II Pediatric Trauma Center. Established in 1987, the verification program promotes the development of trauma centers in which participants not only provide the hospital resources for trauma care, but also address the needs of patients from the pre-hospital phase through rehabilitation. "Meeting the rigorous standards of the ACS COT requires development of a structure that relies on teamwork and commitment encompassing every department in the hospital, as well as a robust process of data-driven quality improvement that strengthens the entire institution," says Robert Winchell, MD, director of the hospital's Trauma Center, professor of surgery, and chief of trauma, burns, acute, and critical care.

## Major Grant Supports Prostate Cancer Research

Weill Cornell Medicine has been awarded a five-year, \$11.3 million Specialized Programs of Research Excellence (SPORE) grant from the National Cancer Institute to improve detection, diagnosis, and treatment of prostate cancer, a disease that affects one in six men. "Despite years of effort trying to understand the biology of this disease," says principal investigator Mark Rubin, MD, professor of pathology and laboratory medicine and of pathology in urology, "we still have many fundamental challenges to address, including why African American men develop a more aggressive form of prostate cancer and why some patients develop a rare subtype that is resistant to therapy." The grant will support four innovative research projects, each led by a basic scientist and translational clinical investigator. It also includes funding to jump-start new high-risk and high-reward studies, as well as a career enhancement program to support junior investigators. "The grant's focus is translational research," says co-leader Himisha Beltran, MD, assistant professor of medicine and an oncologist at NYP/Weill Cornell, "which means our projects have a higher likelihood of going from bench to bedside and impacting patients."



**TRANSLATIONAL TARGET:** Prostate cancer cells from a patient biopsy

## Fine Wins \$6 Million NIH Grant



HOWARD FINE, MD

Neuro-oncologist Howard Fine, MD, has won a five-year, \$6 million NIH Director's Pioneer Award—the first ever given to a WCM investigator—to support his research on modeling deadly brain cancers in the lab. For decades, scientists have tried to model the most common malignant brain cancers, called gliomas, using either patient-derived tumor cell lines cultured in lab dishes or human tumor cells implanted into

the brains of mice—but both approaches have significant limitations. Fine and colleagues have been using advanced stem cell techniques to grow "cerebral organoids"—large clusters of functional, interconnected cells that mimic many aspects of a normal twenty-week-old human fetal brain—and used them to examine how individual patients' gliomas grow and respond to therapies. Fine is founding director of the Brain Tumor Center at NYP/Weill Cornell and WCM, chief of the Division of Neuro-Oncology, the Louis and Gertrude Feil Professor of Medicine, and associate director for translational research at the Meyer Cancer Center.

## Daedalus Fund Supports Innovative Projects

Fifteen investigators have been selected for the fourth round of awards from Weill Cornell Medicine's Daedalus Fund for Innovation, which helps advance applied and translational research projects and emerging technologies that have commercial potential. The recipients are:

- Francis Barany, PhD, professor of microbiology and immunology
- Jochen Buck, MD, PhD, professor of pharmacology, in collaboration with Lonny Levin, PhD, professor of pharmacology
- Ethel Cesarman, MD, PhD, professor of pathology and laboratory medicine
- Shuibing Chen, PhD, associate professor of chemical biology in surgery and in biochemistry
- David Cohen, MD, PhD, the Vincent Astor Distinguished Professor of Medicine
- Ronald Crystal, MD, the Bruce Webster Professor of Internal Medicine and chairman of genetic medicine
- Lukas Dow, PhD, assistant professor of biochemistry in medicine
- Katherine Hajjar, MD, the Brine Family Professor of Cell and Developmental Biology
- Samie Jaffrey, MD, PhD, professor of pharmacology and the Greenberg-Starr Professor
- Gang Lin, PhD, associate professor of research in microbiology and immunology
- David Lyden, MD, PhD, the Stavros S. Niarchos Professor in Pediatric Cardiology
- Xiaojing Ma, PhD, professor of microbiology and immunology
- John Pena, MD '11, PhD, assistant professor of ophthalmology
- Nicholas Schiff, MD '92, the Jerold B. Katz Professor of Neurology and Neuroscience.

## FROM THE BENCH

### Understanding the Malaria Parasite's Life Cycle

Björn Kafsack, PhD, assistant professor of microbiology and immunology, and colleagues have shed new light on the complex life cycle of the malaria parasite. It was previously known that the asexual form of *Plasmodium falciparum*, which is responsible for the clinical symptoms of malaria, is able to continuously multiply in human red blood cells—but that in order to spread, some of these parasites must change into the non-replicating male and female forms. Kafsack and his team used high-throughput single-cell RNA sequencing at the Caryl and Israel Englander Institute for Precision Medicine—which is led by collaborator Olivier Elemento, PhD—to glean unprecedented detail about how several genes that regulate the expression of other genes are turned on in cells that had committed to convert into the transmissible forms. Better understanding of these molecular mechanisms, Kafsack says, “could allow us to develop treatments that block the parasites from going down that path.” The work was published in *Nature*.

### Long Sedentary Periods Pose Dangers



MONIKA SAFFORD, MD '86

A study in *Annals of Internal Medicine* finds that it isn't just the amount of time spent sitting that can affect risk of early death, but also the way in which sedentary time accumulates during the day. Researchers, who used hip-mounted activity monitors to measure inactivity in nearly 8,000 adults, found that those who sat for one to two hours without moving had a higher mortality rate than those who accrued the same amount of sedentary time in shorter stints. “This study adds

to the growing literature on how dangerous long periods of sitting are for our health, and underscores a growing awareness among clinicians and researchers that sitting really is the new smoking,” says co-author Monika Safford, MD '86, chief of the Division of General Internal Medicine, the John J. Kuiper Professor of Medicine, and an internist at NYP/Weill Cornell. “We need creative ways to ensure that we not only cut back on the total amount we sit, but also increase regular interruptions to sitting with bursts of activity.”

### Study Confirms 'Jolie Effect'

Actor-director Angelina Jolie's announcement detailing her decision to undergo a mastectomy to reduce her risk of breast cancer likely inspired more women in English-speaking countries to do the same, finds a study by Art Sedrakyan, MD, PhD, professor of healthcare policy and research, and colleagues at Weill Cornell Medicine and Australia's University of New South Wales. Using hospital discharge data from 2004–14 to examine trends in risk-reducing mastectomy, the researchers identified a significant increase in procedures starting in May 2013, three months after Jolie's announcement. They say that their findings, published in *Health Services Research*, show that celebrities have the power to influence healthcare decisions, and that clinicians should leverage this by offering more information about treatment options.

### Gene Expression Implicated in Leukemia

Errors in the regulation of gene expression may contribute to the development of acute myeloid leukemia (AML), researchers report in *Nature Medicine*. Samie Jaffrey, MD, PhD, professor of pharmacology at Weill Cornell Medicine, and Michael Kharas, PhD, assistant member in pharmacology at Memorial Sloan Kettering Cancer Center, have shown that people with AML have unusually high levels of an enzyme that places chemical marks on messenger RNA (mRNA); working in a mouse model, they found that reducing levels of the enzyme caused tumor cells derived from patients with AML to begin behaving more like normal cells. The results may lead to new approaches for treating AML that target mRNA misregulation.

### Mammography Starting at Forty Saves Lives



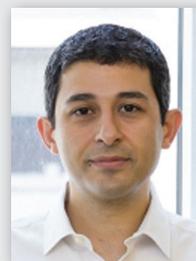
ELIZABETH ARLEO, MD

Annual mammograms for women beginning at age forty prevent the greatest number of breast cancer deaths, researchers report. The findings—published in *Cancer* and gleaned through breast cancer-specific computer models—may help settle an ongoing debate about when and how often women should undergo screening. “Healthcare costs are steep,” says first author Elizabeth Arleo, MD, an associate professor of radiology at WCM and a radiologist at NYP/Weill Cornell. “While some may consider cutting back on screening to lower these costs, our research shows that, in order to save the most lives from breast cancer deaths, annual screening mammography should start at age forty. We need a national consensus promoting this recommendation.”

### Gut's Nerve Cells Crucial to Immune Response

A study in *Nature* has found that nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection. This means that scientists looking for ways to treat diseases that involve an excessive immune system response—such as inflammatory bowel disease, food allergies, and asthma—may have to address the nervous system's role, potentially pointing the way to new therapies. “The immune system and neuronal system don't act independently,” says senior author David Artis, PhD, the Michael Kors Professor of Immunology and director of the Jill Roberts Institute for Research in Inflammatory Bowel Disease. “They are working together.”

### Trial to Study Possible Stroke Cause



HOOMAN KAMEL, MD

A new clinical trial led by researchers at Weill Cornell Medicine, NewYork-Presbyterian, and Columbia University Medical Center aims to identify and treat what may be a common underlying cause of recurrent strokes. ARCADIA, a multicenter phase III trial, will recruit 1,100 patients to study the role that abnormalities in the structure and function of the heart's left atrium—called atrial cardiopathy—play in strokes and test a medication that could prevent a recurrence. Its lead investigators include Hooman Kamel, MD, associate professor of neurology and director of the Clinical and Translational Neuroscience Unit of the Feil Family Brain and Mind Research Institute and assistant attending neurologist at NYP/Weill Cornell. “Strokes are the leading cause of disability in the United States,” he says, “and it's important that we develop new treatments to prevent them.”

### Tiny Sensors Measure Fat in Cells

Researchers at Weill Cornell Medicine and Memorial Sloan Kettering Cancer Center have developed nano-sized sensors that can measure lipids, or fat molecules, in special compartments within live cells—work that could spur the development of new therapies for many diseases. Fats, such as cholesterol, that enter cells are normally broken down by structures called lysosomes; when lysosomes fail to clear them, they can accumulate and damage tissues. This occurs in diseases such as fatty liver disease, atherosclerosis (hardening of the arteries), neurodegenerative diseases like Alzheimer's, and cancer. In *ACS Nano*, Daniel Heller, PhD, an assistant professor in pharmacology and in physiology, biophysics, and systems biology in the Weill Cornell Graduate School of Medical Sciences, and colleagues report that they have created a sensor that can accurately measure this lysosomal fat in live cells. Their device is made of a tiny carbon fiber that is 1/100,000th the diameter of a human hair, wrapped in a DNA sequence that makes it sensitive to lipids.

## Technical Marvel

The much-anticipated Cornell Tech campus opened this fall on Roosevelt Island, dedicated in a gala ceremony in mid-September that featured such dignitaries as New York Governor Andrew Cuomo, former New York City Mayor Michael Bloomberg—who conceived the project—current Mayor Bill de Blasio, and Cornell University President Martha Pollack. Located just across the East River from Weill Cornell Medicine, the tech campus had been in the works for six years, since Cornell University won a city-sponsored competition to build an applied sciences and engineering campus. It began offering classes—in temporary Manhattan quarters donated by Google—in 2012 and has grown to comprise some 300 master’s and PhD students who are pursuing degrees in health technology, computer science, electrical and computer engineering, operations research, and connective media, as well as in business and law programs geared toward the tech industry.

The newly completed first phase of construction consists of a main academic building, the Emma and Georgina Bloomberg Center (seen on the island’s western shore, in front of the Queensboro Bridge pillar), endowed with a \$100 million gift from Mayor Bloomberg; an energy-efficient residential tower (seen on the eastern shore in front of the bridge); and an office building (the lower structure in front of the residential tower) for companies that aim to collaborate with Cornell Tech faculty and students. The campus is planned to be fully built out in 2043—when it will boast two million square feet of space, more than 2,000 graduate students, and hundreds of faculty and staff. “We are assembling some of the finest research teams on the planet,” Pollack said at the dedication of Cornell Tech, whose investigators have already formed collaborations with colleagues at Weill Cornell Medicine and are exploring ways to leverage technology to improve human health, “and what excites me is that their research will be put to use immediately in the real world.”

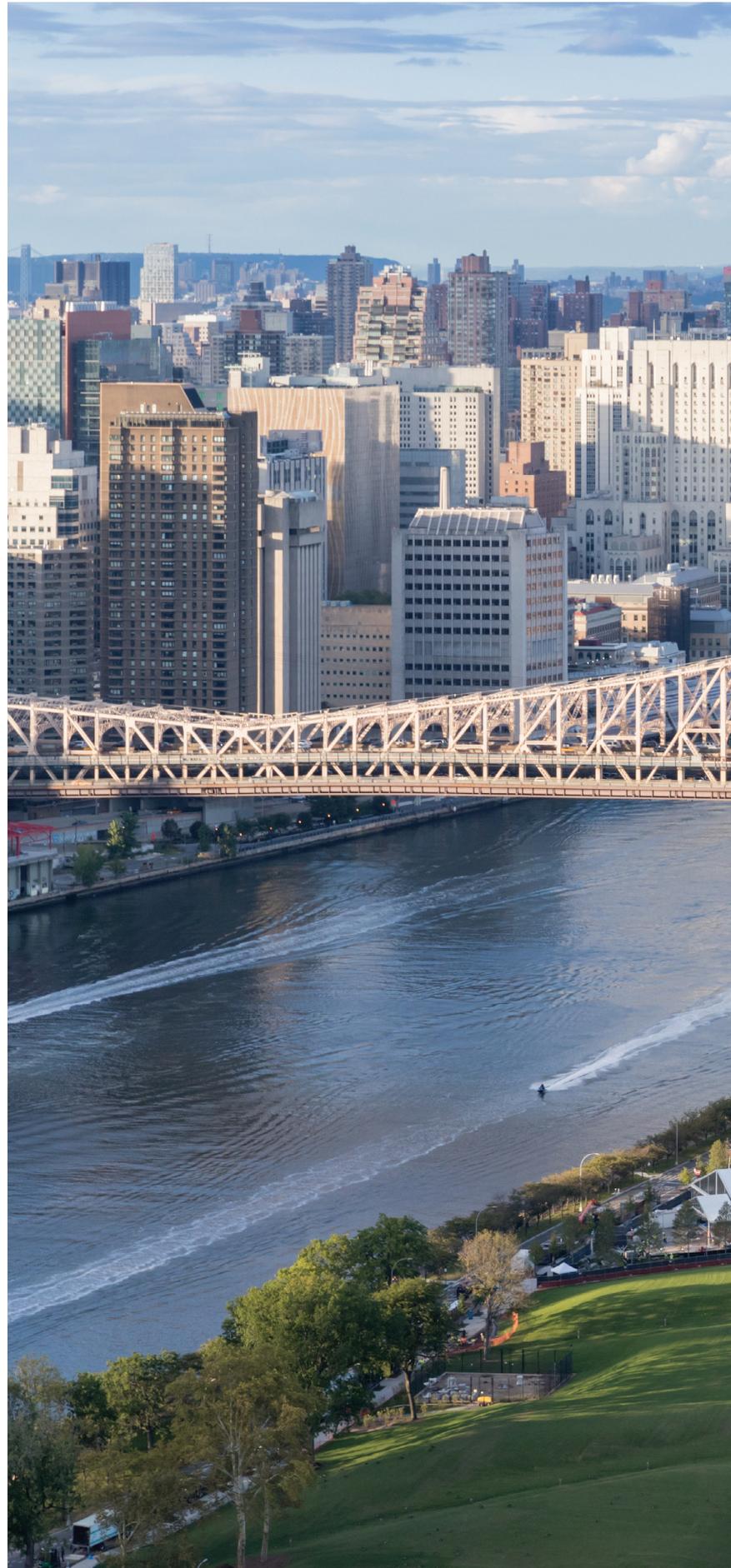


PHOTO: IWAN BAAN



# Conscious Effort

Researchers debunk a long-held misconception about how anesthesia works



**MEDICAL MILESTONE:** Robert Cutler Hinckley's classic painting *The First Operation with Ether* depicts anesthesia being used on a patient in 1846.

The modern concept of general anesthesia dates back to the 1840s, when doctors and dentists began giving patients ether before operations. Until then, surgery—whether to pull a tooth, remove a tumor, or even amputate a limb—had been a violent and painful business. A patient might have been dulled by alcohol or opium—or even knocked unconscious with a blow to the head—but in most cases a team of strong men would have held him down as he screamed in agony. The ability to reliably render a patient temporarily insensate was revolutionary.

In the nearly two centuries since, general anesthesia has become

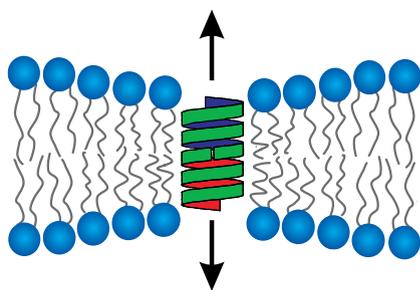
ubiquitous, but our understanding of how it works has not kept pace. Now, however, new research out of the lab of Hugh Hemmings, MD, PhD, chair of anesthesiology at Weill Cornell Medicine and anesthesiologist-in-chief at NYP/Weill Cornell—in collaboration with the lab of Olaf Andersen, MD, professor of physiology and biophysics—has finally debunked a century-old hypothesis about how anesthesia acts on nerve cells to induce unconsciousness, shedding new light on one of the fundamentals of modern medicine. The new study—published in the *Proceedings of the National Academy of Sciences* in March, with Karl Herold, MD, PhD, senior research

associate in anesthesiology, as lead author—decisively disproves a long-held idea known as the lipid bilayer hypothesis. And it provides new support for a different hypothesis: that anesthetics act by directly changing the function of proteins embedded in the cell membrane to reduce electrical signals between neurons.

What's the lipid bilayer? Composed of two sheets of molecules, it's the primary material of the membrane that surrounds all cells. Each of its molecules has a head that is hydrophilic—meaning it is attracted to water—and a pair of tails, made of fatty acids, that repel water. The molecules arrange themselves in two layers, tail tip to tail tip; the tails act as a barrier between the liquid solutions inside and outside the cell.

The hypothesis that Herold and his team disproved originated in the late nineteenth century, when two pharmacologists dissolved anesthetics in olive oil to demonstrate that potency correlated with fat solubility—leading them to believe that anesthesia disrupts communication between neurons by altering the lipid bilayer. That explanation held until the 1970s, when some scientists began arguing that new evidence showed anesthetics act directly on proteins. “This has been a long-standing controversy, and it has been difficult to dispel the old idea,” says Hemmings, who is also senior associate dean for research. “The lipid bilayer hypothesis has been in textbooks for decades, even as recently as when I was studying pharmacology.”

To put the question to rest once and for all, Herold and his colleagues used an elegant technique developed by Andersen and his former graduate student Helgi Ingólfsson, PhD '10. Following the Andersen Lab's protocol, they created sphere-shaped, microscopic models—called lipid vesicles—inside a stopped-flow spectrometer, a device used to combine small amounts of solutions and measure chemical reactions. The simplified synthetic membrane was embedded with a protein called gramicidin. More commonly used as a topical antibiotic, gramicidin incorporates itself into both sides of the lipid bilayer; gramicidin molecules on each side of the bilayer pair up to form tubes, called ion channels, that connect the inside and outside of the vesicle. But gramicidin channels are very sensitive to properties of the bilayer; something that makes the bilayer softer, for example, allows gramicidin molecules to pair up and form channels more easily, while something that stiffens the bilayer can prevent them from linking up at all. “It's very, very sensitive, because you only



**OPEN 'CHANNEL':** An illustration of Hemmings's and Herold's experiment depicts the lipid bilayer, the primary material of the membrane that surrounds all cells; it consists of two rows of molecules, arranged with their heads (in blue) facing outward and their tails meeting tip to tip. Here, it is seen being penetrated by a protein called gramicidin (red and green spiral), a common topical antibiotic the researchers used to study how the bilayer is crossed.



Hugh Hemmings, MD, PhD (left), and Karl Herold, MD, PhD

have these two components, just the bilayer and these channels,” Herold says. “Everything else you add will change the equilibrium between them.”

The team used the model to test fourteen common general anesthetics and anesthetic-like drugs, including inhaled ethers and intravenous agents such as ketamine. A fluorescent dye indicated whether ions were moving into the vesicle through the gramicidin channel: if anesthetics acted on the bilayer, ion flow through

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**‘This has been a long-standing controversy,’ says Hugh Hemmings, MD, PhD, chair of anesthesiology, ‘and it has been difficult to dispel the old idea.’**

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the channel would be impaired. Because none of the anesthetics changed the movement of ions, the researchers were able to conclude that none of the drugs affected the lipid bilayer, at least at levels used clinically. “That was what we expected,” Herold says, “but it's very clear-cut now.” The team did find that levels of anesthetic that would be toxic in a human can have an effect on the bilayer—a phenomenon that, Herold speculated, might account for some anesthetics' hazardous side effects at high doses.

The new research is unlikely to change the practice of anesthesiology right away, Herold says—but since the most common anesthetics have all been in use for at least forty years, there is a need for newer drugs that have a wider margin of safety. Herold's findings might help pharmaceutical researchers identify binding sites—spots on cells where anesthetics might attach—and develop new drugs to target them. Meanwhile, the discovery that high doses of anesthetics do act on the lipid bilayer, perhaps causing unwanted side effects, could help screen out potential new drugs that might turn out to be too dangerous. The research might also help scientists determine whether certain anesthetics are more appropriate to particular patients based on age or disease. “The drugs that we use today, if you look at the molecule structure, are not far away from ether, which was used centuries ago,” Herold says. “Only if you know how a drug works can you create newer, better drugs. This research might not immediately apply to real life, but it has huge implications.” ■

— Amy Crawford

## For Kids' Sake

Pediatric rheumatologist Virginia Pascual, MD, is the founding director of the Gale and Ira Drukier Institute for Children's Health



Virginia Pascual, MD

*For physician-scientist Virginia Pascual, MD, research was a revelation. After graduating from medical school in Madrid and doing a residency in pediatrics, she came to the U.S. for a one-year clinical fellowship at University of Texas Southwestern Medical Center—and was surprised to learn that her new post entailed a research component. “I ended up in a laboratory learning immunology, and it was life-changing,” she says. “What was supposed to be one year became five.” At UT Southwestern, where she eventually became director of pediatric rheumatology, Pascual nurtured a groundbreaking translational research program focusing on diseases such as childhood arthritis. A collaborative effort with the Baylor Institute for Immunology Research and Texas Scottish Rite Hospital for Children, the program studied diseases directly in patients—rather than in animal models, as the work had traditionally been done—and used cutting-edge technologies that gleaned high volumes of data from small*

*samples of blood and tissue. Pascual later moved to the Baylor Institute for Immunology Research, where her work included identifying molecular drivers of disease in pediatric lupus patients. Board-certified in pediatrics and in pediatric rheumatology, she joined Weill Cornell Medicine last spring as the Drukier Director of the Gale and Ira Drukier Institute for Children's Health, established in 2014 with a \$25 million gift from Gale and Ira Drukier, and recruited as the Ronay Menschel Professor of Pediatrics.*

### **What's the current state of research into children's diseases?**

Unfortunately, they have suffered from a lack of translational research—which is when we go directly to patients to bring new treatments based on basic discoveries we make in the laboratory. There have been very few translational studies done directly in children, and funding has traditionally lagged behind adult diseases. But

as a proponent of pediatric research, I always like to explain that in addition to the important work of finding new treatments for our patients, diseases arising in childhood are great models for study.

### **Why is that?**

Because children normally have just one single disease. When a disease starts in adult life, individuals normally not only have that disease, like cancer, but others—such as diabetes, high blood pressure, or depression—for which they are also being treated. In translational research, many times children give us more clear and direct answers about what is wrong than when we study adults.

### **You grew up in an unusual place: Ceuta, a small Spanish colony in the north of Morocco. How do you think that influenced you?**

Even though geographically it belongs to Africa, politically Ceuta has belonged to Spain for more than five centuries. It's very multicultural, with different ethnicities and religions living peacefully together. I think that made it easier for me to cross the ocean to pursue my career, and when I came here, the diversity of this country was something familiar to me. And of course the diseases I study in the lab and see in the clinic impact minorities. For example, lupus—which is a complex disease in which the immune system fails to recognize the patient's own tissues and attacks them, causing symptoms like fatigue, fever, joint pain, and skin rashes—can be difficult to diagnose, because it doesn't impact every patient the same way. It affects children who come from African American, Hispanic, and Caucasian backgrounds very differently, and it has been fascinating to try to understand that. So my background might be motivating from that perspective as well.

### **Could you describe your vision for the Drukier Institute?**

The goal is to bring together the best and brightest physician-scientists with an interest in childhood diseases; initially, our focus will be on those that are mediated by the immune system, such as diabetes, allergy, asthma, and lupus. In these diseases, the immune system either over- or under-reacts to environmental triggers or pathogens, or it attacks the body's own tissues. We want the Institute to be a highly integrated and collaborative operation, as we develop new ways to study these diseases in patients seen by clinicians at NYP/Weill Cornell.

### **Why focus on immune-related disorders?**

Our immune system is there to defend us against myriads of pathogens. During human development—from embryo to fetus to baby—the immune system needs to learn how to recognize “self” from “foreign,” to know what it should and should not fight. This is a long, elaborate process that takes years; when babies are born, their immune systems are immature, so they're more susceptible to infections. During childhood, the immune system continues to evolve, and how it “learns” in those first few years impacts an individual's entire life. So understanding this process—even in healthy

children—is a fundamental aspect of what we want to do. The immune system is at the center of a diverse array of diseases and conditions such as infections, cancer, diabetes, and inflammatory bowel disease. Alterations in the immune system during pregnancy and in the early years of life may even play a role in autism and other neurological conditions.

### **What do you love about treating and studying kids?**

I was attracted to pediatrics because I thought that if we could understand and find better treatments for diseases that affect patients during these vulnerable years of infancy and childhood, we could

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## **As a physician, I cannot imagine any higher motivation than working with children and trying to prevent any interruption that disease can impose on their precious development.**

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have a long-term impact on their lives. As a physician, I cannot imagine any higher motivation than working with children and trying to prevent any interruption that disease can impose on their precious development. In addition, a child's illness impacts not only the patient but the entire family. I never had kids of my own, but my patients are like my children. I've been very fortunate to follow many of them for years, to see them grow and have wonderful lives.

### **Does working with children have distinct challenges?**

Of course. When you see kids with diseases that might cut their lives short, it can be deeply affecting. But these kids and their families are amazingly resilient, and we learn a lot from them. I've treated lupus patients and watched them get very sick despite our best efforts; I've seen them experience things that children should never have to, like strokes, and try their best to go back to a normal life. My patients have inspired me in terms of continuing on and not looking back.

### **Are there any particular patient stories that stand out?**

There are so many. Probably the most rewarding was when we were able to offer a new therapy for a devastating disease called systemic onset juvenile arthritis. These kids are very debilitated and in a lot of pain; the disease causes severe inflammation in the joints and other organs such as the heart. We developed a lab test to try to understand it and found there was a particular molecule in these patients' blood that could be responsible for the severe inflammation. It turned out that a drug already approved by the FDA—to treat adults with rheumatoid arthritis—blocks this molecule. The drug did not help adult patients much, but when we developed a pilot clinical trial to test it in our children, the results were spectacular. Of nine kids who'd had severe disease for years, seven went into complete remission. To see kids who had been confined to a wheelchair for months or years get up and walk—and not only walk, but when kids get out of a wheelchair they want to immediately run. They are so full of energy and life. ■

—Beth Saulnier

## Safe & Sound

A student-run clinic aids immigrants seeking asylum

**G**rowing up in Azerbaijan, Yusif was frequently attacked for being gay. Over the years, he was beaten up at school, punched and kicked by neighbors, and pelted with rocks, and had homophobic slurs written on the door of his family's home. The violence escalated when he was eighteen: Three men dragged Yusif to a schoolyard one night in 2012 and put a knife to his throat. Two took turns raping him, while the third filmed it on his phone and threatened to show the video to others. Yusif went to the police, but an officer refused to file a report even though he could identify his assailants. "Everything changed after that," says Yusif [not his real name, which he asked be withheld to protect his privacy]. "I said to myself, 'You have to get out of here. Your life is going to end soon.' I felt it."

A year later, Yusif's mother borrowed money so he could buy a plane ticket and enroll at a language school in the New York area, which allowed him to enter the U.S. on a student visa—although upon arriving, he discovered that the school didn't exist and they'd been swindled. With nowhere to go, Yusif lived hand-to-mouth for months, working at places that only paid

318 clients from sixty-three countries who have been evaluated by the center since 2010, when Weill Cornell Medicine students founded it with Physicians for Human Rights (PHR). It was the first clinic of its kind in the U.S., serving as a model for similar programs at more than a dozen schools including Columbia, Brown, and the University of Pennsylvania. With a roster of sixty-five volunteer clinicians—many of whom are Weill Cornell faculty—and more than 150 trained student evaluators, the center examines asylum seekers and prepares medical-legal affidavits that can be used at court hearings. Its high success rate underscores the value of such evidence in helping applicants prove their claims: of the clients whose cases have been adjudicated, about 94 percent have been granted asylum—nearly three times as many as those without this type of documentation, according to figures from a study led by researchers at UCSF that was published in *The Journal of Immigrant and Minority Health* in 2008. "Because they're fleeing persecution, the only evidence they can bring with them is, quite literally, the physical and psychological scars that they carry on their bodies," says the center's co-executive director, Andrew Milewski, a sixth-year MD-PhD student. "So our affidavits are crucial pieces of evidence in their immigration court proceedings."

The center connects with clients through referrals from PHR, private immigration attorneys, and local law schools. Exams are done at WCM's Margaret and Ian Smith Clinical Skills Center or at a clinician's office, led by a physician or mental health professional. Student volunteers take detailed notes of the interview and carefully document signs of abuse, then help write the affidavit; the clinician finalizes it and, if necessary, testifies in court. The center has seen Syrian refugees suffering from extreme PTSD, women who've endured genital mutilation—common in certain African and Middle Eastern countries like Egypt, Somalia, Guinea, and Burkina Faso—as well as victims of torture and other brutalities from places in Central America where gang violence has skyrocketed in recent years. Other clients seek asylum because of domestic violence, escaping homelands that don't offer legal protections. One evaluation that Milewski assisted with in 2014 involved three siblings who fled Honduras because of their father's mistreatment. Milewski says that the father would often whip one of the daughters and had broken the son's nose; when they moved in with relatives in an effort to escape the abuse, one of the sisters was sexually assaulted by a cousin. "That was a really hard case," says Milewski,

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**'Because they're fleeing persecution, the only evidence they can bring with them is, quite literally, the physical and psychological scars that they carry on their bodies,' says MD-PhD student Andrew Milewski, the center's co-executive director.**

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him in fast food, and for a time sharing a room with seven other people. He eventually connected with family friends in New Jersey, who gave him a temporary home and referred him to an asylum attorney. That brought him to the Weill Cornell Center for Human Rights, a medical-student-run clinic that provides pro-bono physical and mental health evaluations for immigrants seeking asylum in the U.S., based on abuses due to race, gender, sexual orientation, and other grounds. Though Azerbaijan decriminalized homosexuality in 2001, the country has done little to protect its LGBT community from discrimination, violence, hate crimes, and police harassment. "I don't consider my life before as a life," says Yusif, who was diagnosed with post-traumatic stress disorder and depression. "I considered it survival."

Yusif—who was granted asylum last year—is one of

who notes that the siblings were granted asylum a few months after the evaluation. “The trauma was still very fresh with those kids.”

The center doesn’t just provide a valuable service for asylum seekers. It trains the next generation of evaluators—who are desperately needed, given the current backlog of more than 620,000 asylum cases in U.S. courts. It also gives students hands-on clinical experience early in their medical training. “They get to contribute in a meaningful way to securing our clients’ access to a future free of fear and danger,” says Joanne Ahola, MD, the clinic’s medical director emeritus and a former adjunct assistant clinical professor of psychiatry at WCM, who helped found the center and still works as a volunteer evaluator. “Plus, they get to help a woefully underserved population.”

Even if the students don’t continue to help with asylum cases later in their careers, their involvement with the clinic teaches them how to sensitively treat patients who have endured physical and emotional trauma. Thomas Kalman, MD, a clinical professor of psychiatry and the center’s medical co-director, sees such experience as a vital part of any medical student’s education. “This exposes students to human cruelty—which is an ugly-sounding term, but it’s very real and it exists,” says Kalman, a psychiatrist at NYP/Weill Cornell. “Here in the U.S., we have gun violence, natural disasters—terrible things that leave people traumatized. This clinic is an opportunity to introduce students to some of these things and to show them that people can overcome them.” Milewski agrees, noting that he’s thankful for the chance to observe how resilient many of the center’s clients are. “Knowing that some of our clients, despite what they’ve experienced, still have hope for a better future—that’s incredibly heartwarming and inspiring,” he says.

Indeed, for Yusif, the future looks brighter. Now in his twenties, he’s studying to become a nurse. He volunteers at an LGBT center near his New York area home, wanting to give back to a community that has offered him invaluable support since he came to America. “To any LGBT individuals that for any reason are afraid, possibly under pressure or threat by homophobic people, I would like to say that you are not alone,” he says. “There are resources and people who will support you.” Ever since he learned he’d been granted asylum, he adds, his chronic nightmares and anxiety attacks have abated considerably. “All my life I never felt safe,” he says. “That day was the first time I felt like, ‘OK, I can sleep well tonight.’ ” ■

— Heather Salerno



## 'Great Potential'

A '30 Under 30' honoree, MD-PhD student Kevin O'Rourke, PhD '17, makes early strides in the fight against colon cancer



Kevin O'Rourke, PhD '17

**M**any successful researchers cite the influence of a mentor who inspired and advised them—and that's especially true for Kevin O'Rourke, PhD '17. Even though he's still an MD-PhD student, O'Rourke cites numerous people who have helped guide him on his path. They include an AP biology teacher at his Massachusetts boarding school who sparked his interest in science; a Harvard geneticist who let him shadow her for two days, showing how a scientific discovery could change the course of a

patient's disease; and a Middlebury College professor who taught him about grant writing and the research process and gave him the opportunity to be first author on a scientific paper as an undergraduate. Says O'Rourke, now in his third year of MD studies at Weill Cornell Medical College: "I owe a huge debt of gratitude to them all."

As a student in the Tri-Institutional MD-PhD Program, O'Rourke has continued to benefit from strong mentors such as Memorial Sloan Kettering Cancer Center biologist Scott Lowe, PhD, under

ABBOTT

whom he conducted his doctoral research. It was in Lowe's lab that O'Rourke contributed to promising pre-clinical investigations related to colon cancer—including one project, described in a paper he co-authored, that was featured on the cover of *Cell* and called one of Sloan Kettering's top discoveries of 2015. More recently, his work earned him a coveted honor as one of *Forbes's* "30 Under 30" in healthcare for 2017. "Kevin has great potential, in part because he bridges that space between physician and scientist," says Luke Dow, PhD, an assistant professor of biochemistry in medicine at the Sandra and Edward Meyer Cancer Center, with whom O'Rourke worked for several years. "He's always focused on what's most relevant and important to get us toward helping patients, while remaining thoughtful about the research and trying to advance scientific understanding at a basic level."

Colon cancer is the second most deadly type of cancer in the U.S., and its patients are in desperate need of more effective treatments. While people with other types of cancer—like melanoma, lung cancer, and brain cancer—have benefitted from new targeted drugs in recent years, doctors don't have similar options for treating colon cancer, particularly in its later stages. "While clinical care has gotten better in the last fifteen years and increased screening has provided better outcomes," O'Rourke says, "there's very little we can do when someone has an advanced form of the disease."

In the Lowe Lab, O'Rourke and Dow (who was then a postdoc but now has his own lab) collaborated on complementary projects related to metastatic colon cancer, work that could both contribute to developing better early detection methods and help scientists create safer, more effective therapies. The first—chronicled in the paper that made the cover of *Cell*—is focused on a gene called APC, which plays a prominent role in colon cancer. The team knew that when APC is inactivated in a mouse model, colon cancer develops. But they didn't know what would happen if they could turn the APC gene back on while other genetic mutations remained intact. They did so, and saw that it triggered every tumor to either shrink or disappear. The next step, O'Rourke says, is for scientists to develop a drug that can turn the APC gene back on in human patients with colon cancer, as the team was able to do in mice.

While working on the APC project, O'Rourke was surprised to learn that researchers in the colon cancer field were using an outdated and inadequate mouse model—a realization that led him to his second preclinical project. Introduced in the mid-Nineties, this model's mice develop benign tumors in the small intestine instead of malignant ones in the large intestine. "It's the best model available," O'Rourke says, "but the tumors don't grow in the same place as they would in people, and they're not cancerous." So he devoted himself to creating a new and better mouse model of colon cancer

in the hope of making it available to fellow researchers worldwide.

O'Rourke developed a protocol that requires growing organoids—three-dimensional tissue cultures—from either mice or human-derived colon cancer samples, which must be genetically engineered to inactivate the APC gene before being implanted into a mouse's colon using a quick, non-surgical procedure. The organoids then behave as they would in human colon cancer: they begin as precancerous lesions in the innermost layer of the colon, then invade deeper layers of the colon and finally spread to the liver—all within two months, instead of the one to two years typical in older models. O'Rourke's protocol also gives researchers the flexibility to genetically alter organoids so they can test the genes of their choosing, then transplant the organoids into research mice with relative ease. Scientists in Dow's lab have started conducting experiments using the new model, which was the subject of a paper O'Rourke published in *Nature Biotechnology* in June, as have researchers at Sloan Kettering and in Boston and Spain. "I don't want to oversell it," O'Rourke says, "but we envision that this model, which costs less than previous models and more accurately simulates colon cancer with speed and ease, should enable a lot of labs to finally run the test they've been wanting to run."

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**'He's always focused on what's most relevant and important to get us toward helping patients, while remaining thoughtful about the research and trying to advance scientific understanding at a basic level,' Luke Dow, PhD, assistant professor of biochemistry in medicine, says of O'Rourke.**

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For O'Rourke, there's strong personal motivation to do research that might lead to better, more targeted cancer treatments: when he was nine, his godmother died from breast cancer despite receiving the best care available at the time. After she passed away, O'Rourke says he was left feeling shocked and confused as to why medicine had been unable to help her—until, years later, in an AP biology class, he learned about cancer-causing genetic mutations. "That felt like a light bulb, eureka moment," O'Rourke says. "I figured right then that it could be my life's work to figure out what causes cancer and try to develop a cure."

Now back in medical school, O'Rourke says that he's happy to be focusing on patients again. Looking ahead, he wants to transition back and forth from the clinic to the lab, treating patients and testing new therapies that might lead to cures for diseases like colon cancer. "Being a physician-scientist allows you to ask big questions and try to solve big problems," he says. "Life in research is exciting, fast moving, and collaborative—but working with patients and seeing how a new treatment or therapy could have a positive impact on their lives is what drives me." ■

— Anne Machalinski

## Aftercare App

Surgeon teams with Cornell Tech to spur post-op recovery

Following major surgery, the aftercare instructions that patients need to follow can be complex. They must remember to stay hydrated, take their medications, and change their bandages, among other requirements. If they don't follow these guidelines closely they risk serious complications prompting hospital readmission—which, unfortunately, is relatively common. “Monitoring patients’ recovery period is critical,” says Heather Yeo, MD, the Nanette Laitman Clinical Scholar in Healthcare Policy and Research/Clinical Evaluation, an assistant professor of surgery at Weill Cornell Medicine, and a surgical oncologist at NYP/Weill

Cornell specializing in colon and rectal surgery. “We have been able to do so successfully inside the hospital, but traditionally, it’s been harder and more resource-intensive to keep track of patients when they go home.”

Yeo wanted to change that. So she worked with Cornell Tech to develop an iPhone app, dubbed mHEALS (for mobile app Helping Engage Adults after Surgery), that allows patients to input information about their health and habits, then sends it to doctors; it also generates reminders to help patients stick to their aftercare regimens. Well aware of the need to protect patient privacy and



**ELECTRONIC AID:** Heather Yeo, MD (left), demonstrates the mHEALS app for patient David Matthews, who participated in her pilot study.

security in the digital world, she tapped the expertise of Deborah Estrin, PhD—a professor of computer science at Cornell Tech and of healthcare policy and research at Weill Cornell Medicine who is a pioneer in mobile healthcare technology—who offered advice on available software frameworks that use state-of-the-art techniques and encrypt data while remaining user-friendly.

The app works like this: Just prior to surgery, doctors gather patients' baseline fitness and health data for input into mHEALS. Afterward, when patients are recovering in their rooms, they're trained on how to use it. Once they're home, the app tracks fitness levels by counting patients' daily steps and queries them with surveys meant to monitor everything from surgical incisions to water consumption to bowel habits. "It's like having access to your physician throughout the day," says Yeo. "If a patient's survey responses are abnormal, the app will prompt them to call the hospital right away and sends a notification to their doctor."

Yeo reports that the results of a pilot run—which comprised thirty-two colon surgery patients and was completed last December—are encouraging. Most of them were excited to use mHEALS, she says, and initial results suggest it helped prevent readmissions. "The app provided an impetus for me to focus on drinking water, walking, and doing breathing exercises, and I was more cognizant of my progress," says David Matthews, a seventy-three-year-old retired home inspector living in Marlboro, New Jersey, who adds he was motivated to participate "because of the ability of the modern technology to communicate valuable information to my doctors continuously, in real-time, and with such ease."

To further measure the app's effectiveness, Yeo is currently enrolling several hundred NYP/Weill Cornell surgery patients for a randomized control trial that will run for two to three years. Funded with a \$450,000 grant from the Damon Runyon Cancer Foundation, it will focus on surgeries for gastrointestinal cancer, which can pose a comparatively high risk of postoperative complications and subsequent hospital readmissions—making appropriate aftercare especially vital. But Yeo notes that eventually, the app could be tailored to a variety of procedures and conditions. "This technology has enormous potential," Yeo says. "I can imagine a future where all doctors are using a simple but effective mobile app to keep a close eye on their recovering patients outside the hospital." ■

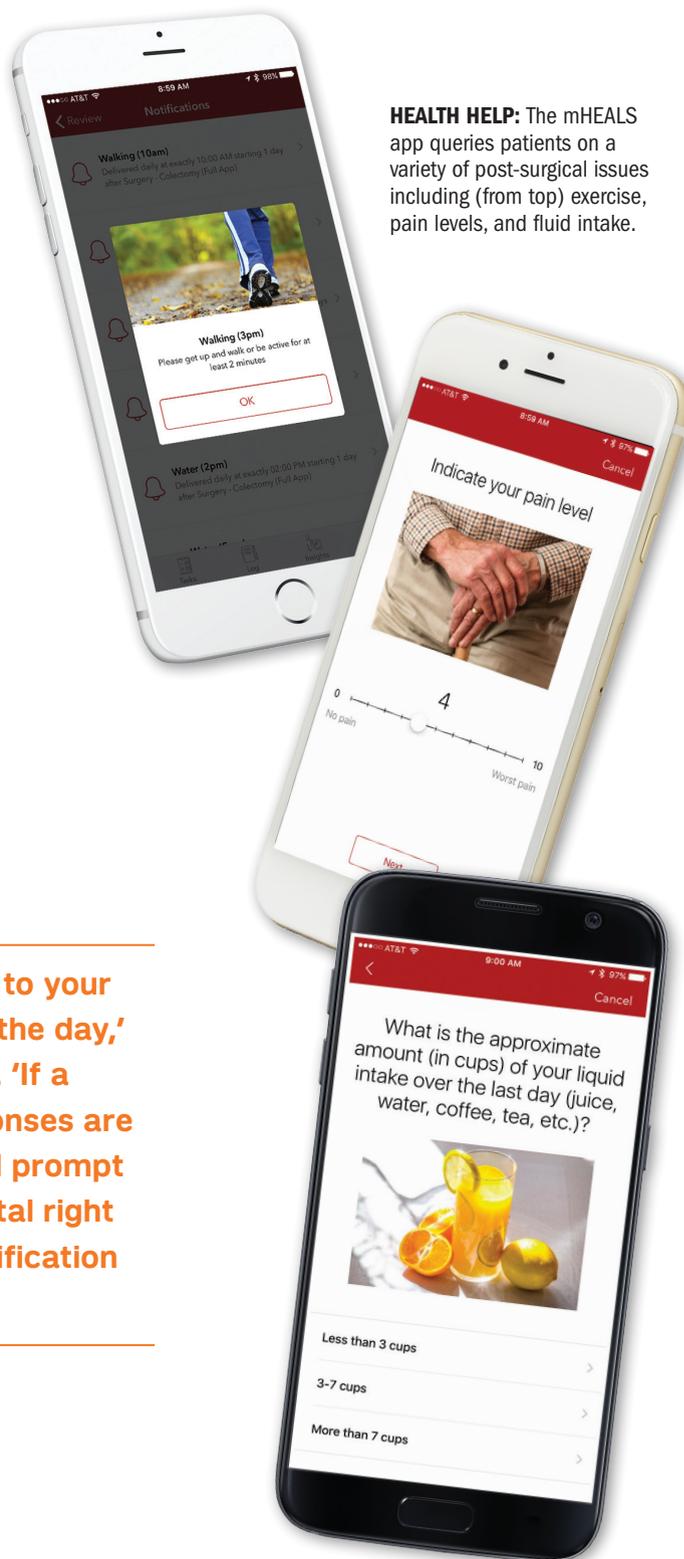
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**'It's like having access to your physician throughout the day,' says Heather Yeo, MD. 'If a patient's survey responses are abnormal, the app will prompt them to call the hospital right away and sends a notification to their doctor.'**

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— Erica Cirino

**HEALTH HELP:** The mHEALS app queries patients on a variety of post-surgical issues including (from top) exercise, pain levels, and fluid intake.



## Chapter & Verse

A father's terminal illness inspires his physician-son's prose poem

**"A**s a writer, I never felt that medicine interfered with me but rather that it was my very food and drink, the very thing that made it possible for me to write," poet and physician William Carlos Williams, MD, reflected toward the end of his life. "Was I not interested in man?"

Williams is among the many influences—along with Greek myths, pop songs, and the language of medical rounds—that manifest in *Diary of Our Fatal Illness*, a book-length prose poem by Charles Bardes, MD. But the most important source is Bardes's own experience as a doctor, son, and poet—one who has found inspiration in, as Williams put it, a "lifetime of careful listening." "Literature is interested in what it means to be human, what it means to suffer," says Bardes, a professor of clinical medicine and associate dean of admissions at Weill Cornell Medicine and an internist at NYP/Weill Cornell. "Medicine engages in that, too. As a doctor, you talk to people about the things that matter most to them—love, aspiration, disappointment, frustration, the tangles that we all find ourselves in. *Diary* is my attempt to bring together my experiences—medical, literary, and life—over the decades. When people ask me how long it took to write this book, the truthful answer is thirty years."

The result is a forty-eight-page volume, published last spring by the University of Chicago Press, that follows an eighty-one-year-old man from cancer diagnosis through death. Told from the point of view of a son who is also a physician, the voice ranges from high literature—with echoes of Modernist poets like Williams and T.S. Eliot—to dark comedy: *My father said, You read me like a book, sir. / The doctor said, But halfway through I'm really only skimming.*

Bardes is careful to note that although his father did pass away after a battle with cancer, the first-person speaker who narrates much of the poem is not purely autobiographical. "About ten years ago, my own father's illness crystallized many of the ideas that I was having about medicine and the ancient healing gods—the idea of disease as metamorphosis—but there's a lot of fiction in the book," says Bardes. "The speaker of the poem has a brother, but I don't. The exchanges between doctors and patients were drawn mainly from my experiences as a physician, not from my father's as a patient."

The writer-physician's path to poetry began with an early love of language in a Philadelphia family where Shakespeare was routinely quoted at the dinner table by his father, a former naval officer. Bardes went on to major in English at Princeton, but as graduation approached he realized that his writing "was too much founded in books, and not enough in experiences." As he recalls: "I began to

think about what profession would bring me most into contact with people. That's when I thought about William Carlos Williams, and the idea of medicine dawned on me." After taking post-baccalaureate science courses and working in a cancer research lab, Bardes enrolled in medical school at the University of Pennsylvania. But he continued to write, taking a year off to pursue an MFA in poetry at Temple.

Bardes put his literary life on hold as a resident and during his early years on the Weill Cornell Medicine faculty, which he joined in 1989, but took up writing again in the late Nineties. When the Boston literary journal *Agni* published some of his lyrical prose pieces on medical themes, they caught the eye of a Bellevue Literary Press editor who asked Bardes to consider writing "the biography of a disease." *Pale Faces: Masks of Anemia*—an illustrated meditation on disease and health that Bardes produced with his wife, visual artist Barbara Kilpatrick—was published in 2008. While the book is primar-

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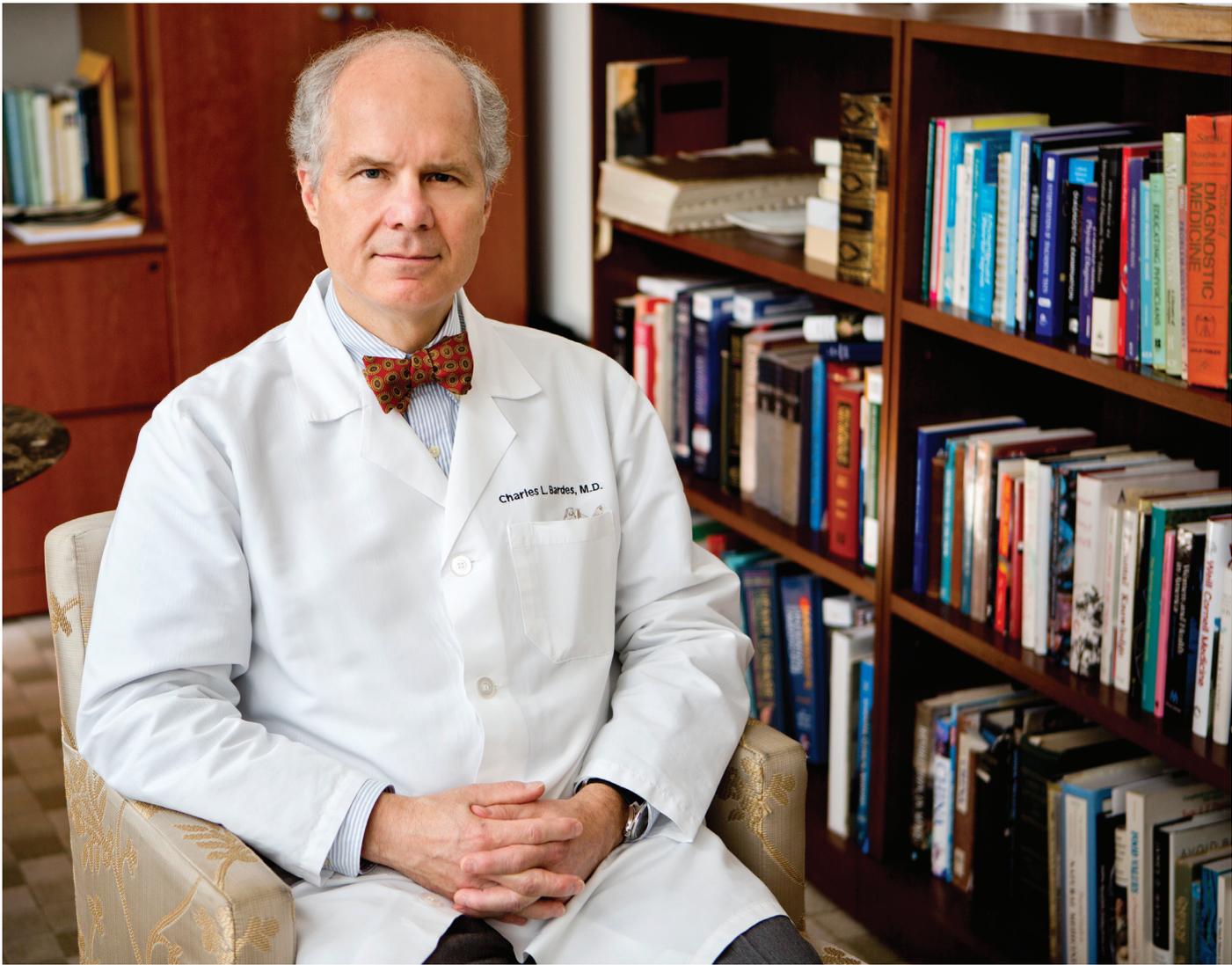
**'As a doctor, you talk to people about the things that matter most to them. *Diary* is my attempt to bring together my experiences—medical, literary, and life—over the decades.'**

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ily nonfiction, *Publishers Weekly* noted its "extended flights of word play," and Bardes has allowed himself even greater literary freedom in *Diary of Our Fatal Illness*. "At one end of the writing spectrum might be an article in a scientific journal, and at the other end, highly personal and revealing poetry," he says. "As a man and a physician, the closer you are to the first end, the safer you feel. As the years have gone by, I've felt less of a need to hold onto the safety line of medical prose. And as I push in the direction of poetry, I can say a lot more and it has greater meaning for me."

*Diary* has found an appreciative audience in the world of letters. As the winner of the New Georgia Arts Collaborative's Literary Achievement Award, Bardes will serve as an artist-in-residence for two weeks in early 2018—lecturing, giving public readings, and meeting with other authors. "Literature and medicine are both forms of paying attention," Bardes observes. "When you bring the principles of reading and writing to doctoring, you become better at listening to your patients' stories, and they pick up on that. They understand that you're not reducing them to a series of biological events, you're trying to understand their experiences—and it becomes a way of offering more of yourself to your patients, too." ■

— C. A. Carlson



Charles Bardes, MD

### Art of Medicine An excerpt from Bardes's prose poem

My mother said, Your father descends underground. He is climbing down a long, deep stairway. Dim bulbs intermittently light the path. He stumbles forward and always downward. He speaks seldom and with little content. He knows the way and does not know the way.

My father said, I think of Odysseus, but there is no Tiresias to receive the sacrifice; of Aeneas, but there is no sibyl; of Dante, but there is no Virgil, no Beatrice, and no reemergence into the light.

My mother said, My husband is become a miner treading incautiously down the deepest tunnels, seeking some ore he will never bring back.

My father said, The shadows on the cave's wall are the same that mark my room. The doctor said, The descent beckons as the ascent beckoned.

My mother said, Still I am lonely and soon will be all alone.

My father said, I knew a dog who, late in her doggy life, dreamed of bounding over hills, herding sheep, and keeping the wolf at bay. I knew a man who, late in life, dreamed of sailing ships, hoisting sails, watching at night, and braving storms. I knew a man who dove a submarine, deeper and deeper, beyond sound and light, beyond any recall.



EXCERPTED FROM *DIARY OF OUR FATAL ILLNESS* BY CHARLES BARDES, PUBLISHED BY THE UNIVERSITY OF CHICAGO PRESS. COPYRIGHT © 2017 BY THE UNIVERSITY OF CHICAGO. ALL RIGHTS RESERVED.

## Person to Person

A student-run elective offers frank discussions with members of underserved communities



**LIFE LESSONS:** Eric Kutscher '18 (center), founder of Community Perspectives in Medicine, with fellow participants in the course

**W**hen Eric Kutscher '18 was a sophomore in college, he went with some friends to give blood during a drive in the school gym. But he was turned away because of his sexual orientation—since at the time, federal guidelines barred donations by men who'd had sex with other men. It was the first interaction Kutscher had had with the health care system since coming out, and it stung. "Walking out of the event, with my peers' eyes on me," Kutscher says, "the stigma I felt was immense."

The donation experience spurred Kutscher's interest in LGBT health issues, helping put him on the path to medical school. And once he got to Weill Cornell Medicine, he realized that he had a broader desire: to understand how healthcare is affected by all types of stigma and discrimination.

That inspired Kutscher to found Community Perspectives in Medicine (CPIM), a unique student-run elective that lets first-years hear directly from representatives of demographic groups that are often underserved, under-represented, or misunderstood. "It's very important that students understand that social determinants—like socioeconomic status, education level, employment status, and societal attitudes such as discrimination and racism—play a major role in health outcomes," says Kutscher, who continues to serve as course director. "You can have the perfect diagnosis and treatment plan, but if you don't do a good job of communicating with your patient or tailoring treatment to their individual needs, they're not going to get better."

ABBOTT

Each meeting of the seven-session course—which is held the second half of the fall semester so that students have had some patient experience through their weekly preceptorships—is devoted to a particular community. Topics include coping with chronic illness; LGBT health; people with physical disabilities; racial health disparities; how religion can affect medical care; and health of incarcerated individuals. “To be a good clinician, the more open you are to more patient populations, the better,” says Laura Deering ’20, who took the course last fall. “And the more you can educate yourself about the different needs among those populations, the better.”

The first half of each class features one or more speakers from a community-based organization in the city; the second half is devoted to a frank, students-only discussion of the issues raised. “That private, safe space—where the students can reflect on the different people in our society that they will be charged with caring for—is so valuable,” says the elective’s faculty adviser, Linnie Golightly, MD ’83, associate dean of diversity and associate professor of clinical medicine and of medicine in microbiology and immunology and an infectious disease specialist at NYP/Weill Cornell. “They can discuss it with no recriminations. No one is going to judge them.” To nurture that sort of open atmosphere and conversational ease, ground rules of confidentiality and respect for each other’s opinions are set at the beginning, and the course has been kept small, with a limit of sixteen students who are admitted on a first-come, first-served basis. “The discussions were very earnest,” says Rachel Umans ’19, who took the elective as a first-year, helped facilitate the debriefing sessions her second year, and will take over leadership of the course after Kutscher graduates. “Students were deeply invested in the issues we were learning about. Everyone was thinking seriously about what it will be like when they’re physicians—what a massive responsibility they’ll have to their patients. It reassured me that I was surrounded by students who were equally concerned about the issues that underprivileged groups face in accessing medical care.”

For both Umans and Deering, one of the course’s most striking sessions covered the experiences of people with physical disabilities; the speaker, who uses a wheelchair, described clinical situations in which she has felt disrespected or dismissed. “She told us how providers often won’t ask patients with disabilities about their sex lives in the same way that we do other patients,” Deering says. “The talk really opened my eyes to the ways in which providers can, even unconsciously, treat

patients differently because of the assumptions we make about their lives.” Other speakers have included the medical director of an LGBT health center in Manhattan’s Chelsea neighborhood, who discussed topics ranging from the practicalities of gender pronouns to the importance of ensuring that clients feel comfortable discussing their sex lives; a foreign-born taxi driver who talked about how his status as an immigrant and non-native English speaker affects his access to healthcare; and a trio from three different religious traditions (a pastor, a rabbi, and a Muslim doctor) who discussed how clinical practice may be guided by their faith,

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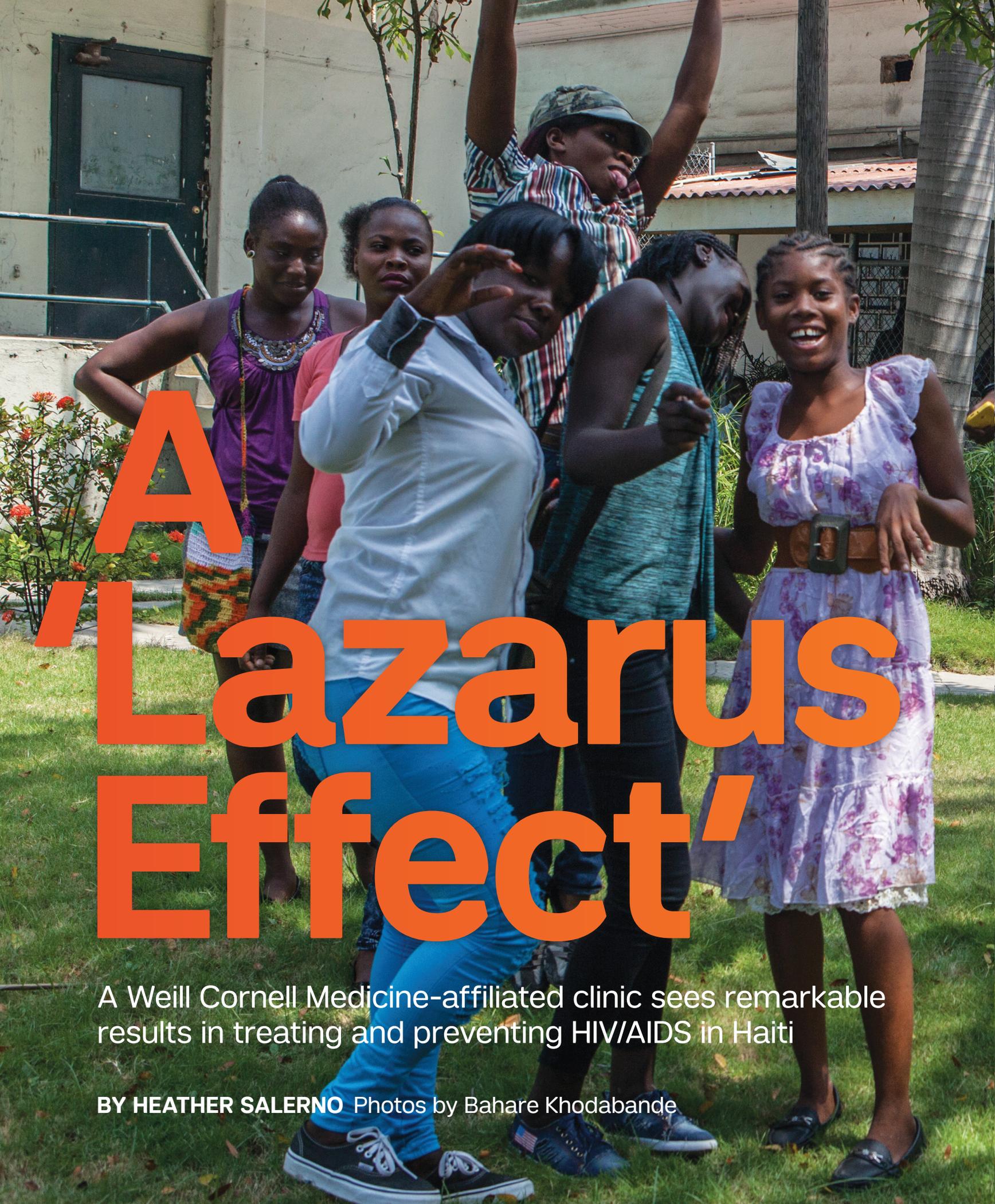
**‘To be a good clinician, the more open you are to more patient populations, the better,’ says Laura Deering ’20. ‘And the more you can educate yourself about the different needs among those populations, the better.’**

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including the role of religious leaders in care and how houses of worship can serve as hubs for wellness efforts. Those and other sessions, Deering says, “brought up issues that I—being an able-bodied white woman whose gender identity matches the sex I was assigned at birth—have not had to think about before.”

As a student-run elective, CPIM isn’t graded; those who attend at least six of the seven sessions receive a certificate of completion and can add their course participation to their résumé. On a deeper level, though, Kutscher (who is leading a two-year study, with Golightly, of the course’s impact on student attitudes toward underserved populations) hopes that participants come away with what he terms “cultural humility”—an understanding that patients from varying backgrounds have different needs and sensitivities, and that it’s a physician’s duty to make them feel included and empowered in their care. For one of CPIM’s community speakers—Allie Cashel, who runs a small nonprofit devoted to raising awareness about living with chronic illness—it comes down to having practitioners empathize with the human being sitting across from them. “In patient-physician relationships, trust and open dialogue are so important,” she says. “All the students I’ve met with have been incredibly receptive. They’re eager to figure out how they can help and support their future patients—how they can really acknowledge the person on the other side of the room.” ■

— Beth Saulnier



# A 'Lazarus Effect'

A Weill Cornell Medicine-affiliated clinic sees remarkable results in treating and preventing HIV/AIDS in Haiti

BY HEATHER SALERNO Photos by Bahare Khodabande



**SUPPORTIVE ENVIRONMENT:**  
Participants in GHESKIO's  
successful adolescent HIV  
treatment, prevention, and  
education program

**A**t what is thought to be the world's oldest HIV/AIDS clinic, based in the Haitian capital of Port-au-Prince, clinicians recently interviewed some longtime patients with the disease—one that's all too common in the Caribbean nation, which has the highest infection rate in the Western Hemisphere. Among the survivors was a mother who spoke proudly of living to see her daughter attend university. Another rejoiced at being able to celebrate her grandchild's First Holy Communion. And yet another shared plans to take a pharmacology class, with the dream of opening a drugstore one day.

Years ago, all that would have been nearly impossible for most Haitians with AIDS. Back when these patients were first diagnosed, HIV-fighting drugs weren't available in the impoverished country, so doctors expected many to die within twelve months. But in early 2003, the Haitian Study Group on Kaposi's Sarcoma and Opportunistic Infections—a nonprofit known as GHESKIO (its French acronym) that provides AIDS care and other services throughout the country in partnership with Haiti's Ministry of Health and the Weill Cornell Medicine Center for Global Health—obtained funding from the Global Fund to Fight AIDS, Tuberculosis, and Malaria to start a free treatment program for those with the illness. Over the next year, more than 1,000 adults began antiretroviral therapy, a combination of drugs that suppresses the virus and reduces the risk of transmission—and they were among the first to receive such lifesaving medication in a developing nation.

The program has proved highly successful: in a study published last year in the *New England Journal of Medicine*, investigators at GHESKIO and Weill Cornell Medicine reported that more than two-thirds of the initial 1,000 patients enrolled were still alive



a decade later, about the same survival rate as their counterparts in the U.S. “It’s had a Lazarus effect,” says co-author Jean Pape, MD ’75, the Holtzmann Professor of Clinical Medicine at Weill Cornell Medicine, who has directed GHESKIO since its founding in 1982. “These people have gone from certain death to actually leading a fairly normal life.”

More than half of the patients in the program already had full-blown AIDS by the time they started taking antiretrovirals. Among the participants, the median CD4 count—which measures the number of white blood cells that protect the body from infection—was 131. (A CD4 count in an uninfected, healthy person is between 500 and 1,600.) Plus, many were malnourished, suffering from other opportunistic infections like tuberculosis, and living on less than \$1 a day. “These people were incredibly, incredibly ill,” says senior author Margaret McNairy, MD, the Bonnie Johnson Sacerdote Clinical Scholar in Women’s Health and an assistant professor in the Division of General Internal Medicine.

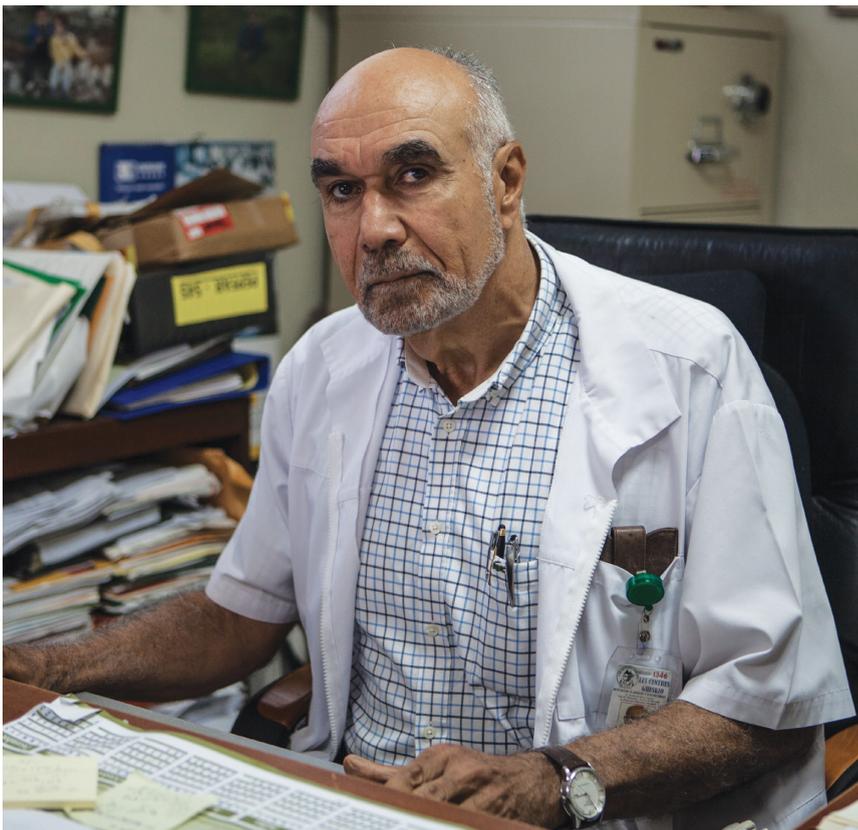
Yet Pape notes that before President George W. Bush announced the President’s Emergency Plan for AIDS Relief (PEPFAR), a multi-billion-dollar global health initiative created in 2003 that largely supported GHESKIO’s therapy program, some prominent scientists argued that antiretrovirals should not be given to patients in the developing world. According to Pape, the concern was that those patients would not follow the complex treatment regimen, leading to drug-resistant strains of the disease entering the U.S. “As it turned out,” says Pape, “that was not true at all.” In fact, compliance was higher than anticipated: five years after treatment began, researchers calculated that the majority of the original 910 patients in Haiti had an adherence level of 90 percent or more. Ten years later, investigators found that about 70 percent of patients had survived—a mortality rate comparable to Americans who started antiretroviral therapy when it began in the Nineties. “Sick people desperately want to get better,” says McNairy, an internist at NYP/Weill Cornell. “If you’re sick, you can’t work and you can’t support your family.”

Although GHESKIO tracked follow-up appointments and assigned field workers to locate people who missed check-ups, participants were responsible for taking their daily medication unsupervised. And >

#### COMMUNITY HEALTH

(clockwise from above): The GHESKIO entrance; Margaret McNairy, MD, with an adolescent patient; director Jean Pape, MD ’75; and a blood testing lab.





**'These people have gone from certain death to actually leading a fairly normal life,' says GHESKIO director Jean Pape, MD '75.**



**HEALTHY FAMILIES:** Participants in a pediatric nutrition clinic

**'If we want to end the AIDS epidemic, we need to have everyone on board—not only adults but adolescents and children as well,' says Vanessa Rouzier, MD, GHESKIO's head of pediatrics and nutrition. 'Different age groups need different strategies.'**



unlike AIDS patients in more developed nations, those in Haiti faced astounding obstacles including extreme political unrest, a cholera epidemic, and the devastating 2010 earthquake. “It’s like the sky falling on your head,” says Pape. “When you have all of these odds against you, and you can make it ten years? It’s really incredible.” That high survival rate has had a ripple effect, too. “It’s amazing to see almost a generation that’s been protected,” says Daniel Fitzgerald, MD, director of the Center for Global Health and a professor of medicine in the Division of Infectious Diseases. “It has not only helped the many people who received treatment for HIV, but the many families that were spared the loss of a loved one.”

## Challenges Remain

Still, the crisis is far from over. Yes, infection rates have been falling: statistics from the Joint United Nations Program on HIV/AIDS (UNAIDS) show the percentage of HIV-positive Haitian adults has dropped from 6.1 percent in 2001 to less than 2 percent today, thanks to prevention programs, education efforts, and treatment services like GHESKIO’s. But the country still leads Latin America and the Caribbean region with the most overall cases of HIV—in 2015, there were 130,000—and AIDS-related deaths (8,000 in 2015). Among the hardest to reach are ten- to twenty-four-year-olds, particularly girls and young women. According to UNAIDS, adolescents and youth account for 40 percent of new HIV infections every year around the world, with deaths among that group having increased by 50 percent over the last decade. “Adolescents are a highly vulnerable group that has been neglected in the past with little dedicated interventions for them,” says Vanessa Rouzier, MD, GHESKIO’s head of pediatrics and nutrition. “We now recognize that we urgently need adolescent specific strategies to help these vulnerable youth cope and thrive with this disease, as well as prevent new infections in that group.”

Rouzier oversees Haiti’s largest pediatric AIDS clinic; since joining GHESKIO in 2009, she has noticed a dramatic reduction in the number of babies infected at birth, which she attributes to more support programs for pregnant women and an increased number of HIV-positive mothers on antiretroviral medication. But unfortunately, she says, young people are still at risk—with many contracting the disease later on through sexual contact. “If we want to end the AIDS epidemic, we need to have everyone on board—not only adults but adolescents and children as well,” says Rouzier. “Different age groups need different strategies.”

One of the difficulties is that young Haitians—most of whom live in extreme poverty and have low levels of education—are more likely to engage in risky behavior, though organizations like GHESKIO

are promoting HIV prevention methods including condom use. Another problem is that for those who already have the disease, few realize that they’re infected. In fact, UNICEF estimates that only 9 percent of adolescent females and 4 percent of adolescent males in Haiti who are living with HIV know their status. Among the barriers to getting tested: children and young adults don’t think they’re at risk for con-



**TREATMENT TEAM** (from left): Jean Pape, MD '75, Samuel Pierre, MD, Margaret McNairy, MD, and Vanessa Rouzier, MD

tracting the disease, clinic hours often conflict with school, and there’s a stigma associated with visiting an HIV clinic. Fitzgerald says these challenges aren’t restricted to Haiti, and he believes the lessons learned there can be applied elsewhere. “HIV is slowly becoming a disease of teenagers around the world,” he says. “Learning how to adapt our care for that demographic is going to be critical.”

McNairy is working with Rouzier and her colleagues on new ways to increase testing among vulnerable youngsters. For nine months starting in December 2014, GHESKIO ran a community-based campaign in seven impoverished neighborhoods of Port-au-Prince, setting up booths that offered a comprehensive package of healthcare services for ten- to twenty-four-year-olds, including same-day testing for HIV, sexually transmitted infections, and pregnancy, and screening for tuberculosis. This way, HIV/AIDS wasn’t singled out for testing—and the strategy worked. Of 3,425 young people, with a median age of nineteen, 98 percent agreed to an HIV test. The results, published last year in the journal *AIDS Patient Care and STDs*, confirmed that these adolescents and young adults were an important high-risk population. “We found a prevalence rate among adolescents and youth that was up to six-fold higher than the national rate,” says McNairy, who led the project, which was supported by the MACAIDS Foundation and led the ▶

## The Public Good GHESKIO's efforts have wider societal benefits

Haitians with HIV are living longer, and that improved survival rate hasn't only benefited those with the disease. It's also bettered the lives of their children—and their children's children. "This has had incredible generational effects," says Daniel Fitzgerald, MD, director of the Center for Global Health and a professor of medicine in the Division of Infectious Diseases. Because of increased prevention efforts and treatment, more mothers and fathers are now able to care for their children, instead of making them orphans at a young age. According to the Joint United Nations Program on HIV/AIDS (UNAIDS), an estimated 200,000 Haitian children under age fifteen lost one or both parents to AIDS by the end of 2001. By 2015, that number had dropped by nearly half, with about 110,000 children orphaned by AIDS.

That makes a huge difference for children who otherwise might have been forced onto the streets, where they're more likely to encounter sexual violence or turn to prostitution to survive. Other AIDS orphans become domestic servants, or *restavèks*, a practice that's been called a form of modern-day slavery. These children are in danger of physical, emotional, and sexual abuse, and usually don't receive proper nutrition or education. Even those who end up fostered by

are able to plan for life instead of preparing for death, as former U.N. Secretary-General Kofi Annan put it when speaking to the World Health Assembly in 2001. Data from the World Bank shows that overall life expectancy in Haiti has dramatically increased in the past three decades: from age fifty-one in 1982—when GHESKIO was first founded to combat the illness—to sixty-three in 2015; Jean Pape, MD '75, the Holtzmann Professor of Clinical Medicine and director of GHESKIO, notes that in recent years, HIV/AIDS has fallen from first place to fourth as a cause of death in the nation. Yet he says it's difficult to assess whether curbing the spread of the disease can be linked to any kind of economic upswing, mainly because progress has been hampered by natural disasters and other crises. Still, as Margaret McNairy, MD, the Bonnie Johnson Sacerdote Clinical Scholar in Women's Health and an assistant professor in the Division of General Internal Medicine, points out: "HIV, like other sexually transmitted diseases, affects primarily adults sixteen to sixty, who are the economic workforce of a country."

Now that Haiti has a healthier population, many patients who come to GHESKIO's clinic are focused on how to earn a living in a nation with massive unemployment. "They're saying, 'Doc, I feel well now.

Can you find me a job?'" says Pape.

So GHESKIO has jumped into the breach with programs intended to prepare clients for work. Since 2005, the group has run a micro-credit fund that has benefited more than 5,000 women living with or vulnerable to HIV/AIDS, offering average loans of \$250 to support small business activities such as selling second-hand clothes or fast food. A 2009 paper written by Pape and his colleagues found that 87 percent of loan recipients reported better living conditions afterwards, including being able to pay for food and rent. Following the 2010 earthquake, GHESKIO

also built a vocational school on its Port-au-Prince campus to train young men in trades like construction. After getting their diplomas, all of those graduates found work and were able to leave their impoverished neighborhoods. Three years later, the training center began recruiting female sex workers and rape victims who were patients at GHESKIO's clinic to learn skills like furniture making. Fitzgerald points out that the training provides economic empowerment as well as a public health benefit: if these women decrease their dependence on sex work, it puts them at a lower risk for HIV and other sexually transmitted diseases, sexual assault, and unintended pregnancy. "Even an incremental change," he says, "can have a big impact."



loving relatives or neighbors face hardships. For instance, almost all schools in Haiti are privately run and require tuition fees; orphaned children put an additional financial strain on already poverty-stricken households, so they're often the ones who don't get to go to school. All of these scenarios put those orphaned by AIDS at a higher risk for contracting HIV themselves—and severely limits their future. "We're seeing so many patients who are still alive with a child who now can read and write, or has finished secondary school," says Fitzgerald. "And you think, if that parent had died ten or twelve years ago, who knows where that child would be right now?"

Indeed, improved care for those with HIV/AIDS means patients



**'Getting them to come get tested is just the first thing,' Rouzier says. 'Getting them to stay in care is the other challenge.'**

way to additional NIH funding.

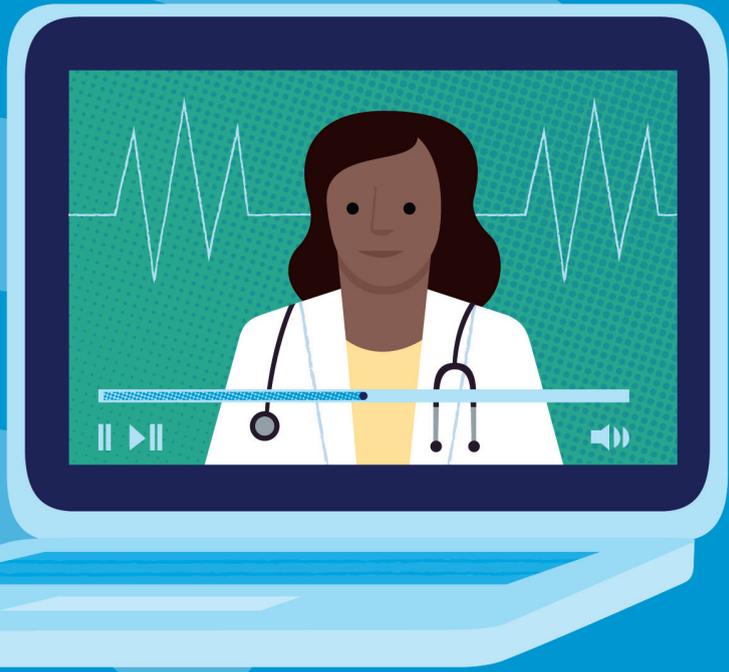
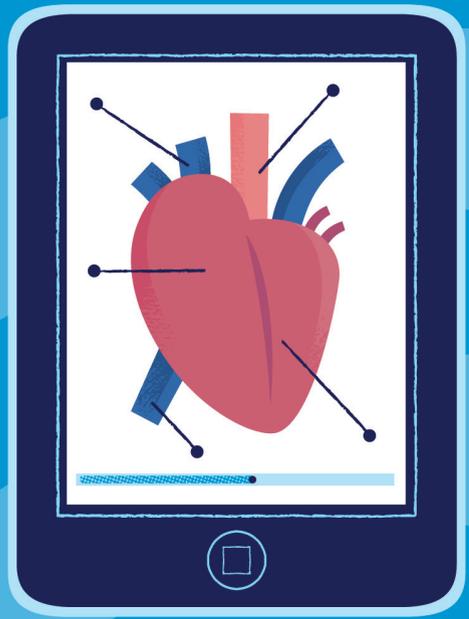
Teens who tested positive were taken to GHESKIO's HIV clinic right away for treatment and counseling. But as Rouzier stresses, "Getting them to come get tested is just the first thing. Getting them to stay in care—and eventually take their medication—is the other challenge." So she, McNairy, and others set up a pilot program to address that obstacle. Rather than continuing to see each patient individually at the main adolescent clinic, GHESKIO established a branch at a local community center, where groups of five to eight youths would meet every month for check-ups by a nurse and to receive support from their peers. "It decreased the stigma and normalized having the disease," says McNairy. "And it created this incredible surrogate family that provided much-needed social support and a sense of belonging." Preliminary outcomes from the program are promising. McNairy says that 90 percent of participants were still in care for a year after they tested positive, compared to only half of those youngsters seen at GHESKIO's main clinic. Her team recently received a \$2 million, four-year NIH grant—entitled FANMI, which is Creole for "family"—to further study the effectiveness of a community-based peer group strategy in a randomized clinical trial.

Overall, Pape says, there are currently more than 80,000 people in Haiti receiving treatment—one-third of them through the GHESKIO network—and

he expects more potent new drugs to soon become available. "That will be even more significant in reducing the amount of the virus in the blood," he says. McNairy adds that, moving forward, the programs in Haiti can be an especially helpful model for other underdeveloped places around the globe, such as parts of Africa where adult HIV prevalence rates are as high as 30 percent. "This work isn't a Band-Aid solution to ending the HIV epidemic," says McNairy. "We're making a real difference." ■

**HANDS ON:** Learning sewing (below) and carpentry (opposite page) in GHESKIO workshops. Above: Clinic staff at work in a lab.





# Digital Ed

As the Medical College curriculum evolves, students are embracing innovative ways in which technology can enrich their studies

**BY AMY CRAWFORD**

PHOTOS BY JOHN ABBOTT

ILLUSTRATION BY ALEXANDER VIDAL



**B**rain and Behavior, a required course for students in the fall of their second year, covers a wide range of topics—from basic neuroscience to diseases of the central nervous system and the physiology of mental illness. As in any medical school course, it comprises a staggering amount of information, and absorbing it all can be a challenge. But Lee Gottesdiener '19 says the details of one disease—multiple sclerosis—are cemented in his memory. That's because the unit on it included a pilot “e-module,” a suite of videos and online activities that filled in for the traditional lecture. “It was definitely a memorable way to deliver the material,” Gottesdiener says. “The e-module was very interactive. You can re-watch the videos if you need to. It was nice to be able to go through the visuals at my own pace. I still remember more about MS—even though it was eight months ago—than about the other topics.”

Gottesdiener's rave review has been echoed by many of his classmates this past year. Three Weill Cornell Medical College courses now include “vodcasts,” or video podcasts, and e-modules—like the MS unit and a similar one about women's heart health—created in partnership with developers at eCornell in Ithaca. More are coming, in a top-down initiative that is part of Weill Cornell's broader move toward more educational technology, from the classroom to the clinic to the anatomy lab (where students now use iPads rather than textbooks to guide their dissections). Some of the tech is eye-popping: the Skills Acquisition & Innovation Laboratory (SAIL), for example, provides students with 24/7 access to simulated operating and procedure rooms complete with robotic patients. And at the Margaret and Ian Smith Clinical Skills Center, which offers a state-of-the-art patient simulator suite, students practice taking histories—with trained actors playing patients—while being digitally recorded for later review by them and their professors. Other technology is more basic but no less transformative, like a new course management system that allows faculty to upload materials for students to access on their own devices. >



**LEARNING IN PROGRESS:** Students in (from top) the Smith Clinical Skills Center, where future doctors are recorded on digital video while seeing “patients” portrayed by actors; the Skills Acquisition & Innovation Laboratory, where high-tech simulators are used to teach surgical techniques; and the anatomy lab, where study is enhanced by the use of iPads



The new tech appeals to the millennial generation, those digital natives who always seem to have a smartphone in hand. “This new breed of students clearly expects things to be technology-based,” says Yoon Kang, MD, the Richard P. Cohen, MD, Associate Professor of Medical Education, director of the Smith Clinical Skills Center, and associate dean for program development and operations of medical education, who is leading the effort. Still, she says, “it wasn’t just about indulging the students. Today there’s an increased need for lifelong learning, because of the pace at which information is changing, from clinical care protocols to basic science. So having information you can access on the hospital floor, or with a patient in front of you—that makes good sense.”

Across the country, medical education is in the midst of a sea change inspired by a major report on the state of American medical schools, published in 2010 by the Carnegie Foundation for the Advancement of Teaching. “The traditional curriculum—two years of foundational education followed by two years of clinical—hadn’t changed much for about a hundred years,” Kang explains. Among other things, their report called for more individually tailored programs, closer connections between the classroom and the clinic, and the cultivation of self-directed learning skills and habits. That’s something electronic instructional materials can help facilitate—as medical schools from Johns Hopkins to Stanford have found when they incorporated more tech into their own curricula.

Adapting to new technology can be challenging for established instructors who are used to teaching in a certain way. Still, Henry Murray, MD, the Arthur Ashe Professor of Medicine and a faculty member since 1979, agreed to take the plunge when he organized a new third-year course called Translational Science. “I’m an old dinosaur,” Murray, an infectious disease specialist at NYP/Weill Cornell, admits with a laugh. “I’ve always favored the face-to-face type of class.” But he realized that since the new course would have its eight meetings spread over sixteen weeks, technology might help “maximize the efficiency of each ninety-minute session, so the students would be prepared to take full advantage of it.” Each of the eight units begins with assigned readings, a hypothetical case report, and vodcasts that students watch on their own time. The vodcasts provide background information and an overview of that unit’s focus, whether it’s the role of the microbiome in disease or the genetic drivers of cancer and treatment resistance. A ninety-minute live session follows, in which a translational scientist gives a brief lecture and, along with a clinician, leads a discussion with a patient whose condition illustrates the subject matter. “That allows the lecturer to focus on what they really thought was important,” Murray says. “They don’t have to try to encompass the entire topic in their one forty-minute talk in class.”

This approach is known by the buzzy term “flipping the classroom”: the foundational material that was once the subject of a lecture is now delivered beforehand, leaving more classroom time for deep dives and question-and-answer sessions. In recent years it has become popular, from high school on up; last year, the University of Vermont’s College of Medicine became the first member of the Association of American Medical Colleges to announce that it >



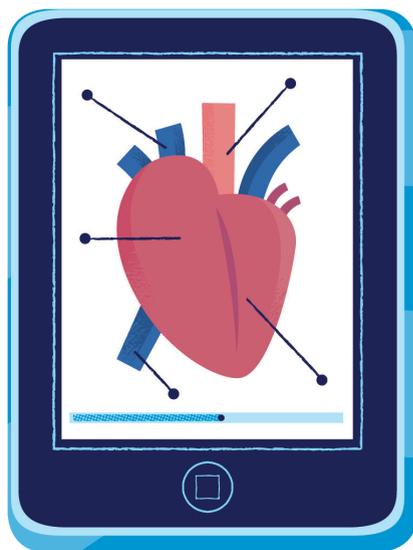
Yoon Kang, MD



**'Today there's an increased need for lifelong learning, because of the pace at which information is changing, from clinical care protocols to basic science,' says Yoon Kang, MD. 'So having information you can access on the hospital floor, or with a patient in front of you—that makes good sense.'**



**TECHNICAL ASSIST:** Medical students (from left) Yoshiko Toyoda '19, Jacqueline Parker '18, and Lauren Tufts '19 in the SAIL lab. The three are collaborating on a new e-module for the surgical clerkship.



**'You spend fifteen or twenty minutes with the basics, and then you're better prepared for a lecture,' says Lauren Tufts '19. 'I think it's the future of medical education—and probably all education.'**

would flip all of its courses and eliminate the traditional lecture entirely. “You spend fifteen or twenty minutes with the basics, and then you’re better prepared for a lecture,” says Lauren Tufts ’19, who took Translational Science last spring, watching the videos on her laptop at home in the evening. “I think it’s the future of medical education—and probably all education.”

Jacqueline Parker ’18, who started with the Class of 2015 before deciding to take a few years off, says students were turning to technology even before the Medical College began incorporating it into the curriculum. Popular tools include the commercially available programs Sketchy Medical, Pathoma, and Picmonic, which use animations and visual cues to help students learn material in microbiology, pharmacology, and pathology. As students spend more time on the hospital floor and their schedules become less predictable, Parker notes that it’s much easier to whip out a smartphone than to haul around a stack of textbooks. “We’re in the hospital for eight or ten hours—and in addition to patient care, we’re responsible for studying for our exams,” she says. “There are gaps of time in the day when it’s appropriate to study, and with electronic access to resources, it’s easier to make good use of the time.”

While feedback has been positive, Kang, an internist at NYP/Weill Cornell, says it’s too early to determine whether Weill Cornell Medical College students are actually learning more. But a number of studies and pilot projects around the country suggest that the flipped classroom approach—when done right—can improve grades and reduce course failure rates. One 2011 paper in *Science* showed that physics students in a flipped classroom scored 33 percentage points higher on an exam than a control group who attended traditional lectures; meanwhile, attendance rates rose by 20 percent.

At WCM, some students have become so enamored of educational technology that they have taken the unusual move of volunteering to create their own content. Under the guidance of Kang and the surgery curriculum team and in partnership with developers at eCornell, Tufts, Parker, and Yoshiko Toyoda ’19 are working on a new e-module for use during the surgical clerkship, which students take in the spring of their second year or the fall of their third. Focusing on hernia surgery, it will include a 3D anatomical diagram, a narrated slide presentation, and videos of the various steps—from gowning and gloving to suturing the incision. “We want to cater to as many different kinds of learners as possible,” Tufts says. “For example, reading and writing aren’t my favorite ways to learn, but I love visual learning.”

Parker notes that if students have already familiarized themselves with a procedure on their own time, they’re better prepared to follow along when they observe it in real life—and are likely to ask more informed questions. “What technology can’t do is provide a personal connection and mentorship,” she says. “It’s important that we continue to grow mentorship opportunities, and that we find a way for technology to foster them.” Gottesdiener agrees that technology should serve as a complement, not a substitute, for traditional methods of teaching. But as the Medical College’s pedagogical approach continues to evolve, he is looking forward to more opportunities to learn through tech-driven methods. “It’s not going to replace everything,” he says. “But outside of school, we take in so much information through the computer—and this plugs into that.” ■



**STUDY AID:** Lee Gottesdiener '19 says that his understanding of multiple sclerosis was enhanced by the use of an e-module.



**VIRTUAL VIEW:** The growing collection of online resources for Weill Cornell Medical College students include a video lecture on Parkinson’s disease by Claire Henchcliffe, MD, PhD, associate professor of neuroscience and of neurology and a neurologist at NYP/Weill Cornell.

## NEWS OF MEDICAL COLLEGE AND GRADUATE SCHOOL ALUMNI



Dear Alumni,

So much of who we become is based on our role models. When I was an intern, the phrase was, “We stood on the shoulders of giants,” and during my time at Weill Cornell Medicine, I was very fortunate to be mentored by the thoughtful Charles Christian, MD, and the inquisitive Martin Gardy, MD '60. Both had a tremendous impact on my approach to science, patient care, and professionalism.

Dr. Christian—who was at various points director of the Division of Rheumatic Diseases and acting chairman of medicine at what was then New York Hospital—was ever composed, a great diagnostician, and obviously supportive of his division faculty and fellows. I learned a lot about quiet, thoughtful leadership from him. Dr. Gardy, an internist and dean of students, was superb at bringing underlying pathophysiology to bear on the clinical problem. He was rigorous in exploring what we knew about a diagnosis, and the calculus of what we didn't know in terms of risk and benefit. I credit him with my approach to teaching house staff these last forty years. My exposure to these two “giants” is one of the many reasons I feel so strongly about giving back to the Medical College.

In recognition of the positive impact relationships such as these can have on a medical career, Dean Choi has emphasized the importance of mentorship at the Medical College. We at the Alumni Association are enthusiastically behind this effort and have been thinking for some months about ways we might reach out to new graduates at their sites of PGY1 training. To this end, we are planning to pilot an alumni mentoring program by next summer. Alumni at certain academic centers where many of our graduates are training will be invited to reach out to the incoming interns in their area, meet with them, and offer a mentor-mentee relationship. Once we launch this program, we will follow it closely, tweak it as needed, and expand it incrementally until the majority of our recent graduates have access to it.

It is our hope that nurturing these relationships will prove fruitful to both parties. The benefits of this program to the graduates should be many: comfort in a time of what can be a stressful transition, exposure to someone with memory and knowledge of their new institutional culture, and tangible evidence that the Medical College wants to be helpful to them after they have graduated. For the mentors, it will be a way to enhance their connection with their alma mater, and enjoy and observe the growth of their mentees.

Those of you who wish to participate in this program, or who have thoughts about its structure, are encouraged to be in touch with either Clara Sharp or myself via the Office of Alumni Relations. I look forward to keeping all of you apprised of the progress of this project. Please do not hesitate to contact me with thoughts or concerns.

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

## Medical College 1950s

**Martin J. Evans '46, MD '50:** "I write this note as a last record to the Class of 1950, fully aware that most of this wonderful class including all of my closest friends are gone. Living in retirement now at North Shore Towers Apartments in Queens, overlooking a division of Northwell Health, my wife and I are privileged to associate with some present stalwart members of Weill Cornell Medicine—namely Stanley Goldsmith, MD, recent director of nuclear medicine, and Martin Kaplitt, MD, former clinical associate professor of surgery and father of **Michael Kaplitt, MD '95, PhD**, professor of neurological surgery. While not in these lofty positions, we did achieve a competence in pediatric practice thanks to the greatest Department of Pediatrics under the direction of **Samuel Z. Levine, MD 1920**. A residency in pediatrics that followed at the Jewish Hospital of Brooklyn clinched the training. Fond memories of **Bill Finn, MD '40** (obstetrics) and **Henry Goldberg, MD '27** (pediatrics) persist, and above all a memory of my premedical adviser, **Perry Webster Gilbert, PhD '40**, director of comparative anatomy at Cornell in Ithaca, who was directly responsible for my acceptance at what was then Cornell Medical College in 1946."

**Sarah Burton Nelson, MD '50**, a retired psychiatrist who was one of the few women in her class at Weill Cornell, lives with her husband, Bernie Makowsky, in a retirement community in Scottsdale, AZ. She enjoys reading newspapers, novels, and medical journals; does physical therapy exercises to retain as much mobility as possible; and visits with family and friends. She has many fond memories of her time at Weill Cornell and sends greetings to all other alumni.

**Ira Kaufman '48, MD '53:** "Just getting through Hurricane Harvey, which devastated Houston. Fortunately, we are in high-rises and did not lose power or water. Large areas of inundated housing abound. Amazing amount of organized rescue and relief coordination. This will make history. Warmest regards to all classmates."

PHOTOS THROUGHOUT: TRAVIS CURRY



**CLASS OF 2021:** Newly arrived first-year students fill the auditorium at the White Coat Ceremony in August.

**Alan Retik '53, MD '57:** "This my first correspondence. Most of my career has been at Boston Children's Hospital. I was chairman of pediatric urology for 35 years, stepping down in 2012. Since then, I have continued to practice and teach. As one might imagine, being in one institution for 40 years results in a variety of leadership positions and awards. The most prestigious was surgeon-in-chief from 2004–10 and in June of this year, Harvard Medical School presented me with the William Silen Lifetime Achievement in Mentoring award. On a sad note, Lynn, my wife of 50 years, recently passed away."

**Bernie Siegel, MD '57:** "My wife was in the hospital recently due to a heart attack. Nurses said I was very nice and didn't act like a doctor: a sad comment about our profession. I keep learning from life about what caring for people is about, and that means the person sharing the room with my wife and how we bonded. Share your life and your stories with others and help them to heal also. After 60 years, I realize how much I have learned from my professional, personal, and family experience with illness. My wife was diagnosed with MS over 50 years ago and the neurologist's predictions were heartbreaking for me. Well, here she is still telling me how handsome I am when I get angry. One of our kids at age seven

**'Just getting through Hurricane Harvey, which devastated Houston. Fortunately, we are in high-rises and did not lose power or water. Large areas of inundated housing abound. Amazing amount of organized rescue and relief coordination. This will make history.'**

— Ira Kaufman '48, MD '53

**'Since retirement from active practice about six and a half years ago, I founded an eye clinic in the town of Riobamba, high in the Andean region of Ecuador. The town is about six hours from either Quito or Guayaquil and serves the indigenous population, who have gotten virtually no healthcare from the government. The clinic has grown beyond my wildest dreams and is now open about 365 days a year.'**

—Elwin Schwartz, MD '76

said his leg hurt and I told him to take a hot bath until one day he said he needed an X-ray, which revealed a bone tumor. I was sure it was a sarcoma and he'd lose his leg and be gone within a year of my advice. He became my therapist when he said to me, 'Dad, you're handling this poorly.' When my wife was diagnosed with breast cancer many years ago, I lived the message our son and patients have taught me. He taught me to enjoy the day, and fortunately the tumor turned out to be benign. I have learned from Thornton Wilder, 'In love's service only the wounded soldier can serve.' Those are the words of an angel to a doctor when the doctor wonders why the angel won't let him be healed. So keep learning and may we truly teach the doctors of the future how to live and heal and teach their patients what they learn."

## 1960s

**Richard M. Ehrlich, MD '63**, a prolific photographer, had his Holocaust Archives portfolio—which was created in 2007 and contains 52 color digital images—accepted into the permanent collection of the J. Paul Getty Museum. As mentioned on the website [artdaily.org](http://artdaily.org), it illustrates the Nazi bureaucracy with images at once artistic and chilling. *Faces of Promise: Looking Beyond Autism*, published by Graphic Arts Books, features photographs of children on the autism spectrum, with notations from their parents. As he writes, "It serves to counteract uninformed and erroneous stereotypes of autism and portrays these children with promise, dignity, and hope." His latest project, *Neogenesis 1* (Nazraeli Press), combines disparate photographs to form new images. He has recently exhibited at the Rose Gallery in Santa Monica, CA, and the Morrison Hotel Gallery in New York City.

**Stephen Padar '59, MD '63**: "There are four of us from the Class of 1963 who live in the Sarasota, FL, area—**Jack McIvor '59, MD '63, Peter Fegen, MD '63, Charles Hill '59, MD '63**, and I. We and our wives periodically meet for dinner at a local restaurant. Occasionally, **Art Atkinson, MD '63**, has joined us while vacationing in Boca Grande."

**Lawrence W. Raymond, MD '64**: "I continue to enjoy teaching, health promotion, and occupational medicine in my 23rd year with Carolinas HealthCare System in Charlotte, NC. I've completed my three-year term as physician commissioner with North Carolina's Environmental Management Commission, so Claire and I hope to see more of our mountain place near Blowing Rock this fall. Also looking forward to January's Western Medical Research Conference in Carmel again; I had two abstracts accepted. Many happy memories of wonderful classmates who coached me through my challenges of first year. Thanks, all!"

**Jack E. Meyer, MD '65**: "I retired July 1, 2017, after spending the last 30 years at Brigham and Women's Hospital. For me, it was an extraordinary place to practice, teach, and do clinical research. I am now professor emeritus of radiology at Harvard Medical School, and will remain on the HMS Admissions Committee as well and support BWH radiology resident teaching and research efforts."

**Steven H. Sewall, MD '65**: "Since our reunion, Sue and I had a great time visiting our granddaughter, who is now a senior at the Ringling School of Art and Design in Sarasota, FL, and we also visited Sunny and **Jon Adler, MD '65**, in Naples, FL. Subsequently, in early spring we toured Morocco for two weeks, and in late spring we journeyed to the Italian Lake District before joining our friends for our annual bike trip from Parma to Verona in northern Italy. We had a lovely family reunion this summer in Niantic, CT, with children and grandchildren. I also spent a week at the Wellesley Summer Chamber Music Camp being coached on Beethoven and Brahms string quartets. I continue to work part time at Orthopedic Associates of Marlborough and am completing my 47th year there."

**John Welch, MD '66**: "After Air Force and training at Parkland in Dallas, we moved to Colorado, where I practiced ophthalmology with fellowship training in glaucoma. My wife, Andria, and I were married before we moved to Texas. We had two kids while I was in the Air Force in Austin. Ten years later we had two more kids. The two boys have moved

to Denver. The two ladies are in Columbus, OH, and Fredericksburg, TX. We have eight grandchildren. The oldest is a junior at Cornell. We now live in the mountains near Beaver Creek, CO, in Arrowhead. We hope to see you if you are in Colorado."

**N. Reed Dunnick, MD '69:** "On July 1, 2017, I became editor-in-chief of *Academic Radiology*, the official journal of the Association of University Radiologists."

**Elaine Sarkin Jaffe '65, MD '69:** "I continue to be actively engaged in my work on lymphoma at the National Cancer Institute. As an editor, I helped coordinate the update of the fourth edition of the *WHO Classification of Tumours of the Haematopoietic and Lymphoid Tissues*, which was published on September 15, 2017. On a more personal note, Michael and I celebrated our 50th wedding anniversary with a hut-to-hut hiking trip in the Dolomites, joined by our children and grandchildren (ages 9 to 20)."

## 1970s

**Richard A. Lynn, MD '71,** encourages his classmates to refer to the archives section of the August 17, 2017, issue of the *New England Journal of Medicine* for an abstract written by **Walter Rubin, MD '59,** and M. H. Slesinger, MD.

**Terrence A. O'Malley, MD '73,** was appointed to the federal Health Information Technology (HIT) Advisory Committee in early August. He is an internist and geriatrician at Massachusetts General Hospital, where he did his training in primary care. He provides clinical care and supervises trainees in a skilled nursing facility, and is the former medical director for non-acute care at Partners HealthCare System in Boston. At the national level, he co-lead the work groups on long-term and post-acute care transitions and the longitudinal coordination of care within the Office of the National Coordinator for HIT's Standards and Interoperability Framework. Currently, he is the community lead on the electronic long-term services and supports (eLTSS) work group to develop standards for the exchange of an LTSS care plan. He is a member

of the National Quality Forum (NQF) Care Coordination Measure Endorsement Standing Committee, the NQF Interoperability Measures Framework project, and the federal HIT Standards Committee.

**Elwin Schwartz, MD '76:** "Since retirement from active practice about six and a half years ago, I founded an eye clinic in the town of Riobamba, high in the Andean region of Ecuador. The town is about six hours from either Quito or Guayaquil and serves the indigenous population, who have gotten virtually no healthcare from the government. The clinic has grown beyond my wildest dreams and is now open about 365 days a year. We have hired a full-time ophthalmologist from Nicaragua and an optometrist from Quito. We also send down teams of American ophthalmologists to help with the surgical backlog. With the aid of my wife, Cheryl, who is a licensed optician, we dispense free glasses to any patient requiring them. We have teamed with Vision Health International and SEE, who have provided generous donations and teams of doctors to help us out. When not in Ecuador, we live on the coast in Connecticut. We love to spend time with our two daughters' families (including five

granddaughters), as well as sail, ski, and play golf."

**Vincent de Luise, MD '77:** "I have retired from the active practice of ophthalmology. I am still on the clinical faculty at Yale and Weill Cornell Medicine and serve on the Weill Cornell Medicine Music and Medicine Initiative Advisory Board. I remain active with the American Academy of Ophthalmology with a lecture course on visual perception and the arts."

**Lisa Levin Nagy, MD '78,** medical director of the Environmental Health Center of Martha's Vineyard, was featured on the TV program "White House Chronicles," which aired nationwide on PBS in August. In the show they acknowledge that she is one of the leading environmental medicine physicians in the country and that the field has utility in many aspects of chronic disease as well as the opiate addiction crisis. Netflix is filming a series on chronically ill patients, some of whom are Dr. Nagy's. The show will be airing in the spring.

## 1980s

**Carolyn H. Grosvenor, MD '80:** "I went on my first medical mission trip to Africa

**WEILL CORNELL WELCOME:** Dean Augustine M. K. Choi, MD, greets new students and their families at the White Coat Ceremony reception.





**ALL DRESSED IN WHITE:** At the White Coat ceremony, faculty help first-year students don the traditional uniform of the physician to mark the beginning of their medical studies.

this summer. We served in two communities in the southern Volta region of Ghana. We saw and treated a lot of malaria and a few cases of schistosomiasis. Perhaps the most exciting event was when a mother brought her malnourished infant to the clinic. He couldn't suck because he was tongue-tied. Our dentists snipped the frenulum and within five minutes he was breast feeding!"

**Robert Kalb, MD '82:** "After many years at the Perelman School of Medicine at the University of Pennsylvania, I will be moving to Chicago to be director of the Les Turner ALS Research and Patient Center and the chief of the Division of Neuromuscular Medicine and professor of neurology. This promises to be a marvelous opportunity to enhance the basic research in my lab and to foster translational medicine. Northwestern is a superb medical center with a deep commitment to understanding the scientific basis of disease."

**Robert London, MD '82:** "Loren and I are still in Orlando, FL. She is the creator of RAISE, a community program that offers work and social skills training that builds confidence and supports adults with special

needs and their families in alliance with the vocational rehabilitation job search process. My daughter, Andra, is married (no grandchildren yet) and is a director at Brighthouse, an Atlanta ideation/brand management company. My son, Brent, lives in San Francisco and is a program manager at Waymo. He enjoys his weekly rides in their driverless cars. I am still working full time as an anesthesiologist with continued interests in patient safety and clinical risk management. This year, I was appointed to the Florida Board of Medicine, which has easily displaced any 'free time' I had. I enjoy it greatly, and feel I am helping to maintain high standards of medical care for Floridians."

**David A. Haughton, MD '84:** "I will retire from medicine at 0700, October 29, 2017. No one knows exactly how much time the gods will afford you; I will concentrate my last years as a full-time (starving) artist. I showed new paintings in Vancouver this September in a show entitled '40 Views of Mount Baker: Homage to Hokusai.' Hokusai, my artistic hero, best known as author of the woodblock print series 'Thirty-six Views of Mount Fuji,' personified a counterweight argument to my

art teachers who frustratingly equated new, disruptive, and non-figurative with good or real art. View the paintings at [www.haughton-art.ca](http://www.haughton-art.ca). Come visit us in Vancouver!"

**Steve Tam, MD '84:** "I belong to CAIPA (Asian Coalition IPA) which comprises around 750 physicians of various specialties in the New York area. I was very surprised that I was given the Best Doctor award based upon overall 2016 patient panel, quality, utilization management, and risk adjustment scores. And Medicare has also given me a certificate of achievement for having successfully managed a large panel of patients and delivered care in the most cost effective manner. I humbly accepted the plaque, but the award money was donated to a much better use."

**Brian Aboff, MD '85:** "This past academic year I had the honor of being president of the Association of Program Directors in Internal Medicine (APDIM) and, after 24 years of living in Delaware, I decided to take a leap into a new and exciting opportunity. I recently moved to Richmond, VA, and now serve as the senior associate dean and director for graduate medical education at Virginia Commonwealth University."

**Bruce Reidenberg '81, MD '85:** "I'm several years into my second career and was promoted to medical director for the Hudson Valley Region of the NYS Office for People with Developmental Disabilities. I'm also guest lecturing in the MD-PhD pharmacology seminar series. Many classmates remember my wife, Joy Gaylinn Reidenberg '83, hanging out in our gross lab; she continues to study animal and human anatomy and teaches at Mount Sinai. She was recently on PBS in 'Wild Alaska Live.'"

**Robert Freund, MD '87:** "I am entering my 23rd year in plastic surgery private practice in Manhattan. Things are great! On the side, I dabble in medical device development and innovation. My kids are getting old. Jake is entering his senior year at Brown. Ben is entering his sophomore year at Michigan and did medical research at Memorial Sloan Kettering Cancer Center this summer. Emily is 16 and Jonah is 10—they have a long way to go and so do I."

**Sonja Gray, MD '88:** "I'm going on a ten-day yoga retreat to Bali in preparation for the opening of my wellness center in northern New Jersey. After completing my medical training, I was fortunate to be selected to the UCLA psychiatry residency program. My education was phenomenal from Cornell to UCLA. After practicing over 20 years in my specialty, it's time to do my hobby and truly merge mind/body medicine as I open a special wellness center that will focus on yoga, meditation, and other alternative ways of supporting and healing the central nervous system. Eastern medicine will merge with Western medicine in a way that only a Cornell alum can orchestrate. The center is opening in the summer of 2018; it's currently under construction."

## 1990s

**Christine Frissora '85, BA '86, MD '90:** "Our son, Scott Jr., Cornell '18, is president of the Cornell Triathlon Club. He represented Cornell at the Mont Tremblant Ironman this August. Our daughter Sarah, Vassar '17, will be attending the Yale School of Divinity for a master's in divinity and the Yale School of Sacred Music for an MA in art, religion, and literature. Caitlyn, age 13, recently was cast in *Le Corsaire* at the American Ballet Theatre, and I was chosen as a supernumerary—my ABT debut at the Met! My husband, **Scott Rodeo, MD '89**, just received the Wilson Teaching Award from Hospital for Special Surgery and continues his work as the team physician for the New York Giants."

**Salvatore J. Cannizzo '88, MD '92:** "I recently started a position as medical director of Mount Sinai Doctors Greenwich Street, a newly opened multi-specialty practice located at 255 Greenwich Street in TriBeCa. We currently provide care in internal medicine, cardiology, and dermatology, with plans to expand the scope of services offered."

**Hadine Joffe, MD '94,** became executive director of the Mary Horrigan Connors Center for Women's Health on June 1. She will also be appointed as the Paula A. Johnson Professor in Women's Health at Harvard Medical School. Currently, she serves as the



**ESSENTIAL INSTRUMENT:** In addition to their white coats, new students receive free stethoscopes, thanks to the Weill Cornell Medical College Alumni Association and the Buster Foundation.

Department of Psychiatry's vice chair for research and director of the Division of Women's Mental Health, as well as director of psycho-oncology research at Dana-Farber Cancer Institute.

## 2000s & 2010s

**Angela Roberts Selzer, MD '09:** "This summer, my family and I relocated to Denver, CO, my hometown. I was sad to say goodbye to Cornell after 13 years, but am excited about my new position as an anesthesiologist at the University of Colorado and medical director of their Preoperative Medicine Clinic. Kaya, who was in first grade our first year of medical school, is now a sophomore at the University of Michigan School of Architecture. Zea, who was 1 year old when we started, is now a freshman in high school. Time flies! I have two other boys, August, 6, and Wulfie, 2. I continue to enjoy research, writing, and teaching."

**Sarah Haseltine Van Tassel, MD '12,** joined the faculty at Weill Cornell Medicine in August as an assistant professor of ophthalmology specializing in glaucoma and cataracts.

**Mark Sonnick, MD '17:** "I was recently named an employee of the month by NewYork-Presbyterian, where I am doing my residency in internal medicine."

**'This year, I was appointed to the Florida Board of Medicine, which has easily displaced any "free time" I had. I enjoy it greatly, and feel I am helping to maintain high standards of medical care for Floridians.'**

— Robert London, MD '82

**'I continue to "explore the frontiers of the unknown," but now in the realm of the psyche and mind/body. I have recently started training to become a Jungian psychoanalyst in Zürich, Switzerland, where classes are held in residence twice a year.'**

— Renée Claire LeStrange, PhD '88

## Graduate School of Medical Sciences

**Jill P. Adler-Moore, PhD '74**, is professor emeritus of microbiology at California State Polytechnic University, Pomona. Having had a very fulfilling career, she remains active with a busy research laboratory collaborating with Gilead Sciences Inc. and Molecular Express Inc. Since 2009, she has served as program director for the NIH RISE Training grant at Cal Poly Pomona.

**Renée Claire LeStrange, PhD '88**: "I graduated with a PhD in molecular biology. I left the field after working just a couple of years to pursue a PhD in clinical psychology with a specialization in depth psychology. I continue to 'explore the frontiers of the unknown,' but now in the realm of the psyche and mind/body. I have recently started training to become a Jungian psychoanalyst in Zürich, Switzerland, where classes are held in residence twice a year. Leaving NYC upon finishing my degree, my husband and I moved around the country, living in Boston, Los Angeles, Providence, Oklahoma City, Chicago, Las Vegas, and now Atlanta. We still miss NYC, but our 23-year-old daughter is an artist in the city (Brooklyn, of course), so we get to visit and see how much has changed around York Avenue."

**Derik de Bruin, PhD '93**, is a managing director in equity research covering U.S. life sciences and diagnostic tools for Bank of America Merrill Lynch Global Research. In the *Institutional Investor* All America Research Poll, he was ranked first in 2010, third in 2011, and second in 2012–16. Previously, he worked at UBS as a senior analyst, at Credit Suisse First Boston as an analyst in biotechnology, and at Salomon Smith Barney as a research associate in biotechnology.

**Jacob Bitterman, PhD '12**, completed the pharmacology program and is currently working at the FDA's Center for Veterinary Medicine as a chemistry reviewer.

**Savira Kochhar Dargar, MS '16** (health policy and economics): "I have transitioned from the project manager of quality and patient safety to the research program manager for the Division of General Internal Medicine, Department of Medicine, where

I oversee all program and project related activities and research support for the division. I just got married to Saurabh Dargar, PhD, in Neemrana Fort Palace, India. We went on a honeymoon trip to Italy."

**Parag Goyal, MD, MS '17**, who earned an MS in clinical epidemiology and health services research from the Graduate School of Medical Sciences, joined Weill Cornell Medicine as an assistant professor of medicine with joint appointments in the Division of Cardiology and of General Medicine. An alumnus of the University of Massachusetts Medical School, he was awarded a R03 grant from the National Institute on Aging to examine the potential adverse consequences of polypharmacy among older adults hospitalized with heart failure.

**Alexander Root, PhD '17**, is a post-doctoral researcher at Memorial Sloan Kettering Cancer Center, working on developing a blood test for the early detection of pancreatic cancer.

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## ALUMNI

**'42 MD—J. Burton Mayes** of Little Rock, AR, January 17, 2017; ob/gyn; practiced in Brooklyn, NY, for more than 35 years; veteran; avid golfer; active in professional affairs.

**'46 MD—Sanford W. Harvey** of Middletown, CT, September 19, 2016; chief of Middlesex Memorial Hospital's Dept. of Physical Therapy; consultant, Rocky Hill Veterans Hospital and Uncas-on-Thames Hospital; veteran; avid boater and bicyclist.

**'43 BA, '47 MD—Susannah Krehbiel Horger** of Delray Beach, FL, August 13, 2017; director of the South County Mental Health Center; associate professor of clinical psychiatry and director of the Child Psychiatric Outpatient Clinic at Jackson Memorial Hospital; did consulting work for emotionally handicapped students in Palm Beach County and for the Child Protection Team in Florida's District IX; active in community, professional, and alumni affairs.

**'55 MD—Guy D. Plunkett Jr.** of San Antonio, TX, June 27, 2017; ob/gyn, U.S. Army Medical Corps; chief of ob/gyn, Womack Army Hospital, 2nd General Hospital in Landstuhl, Germany, and Brooke General Hospital; commander, 130th Station Hospital in Heidelberg, Germany; chief, Dept. of Obstetrics and Gynecology, Eisenhower Army Medical Center; consultant to the Surgeon General; department chief, Fitzsimmons Army Medical Center; chief of professional services, Brooke Army Medical Center; deputy chief of staff for clinical services, headquarters, U.S. Army Health Services Command, Fort Sam Houston, TX; clinical associate professor of ob/gyn at University of Texas Health Science Center; author; volunteer research assistant, Brooke Army Medical Center Library; woodworker; baker;

voracious reader; supporter of public radio; active in community and professional affairs.

**'58 MD—John W. Evans** of Jamul, CA, August 20, 2017; professor emeritus in the School of Medicine and Dept. of Mathematics, UC San Diego; expert in nerve axon equations, pulmonary gas exchange, and applied mathematics; fellow, UCLA Neuropsychiatric Institute; earned a PhD in mathematics from UCLA; worked at IBM's Western Data Processing Center; worked in the Mathematical Research Branch, NIAMD, National Institutes of Health; served in the Public Health Service; active in professional affairs.

**'57 BA, '61 MD—Martin S. Wolfe** of Washington, DC, June 15, 2017; specialist in tropical diseases and travel medicine; founder, Traveler's Medical Service; after residency, trained at the London School of Hygiene and Tropical Medicine; accompanied Secretary of State Henry Kissinger as his personal physician in the 1970s; medical officer, U.S. State Department; tropical medicine consultant for the State Department, World Bank, and Peace Corps; taught tropical medicine and parasitology at Georgetown University and George Washington University medical schools; conducted research in Ghana and Pakistan; author; active in community, professional, and religious affairs.

**'62 MD—John C. Warburton** of Destin, FL, formerly of Gold Beach, OR, February 28, 2017; orthopaedist; chief of orthopaedics at two hospitals; also practiced at North Bend Medical Clinic and Orthopedic Associates; medical missionary for the Calxico Medical Clinic in Mexico; basso; pilot; traveler; active in community, professional, and religious affairs.

**'75 MD—Cleland C. Landolt** of San Diego, CA, June 19, 2017; cardiothoracic and

vascular surgeon; president and CEO, Cambridge Life Sciences Strategies; ran strategic and business development groups; served as COO of Novellus Research Sites, Berkeley HeartLab, and Collateral Therapeutics; chair of strategic planning, Ronald McDonald House of San Diego; served on the board of trustees of the Juvenile Bipolar Research Foundation; philanthropist; active in community and professional affairs.

**'75 MD—Christopher J. Lynch** of Bedford, NH, June 10, 2016; rheumatologist; held several leadership positions at Elliot Hospital; recipient of the Stephen A. Tzianbos, MD, Award for Physician Excellence; named a top doctor in New Hampshire several times; active in professional affairs.

## FACULTY

**Richard A. Fraser, MD**, of New York City, September 14, 2017; neurosurgeon; retired chief of the Division of Neurosurgery at Weill Cornell Medicine; member, American College of Surgeons; survived by his wife, Sara Anne, four daughters, and two grandchildren.

**Robert B. Millman, MD**, of New York City, August 14, 2017; professor at Weill Cornell Medicine, 1974–2009, and the Saul P. Steinberg Distinguished Professor of Public Health and Psychiatry, 1987–2009; undergraduate alumnus of Cornell University, Class of 1961; survived by his wife, Ann Beeder, MD, the Jeanette and Jeffrey Lasdon Associate Professor of Clinical Public Health and Psychiatry, son Lucas Millman (currently a senior at Cornell), daughters Daria Millman and Jenna Millman, and brother Howard Millman, MD (Cornell BA '65).

## We Are WCM

Inmaculada de Melo-Martín, PhD, fell in love with philosophy when her brother brought home textbooks on Aristotle and Plato. Now a professor of medical ethics in medicine and in reproductive medicine, she explores the issues raised by clinical and scientific advances—such as the potential for “designer babies.”



#WeAreWCM

**I**n Spain, philosophy is a required subject in high school; the idea is that training people to be good citizens involves the ability to question our basic beliefs and assumptions. I am the daughter of a coal miner, and my siblings and I were the first in our family to go to university. Growing up in the context of the working class made me realize that there is a lot of injustice and that things could be better—that if we can change our institutions and the ways in which we think, maybe our world would be more egalitarian. So one aspect of philosophy that attracts me is the ability to reflect on issues that appear on the surface to be unproblematic, but are grounded in assumptions that might be quite wrong.

“Most of my work is in two areas: ethics and philosophy of science. I was in a philosophy department before being recruited to Weill Cornell Medicine twelve years ago, and when I got here I was excited to work closely with scientists on ethical issues in biomedical sciences. One reason I decided to get a master’s degree in molecular biology after my PhD in philosophy was that I found that not having formal training in the sciences made me less credible, and I wanted scientists to listen to me. It’s one thing to have

theoretical knowledge, but it’s different to be in the thick of it—to bring this sort of questioning into the realm where things are actually happening.

“My book, *Rethinking Reprogenetics*, is a criticism of some of the arguments in favor of technologies that could allow parents to choose what are called ‘designer babies’—embryos that don’t just lack certain diseases, but have certain physical or character traits. These technologies potentially give us an unprecedented and sophisticated level of control, not just over whether and when to have children but also over what children we have—over who can and cannot be born. Although these technologies will afford us significant benefits, they are also likely to have negative impacts. They’re likely to increase critical examination of the choices that pregnant women make, which are already unduly scrutinized. They can contribute to sexist, racist, and ableist practices. And because only those with ability to pay are likely to have access to them, they can increase inequality. So how we use reproductive genetics will affect our society—and I want to get people to think about it, before it’s too late to go back.” ■

ABBOTT

# A Legacy Gift Inspired by a Special Bond

“Psychiatry has completely changed my life,” says Brooks Betts, at left. To honor her longtime Weill Cornell Medicine psychiatrist, Dr. Judith Tanenbaum, MD '88, at right, and to support the careers of future psychiatrists, Ms. Betts created a bequest in her will to establish the endowed Betts Tanenbaum Chair in Clinical Psychiatry at Weill Cornell Medicine.



**What will your legacy be?  
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