BROWN MEDICINE

Volume 20 | Number 2 | Spring 2014

What's Next?

Meet some of our freshly minted MDs.

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"To view someone's life completely ... can allow so much insight into how we might best help as physicians."

—Ross Hiliard, MD RES' *Page 28*

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DEPARTMENTS

Cover: Photographed in Providence, RI, by Karen Philippi.

STEPHANIE DALTON COWAN; CONNIE GROSCH; COURTESY GEOFFREY TABIN

LETTER FROM THE EDITOR

BROWN MEDICINE

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Editor's Choice

I'm not sure if it was luck or the consistent extraordinariness of Brown students that gave me three great cover options for this issue. But how to choose just one?

You can't help but feel hopeful when you look at these new doctors. They are going into a health care system in tumult, an experiment that is testing ways to make the system fair for patients, for physicians, and for society. They've signed up for the challenge, and have years of continued personal sacrifice ahead. I decided that was worth having three different covers. You'll meet three more graduating students in "A Date with Destiny" (page 32).

This issue's feature story about internal medicine residents who make visits in patient homes reminded me of a time in my childhood when my mother was a caregiver to an elderly woman. As her health deteriorated, Mrs. C moved in with us, and her doctor began making his biweekly visits with her in our home.

I knew this was rare and special even in the mid-1980s, but now I understand that the doctor was doing more than accommodating a frail patient. He was checking out her new environment, ensuring she was well cared for and safe.

I wish health care providers, not just doctors, had more opportunities to do that, especially for the most vulnerable—the elderly, children with special needs. What is learned at a patient's dining room table might be the thing that keeps them from slipping through the cracks.

Kris Cambra

INBOX

CLASSICAL EDUCATION

In your last issue you touted the benefits of the PLME (Program in Liberal Medical Education) ("The Whole Physician," Winter 2014). That is all hogwash, in my opinion. I firmly believe in a PCME (program in conservative or classical medical education). My father was the product of such an education. He and my mother both came from Ukraine, a former republic of the Soviet Union. Both of them attended medical school there (although my mother couldn't finish because of the war and because she was younger than my father). Under the Soviet system, colleges or universities were for the sole purpose of attaining training in one's chosen profession. All of the broad, general education that one had to have was achieved in the gymnasia, or high school. Right after graduation from this secondary school, my parents matriculated into medical schools. The duration of medical studies was five years, after which time my pop received his MD degree. During his medical school years nothing that he learned was superfluous. ...

The inaugural PLME class, 1985.

ALPERT MEDICAL SCHOOL ARCHIVE

When I was at Brown as an undergrad I took Music 1-2, a course taught by Mr. Fischer. My father asked me why I would need to take a music course if I was planning to pursue a medical career. I couldn't give him a good answer except to say that I was fulfilling a distribution requirement. My paw came to the conclusion that premedical studies in this country were nothing more than a business-making activity, something done to make the educators money. It does nothing to make one a better physician or surgeon. The argument that it makes us better humanists is just a bunch of bull, because no one was a better "humanist" than my father, speaking from a completely objective point of view. He did not have a particularly busy practice, he took time with his patients, and oh yes, he made house calls. He was of the opinion that there are some patients who are too sick to be seen in his office but not sick enough to go to the ER. He would make his rounds wearing his fedora hat and carrying his black bag. When he died prematurely at age 59 his patients sorely missed him. Now that was a model of what a general practitioner should be like. And yet he had been trained under a PCME. ...

So let's start focusing on what's really important in our society and reform health care from a disease-oriented approach to a health-oriented approach and we'd all be better off. That is the real essence of humanism.

George Chudolij '72 MD'76
East Freetown, MA

KID STUFF

I thoroughly enjoyed Kylah Goodfellow Klinge's essay, "Question Away" (Winter 2014), and believe that she is absolutely right in insisting on doctors' listening with more open minds to their patients' concerns.

However, I would like to point out that Ms. Klinge's assessment of type 1 diabetes—"I was no longer young and healthy. I was diabetic"—implies that diabetes is antithetical to youth. In fact, most type 1 diabetics are diagnosed in childhood or adolescence. The condition was, until recently, referred to as "juvenile diabetes." I was diagnosed at the age of 11.

Emily Petit
North Kingstown, RI

EVENTS

May 23-25, 2014
Commencement-Reunion Weekend
brown.edu/go/md-reunion
September 27-28, 2014
Alumni 250th Celebration
250.brown.edu
October 24-26, 2014
Family Weekend
brown.edu/go/mdfamilyweekend

JUST SAYIN'

Please send letters, which may be edited for length and clarity, to:

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- Brownmedicinemagazine.org

The BEAT

WHAT'S NEW IN THE CLASSROOMS, ON THE WARDS, AND IN THE LABS

LISTEN AND LEARN Rian Yalamanchili MD'16 (right) and Amed Logrono '12 MD'16 participate in the Brown Human Rights Asylum Clinic training.

SCOTT KINGSLEY

TRAINING DAY

Safe Harbor

Med students provide help for asylum seekers.

The US has opened its doors to immigrants fleeing persecution and violence since its founding. But the process for attaining asylum is complex and lengthy, and only 30 to 40 percent of applicants receive refugee status. That rate goes up to 90 percent, however, for asylum seekers with a medical affidavit, which documents physical evidence of abuse or torture—so medical assessments significantly influence cases.

The stakes are high: if denied, immigrants must return to their home country, where they may be harmed. Doctors lend their power and credibility through the medical affidavit, and now, with training from the Brown Human Rights Asylum Clinic (BHRAC), some Rhode Island physicians have that authority.

On a Saturday in February, 72 doctors, residents, medical students, and others packed a second-floor classroom at Alpert Medical School for the BHRAC's first-ever training day, learning skills such as affidavit writing, human rights and asylum law, and evaluating scars. As the last session wrapped up, clinic cofounder Rebecca Slotkin MD'16 announced, "Before today, may-

SPECIAL GUEST
Jillian Tuck, manager of Physicians for Human Rights' asylum program, was one of the day's speakers. She talked about human rights law and the medical affidavit.

> "This is something that's **tangible help for someone. Your observation and documentation are what help them."**

be three or four physicians in the state of Rhode Island were qualified to assess asylum applicants. Now?" She gestured to the crowd. "There are dozens."

Asylum assessments differ markedly from regular examinations: doctors look for years-old evidence of trauma, and must account for all scars and abnormalities, even those unrelated to abuse. Such exams can take hours, and often practitioners can't use the space in which they normally work because the applicants aren't patients.

This is where the BHRAC can help. In addition to connecting clients with qualified physicians and affidavits at no charge, it has arranged with Clínica Esperanza, a Providence clinic for uninsured adults, to donate space for assessments as needed. Before the BHRAC, asylum seekers had to travel to Boston or New York City to get affidavits, increasing the time and cost of an already demanding process. The difficulties of traveling to and navigating an unknown city may have deterred asylum seekers from taking the trip at all.

Trained Alpert medical students observe assessments and draft affidavits, which are routinely 20 pages long and must be thorough and exact. "Most of the time when you're a med student, you're just tagging along and observing—the patient is doing you a favor," Caitlin Ryus, MPH MD'17, a BHRAC codirector, says. "In your first few years of medical school you can take the sexual history and you can do some first aid, and that's about it. But this is something that's tangible help for someone. Your observation and documentation are what help them."

Ryus says the group is hoping to partner with a radiologist so they can do x-rays, which can show evidence of old fractures and breaks resulting from abuse—things that can't be seen from a surface exam, and can be powerful evidence. She adds that they expect the number of clients to increase as word spreads of the free assessments.

"We originally expected clients to be referred through PHR," says Ryus, referring to Physicians for Human Rights, a national organization that helps asylum seekers find legal counsel and medical care. "But at Clínica, we ran into two different women seeking asylum who needed assessments," she says. "The need in the community may be greater than we had thought." ***—Josephine Benson '17***

OVER HEARD

"I've spent my life fighting three things: injustice, bureaucracy, and hypocrisy. The American health care system has all three."

—**IRA MAGAZINER '69, P'06, '07, '10** delivering the Paul Levinger Professorship Pro Tem, "Can Health Reform Fix Health Care?", on March 20 at Alpert Medical School.

SCOTT KINGSLEY

STUDENT LEADERS
Executive Master of Health Care Leadership students gather during one of the on-campus sessions.

KARL DOMINEY OF DOMINEY PHOTOGRAPHY

The BEAT

Change Makers

A new master's program helps shape health care leaders.

With a professional career already underway, many leaders in health care might not think about going back for another degree. But as health care delivery becomes more complex and collaboration more crucial, many providers, executives, and other professionals feel the need to gain new skills and a better understanding of health care reform. That has them flocking to Brown's Executive Master of Healthcare Leadership (EMHL) program.

Program Director Angela Sherwin '07 MPH'09 says the program was "overwhelmed" by interest. Twenty-eight students are enrolled in the first cohort of the program, which began in August 2013. They have professional roles all over the health care industry, as physicians, pharmacists, hospital and patient care practice executives, health insurers, IT experts, and even a health care architect and facility planner. But they share the same goal: learn up-to-the-minute best practices in the rapidly changing health sector.

Doreen Wiggins MD'88 RES'92 decided to pursue the degree program when she was appointed founding director of the Women's Cancer Survivorship Program at Lifespan. The breast surgeon wanted to get things right from the start, and saw the degree program would give her the skills to do that.

"One of the things we're looking at [in the coursework] is the cost effectiveness of the things we do for patients and whether they align with evidence-based medicine. We're asking, is it an effective treatment and is it cost effective?" Wiggins says.

Because the curriculum of the EMHL is designed to address real-world problems, students identify a "critical challenge" they are facing in their organization. All of their coursework and their final project are focused on learning ways to address that challenge. They develop a strategic plan that can be implemented in their workplace. For Assistant Professor of Emergency Medicine Anthony Napoli, MD RES'06, that's the emergency department (ED).

"My critical challenge focuses on more efficient and effective management of patients who present to the ED with undifferentiated illnesses or diagnoses that may be best managed in a short-stay clinical decision unit," Napoli

PEER TO PEER
Doreen Wiggins MD'88 RES'92 (left) says she enjoys learning from fellow students who work in other sectors of the health system.

> "The program provides **different ways of thinking about the work we do.** It promotes forward thinking."

says. "Rapid diagnostic and management protocols in such units offer the capacity to provide improved patient care, at lower cost, with lower resource utilization and with greater patient satisfaction."

Both Wiggins and Napoli say the perks of the program so far have been the teamwork and the exposure to different aspects of the health care industry.

"The program provides different ways of thinking about the work we do. You learn about marketing, strategic planning, and how to read data," Wiggins says. "It promotes forward thinking."

At the end of the 16-month program (the first cohort will finish this fall and participate in the May 2015 Commencement), the students will emerge as true leaders, not only ready to face the fluctuations underway, but to make change themselves.

"There's a passion for transformation in our students," Sherwin says. "I'm excited to see what they'll accomplish in the next few years." ***—Kris Cambra***

Ask THE EXPERT

Birth Control

For nearly 1 in 10 women, fertility is violence.

What is reproductive coercion and how prevalent is it?

Brown Medicine asked Associate Professor of Medicine (Clinical) and Obstetrics and Gynecology (Clinical) Amy S. Gottlieb, MD, and Assistant Professor of Obstetrics and Gynecology Rebecca H. Allen, MD, MPH, to explain the issue and describe their study published in the *American Journal of Obstetrics and Gynecology*.

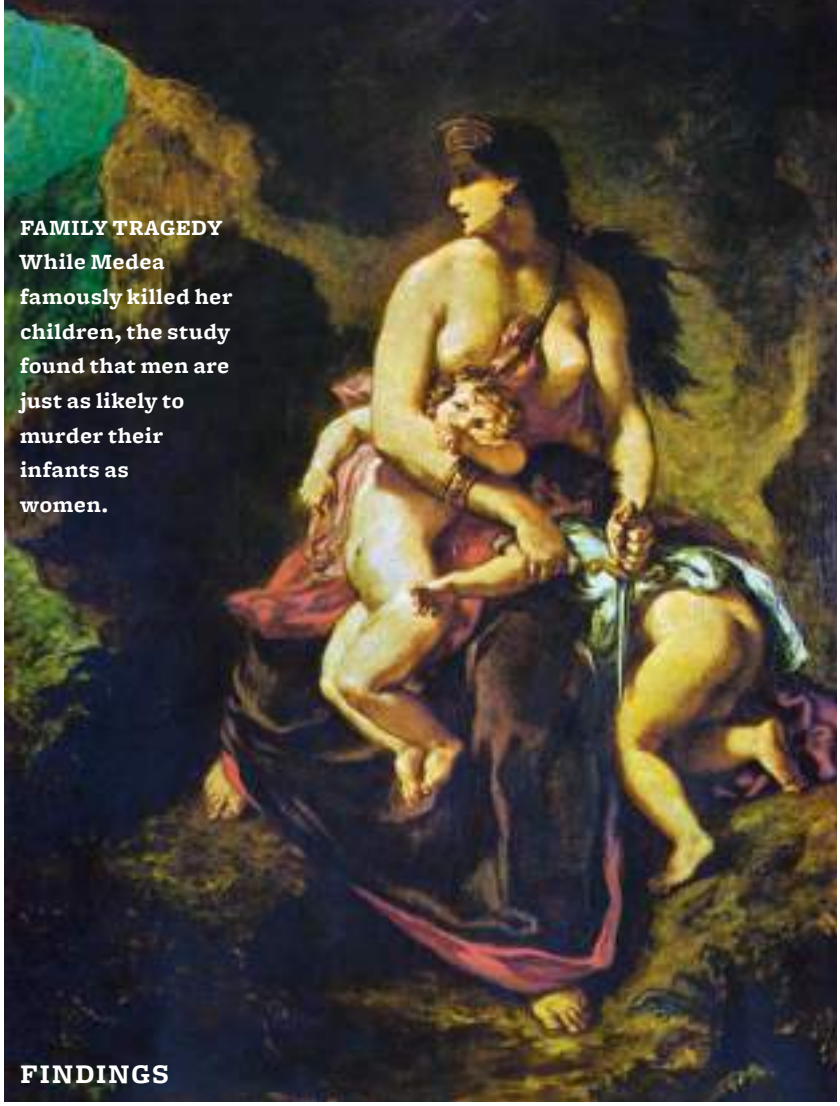
Reproductive coercion—or RC—is male behavior to control contraception and pregnancy outcomes of female partners. It can include pregnancy coercion, such as threatening to harm a woman physically or end the relationship if she does not become pregnant; and birth control sabotage, such as flushing oral contraceptive pills down the toilet, intentionally breaking or removing condoms, or inhibiting a woman's ability to obtain contraception. Since RC is about fertility control and not a particular reproductive outcome, it can also involve pressuring a female partner to terminate a pregnancy.

Nationwide, at least 9 percent of women in the US have experienced RC. Recently at Women & Infants Hospital's Women's Primary Care Center, we and our colleagues asked 632 women presenting for routine obstetrics and gynecology care about experiencing RC. Our study was the first to assess RC among a general obstetrics and gynecology population and affirmed findings of previous investigations done in more specialized settings like family planning clinics. We found that 16 percent of women reported experiencing RC currently or in the past. Among these women, almost one-third said RC occurred within a physically abusive relationship.

Health professionals who care for reproductive-aged, heterosexual women should address RC in the clinical setting. RC impacts a woman's ability to use contraception and/or plan her own pregnancies. It has significant implications for providers' efforts to promote reproductive health and family planning. Furthermore, when RC is identified, a female patient who desires contraception can be offered hidden forms of birth control like a contraceptive injection or intrauterine device.

Physicians and allied health professionals are well placed to identify reproductive coercion and lessen its impact on the health and well-being of our patients and their families.

The BEAT



FAMILY TRAGEDY While Medea famously killed her children, the study found that men are just as likely to murder their infants as women.

FINDINGS

Flesh and Blood

Brown researchers take a hard look at the incidence of filicide.

About 3,000 times a year, someone in the US kills their child. It's a tragic phenomenon no one has tried to understand—until now.

Timothy Mariano, MD, PhD RES'15 and Wade Myers, MD, professor of psychiatry and human behavior and a forensic psychiatrist at Rhode Island Hospital, published a study in the March issue of *Forensic Science International* that offers the first statistical analysis of filicide, drawing on 32 years of data on more than 94,000 arrests.

Their research could help identify patterns among filicide cases, which could in turn aid in studying its causes.

"To know more about the epidemiology of this crime will hopefully help medical practitioners to identify people who are at risk for committing such crimes," Mariano, the lead author, says, "and that will help us with prevention, which is the ultimate goal of this research."

Understanding filicide can help challenge myths and stereotypes about the crime, Myers adds. For example, the data, mined from the FBI's Supplementary Homicide Reports, show that men and women are almost equally likely to kill infants, though men were more likely to kill older children. Stepchildren are at no greater risk than biological children, and adult children account for nearly one in five filicide victims, suggesting it's a lifetime risk.

Perhaps the only silver lining in the research—if one can be said to exist at all—is that filicides appear to be on the decline. The total number of cases has drifted slightly downward since the 1990s, even as the population has grown.

DARK DATA

Mariano, Myers, and co-author Heng Choon Chan, PhD, of the City University of Hong Kong, found that more than 58 percent of victims in the study were male. A father killing a son was the most likely filicide scenario, representing nearly a quarter of such deaths; women killing a stepchild accounted for less than 1 percent of cases.

The most common method of killing, especially of infants, was with "personal weapons," such as beating, choking, or drowning. As victims aged, firearms were more common, and men were much more likely than women to use them.

The paper suggests three main hypotheses about the motives for filicide. One is that at least some offenders have mental illness that derives from low levels of the neurotransmitter serotonin. Not only is that borne out in some animal studies, but the most typical ages of parents in the data—18 to 30 years—are when many serotonin-related illnesses occur, like depression and schizophrenia.

Because men committed more than 57 percent of the killings, the researchers also considered high levels of testosterone, which appear to coincide with higher rates of filicide in animal studies.

The final theory pertains to "the unwanted child." This evolutionarily motivated idea, also informed by other studies, suggests that parents, particularly young mothers, may kill young children who are sick or for whom they feel they cannot provide care.

Neither the data nor the hypotheses definitively explain filicide, but they can help researchers focus their inquiries. "Hopefully future research will continue to improve society's ability to identify, manage, and treat populations at risk," the authors write. ***—David Orenstein***

EUGÈNE DELACROIX, *MEDEA ABOUT TO KILL HER CHILDREN*, 1838

DOCTOR TO DOCTOR

Therapeutic Microbes

Are fecal transplants the answer to *C. diff* infection?

Colleen Kelly, MD RES'06, clinical assistant professor of medicine and a gastroenterologist at the Women's Medicine Collaborative in Providence, is a leading expert in fecal microbiota transplants (FMT) to treat recurrent *Clostridium difficile* infection, which infects as many as 3 million patients each year in the US—and kills about 50,000 of them. These infections are caused by antibiotics and are becoming more resistant to routine therapy.

Kelly has treated more than 140 patients with FMT and is the principal investigator for an NIH-funded randomized controlled clinical trial for the treatment of relapsing *C. difficile* infection. FMT involves transferring the "good" microorganisms from a healthy donor into a patient with *C. diff* infection. These bacteria then begin to grow in the patient's colon and prevent *C. diff* from overgrowing again. Published data suggest the therapy is up to 94 percent effective.

Why is toxigenic *C. difficile* dangerous? How do antibiotics cause this?

***C. difficile* infection** can range from mild diarrhea to severe. At its worst, *C. diff* can present with severe systemic toxicity including shock, multisystem organ failure, lactic acidosis, and even result in death. Antibiotics cause damage to the "good bacteria"—the healthy communities of anaerobes that are normally dominant in a healthy colon. These anaerobes normally limit the growth and expansion of *C. diff*. When they are wiped out by antibiotics, *C. diff* can proliferate, produce toxin, and result in disease.

CONNIE GROSCH

BEHIND THE MASK
Colleen Kelly prepares a slurry of donated fecal matter for transfer to a patient.

How did your research begin?

I started doing fecal transplants because I had a patient with recurrent *C. difficile* who was not getting better after six months of standard therapies. It seemed logical and safe, and it was her only option. When it worked, I was referred a few more patients from Boston, where they were not yet doing fecal transplants. It was effective in every one of them.

After about a year, I wondered why everybody wasn't doing it. That led me to designing a study, applying for funding through NIH, and securing an IND [Investigational New Drug] status from the FDA. The FDA considers fecal transplant a "drug" and a "biologic" and requires an application, just as they would from a pharmaceutical company seeking to test a new drug. I started a randomized double-blind clinical trial in 2012 and we should be completing enrollment sometime this summer.

Were you nervous when you treated your first patient and implanted screened stool from a healthy donor into her via a colonoscope?

Very. I wasn't sure exactly how to do it, whether it would work, whether I could cause an infection. I read everything I could find, talked to doctors who had done it, and became more convinced about the safety. In more than 50 years of fecal transplants, there haven't been any reports of infections transmitted. With the first patient I was just worried it wouldn't work. I didn't know what else I could do for her.

Who have been more squeamish, patients or physicians?

Definitely the physicians. These patients are suffering and willing to do anything to get better. They have read all about fecal transplant online and seek out a provider willing to do it for them.

Our bodies are packed with microbial communities living on and in us. Your

The BEAT

work seems to underscore how dependent we are on these organisms. Why?

These organisms have important roles in digestion, energy metabolism, vitamin production, and immune system development. They also help protect us from getting sick. We now are learning what genes these bacteria carry and what they are doing. There are a number of diseases such as inflammatory bowel disease, obesity, fatty liver disease, and autoimmune-allergic conditions that are associated with gastrointestinal dysbiosis [alterations in bacterial populations in our guts]. We hope to eventually figure out whether therapeutic manipulation of these bacteria can be beneficial in some of these other conditions.

You and your husband, Assistant Professor of Medicine Matthew Jankowich, MD F'07, are raising three children (Alex, 9; Carrie, 9; and Catherine, 5). How do you have the energy to do all that you do?

I am a born worker. My parents were both blue collar and worked very hard. They instilled that ethic in us. My first job was a paper girl in sixth grade for the *Cleveland Plain Dealer*. My parents warned me that if I took the job I had to keep it for at least one year. I had to get up every morning at 5. It was dark and cold and I was lugging around all these heavy papers and I hated it after about three days. But they made me do it for a whole year; I was not allowed to quit. So quitting or giving up was never an option with any of this. From writing the NIH grant to getting an IND from the FDA, it took hundreds of hours. Yes, I would often feel a little tired or overwhelmed or sorry for myself, but I just kept plugging away because I believe nothing of value in life comes easily.

You have saved many thank-you letters from patients. What do these mean to you?

When I'm feeling really tired or frustrated about something, I look at them and remember how much this work is helping people and making a difference. They mean a lot to me. They make me smile and sometimes almost cry. They are so heartfelt. It feels good that all this work is so appreciated.

What is your message to physicians and dentists who prescribe antibiotics?

Carefully consider every course of antibiotics that you prescribe. I've seen people die of *C. diff* that resulted from courses of unnecessary antibiotics. The antibiotics you prescribe do a lot of collateral damage. We need to preserve the ecosystem that is our gut microbiome. Use the most narrow-spectrum antibiotic you can and avoid clindamycin. It should have a skull and crossbones on the bottle.

—Teresa L. Schraeder, MD

Clinical Assistant Professor of Family Medicine

ANATOMY OF AN EMERGENCY MEDICINE PHYSICIAN

Scuba Diva

Michelle Daniel, MD, assistant professor (clinical) of emergency medicine, keeps a full schedule—as course leader of the Doctoring program, nocturnalist at Rhode Island and The Miriam hospitals, graduate student in medical education at Maastricht University, wife, and mother of two girls. Her hobbies are no less daunting, from horseback riding and running to skiing, scuba diving, and high-altitude trekking. But her favorite pastime is one she can never indulge enough. "It's hard to really maintain music in your life," says the mezzo-soprano, who double majored in classical voice and biology as an undergrad. Trained in opera and musical theater, her outlets now are Alpert Medical School's a cappella group, Medical Records, and the annual BioMed Concert. This year Daniel found a way to integrate her love of music with medicine as faculty adviser for a new preclinical elective, Diseases, Doctors, and Divas: Opera and Medicine. They explored how operas "represent societal perceptions of physicians and illness," she says, like HIV/AIDS in *Rent* and tuberculosis in *La Bohème* and *La Traviata*. She credits student leaders Scott Levin MD'16, Fei Cai '12 MD'16, and Nicole Noronha '12 MD'16 with the course's success. "They're a fabulous, on-the-ball, organized trio," she says. ***—Phoebe Hall***

PICTURE THIS

The world traveler "dabbles" in photography and scrupulously documents her trips with lush albums.

DON'T LEAVE HOME WITHOUT IT

Daniel's work in disaster response regularly took her out of the country, including Haiti after the 2010 earthquake. Until she finishes her master's, her international travel will be somewhat more leisurely—the Netherlands for school and places like Patagonia for fun.

ADAM MASTOON

MUSIC THERAPY

In a couple of years Daniel plans to perform Mahler's *Kindertotenlieder*, songs about parents whose child has died, as part of a humanities seminar on grief and loss.

EYE OPENER

"I drink three of these a day. I don't drink coffee."

FIELD TRIP

The culmination of the Diseases, Doctors, and Divas course was a night at the Metropolitan Opera, where the students saw Puccini's *La Bohème*, a tragic tale of love and TB.

DARK HORSE

Always a fan of big dogs—she has a Leonberger now—Daniel recently discovered a love of horses, too, when she took up riding with her daughter.

UNDER THE SEA

The most recent entry in Daniel's dive log is Belize, where she took her 10-year-old daughter to get scuba certified in January.

YES TO THE DRESS

Daniel bought this gown for performances in college. Through med school and residency she had little time to sing, "but I was the proverbial wedding singer three or four times a year."

DOWN AND DIRTY

Daniel competes in mud runs and obstacle races for her nephew, whose leg was wounded while serving in Iraq.

COOL TOOL

Through the Google Glass

A new study tests medical applications of mobile video technology.

LOOK SHARP Worn like typical eyeglasses, Google Glass has a tiny lens that takes photos and records HD video.

Sure, it's cool, but could Google Glass be useful in clinical care? Researchers at Alpert Medical School and Rhode Island Hospital are testing it out in the emergency department.

Using a stripped-down version of the wearable mobile video communications technology, researchers will test the efficacy of using Google Glass for real-time audio-visual consults for willing patients who require a dermatology consultation.

"We live in a world of instant gratification, and in many ways, we're testing that mindset by using Google Glass to enhance telemedicine in the emergency department," says principal investigator Paul Porter, MD, assistant professor of emergency medicine (clinical) and a physician in the emergency departments of Rhode Island, Hasbro Children's, and The Miriam hospitals.

The researchers will use Google Glass to stream live images of a patient's dermatological condition to the consulting dermatologist. He or she will be able to see identical images on a tablet in real time, making it possible to offer appropriate advice, diagnosis, and treatment options.

Porter and researchers Peter Chai '06 MMSc'07 MD'10 RES' and Roger Wu, MD RES' worked with experts at Pristine, a health care technology communications company, which has developed the only form of Google Glass that meets HIPAA laws.

While this study is limited to patients needing a dermatology consult, the researchers see opportunities for broader applications. "Ultimately, the use of this technology could result in better coordinated care, faster interventions, better outcomes, fewer follow-up office visits, fewer readmissions, and lower costs—for a wide range of disciplines, not just dermatology," Porter says.

The six-month feasibility study will be limited to emergency patients who require a dermatology consult, and who consent to take part in the study. Rhode Island Hospital is the first hospital in the US to use Google Glass in an emergency department setting. ***—K.C.***

COURTESY RHODE ISLAND HOSPITAL; ADAM MASTOON

The BEAT

WHO KNEW?

Hitting the High Notes

The Medical Records, Alpert Medical School's only a cappella group, give command performances at everything from Reunion events to the annual Medical School talent show. From left, Lianna Karp MD'16, Tiffany Hsu '12 MD'16, Jordan Thompson MD'16, Paul Herman MD'16, Matthew Schwede MD'15, David Greenky MD'16, Fei Cai '12 MD'16, and Kerani McClelland MD'16 sing from their repertoire, including "We Will Heal You," a parody of Queen's "We Will Rock You." Hsu says the group, which also includes med school faculty, is open to anyone looking for some vocal harmony—or who just likes puns. *—P.H.*

FIELDNOTES

BY DANI GRODSKY '14

The Real World

A study abroad program exposes students to varying health care systems.

Dani Grodsky '14, a cognitive neuroscience concentrator, spent the Fall 2013 semester traveling the globe for the International Honors Program: Health and Community. With 31 other US college students and two professors, she spent more than a month each in India (Delhi and Uttar Pradesh), Vietnam (Hanoi and H'mong Village), and South Africa (the Bo Kaap, Cape Town, and Zwelethemba), exploring health care in urban and rural areas and taking courses on globalization, medical anthropology, research methods, and the link between biology and policy, all while living with local families. Grodsky kept a travel blog of the experiences and insights that she gained in each country, which are excerpted here.

INSPIRING INDIA

In this one month I have: haggled in multiple bazaars, worn traditional clothing, slept on overnight trains (and gotten food poisoning during a ride), taken countless bicycle and electric rickshaws amid blaring horns and wandering cows, observed health centers and the work of innovative NGOs, bought cinnamon from the world's largest spice market, ridden an elephant to the entrance of a palace, and spent a week in a tiger zone. It's been nothing short of eye opening and enlivening.

One thing that surprised me most is that people in middle- to upper-class neighborhoods walk just down their blocks to see families living in tents on the sidewalk or ramshackle buildings. It's a part of life. Also, women have more independence than I expected from the stereotypes I had heard, but many parents still see more value in teaching their daughter housework than in sending her to school. The air is thick with pollution, and malnourishment is common.

Yet India is a place of boundless growth, innovation, and enthusiasm. Inspiring community members, doctors, business people, and government officials are doing incredible work to make their cities and country healthier and more equitable. I met a teenage girl, the leader of a children's rights group from a rural village, who helped save a friend from being trafficked to Nepal; she wants to be a police officer. I met the founders of Sulabh International, an organization improving hygiene through the placement of public toilets, and of Healthpoint Services, which provides remote communities with clean drinking water and affordable, accessible doctors.

The human spirit and connection have helped me better understand how infrastructure and belief systems come to be—an understanding that more accurately incorporates circumstance, tradition, and humility instead of over-generalized labels of ignorance or apathy. These shifts in thinking, and, furthermore, problem solving are of great importance when it comes to developing innovative efforts to provide millions of Indians with more options for health and equality.

ON TO VIETNAM

There is a long history here of war—with the Chinese, French, and, of course, Americans—but despite the tumult that the Vietnam War caused in the US, to the Vietnamese it seems to be just a blip in centuries' worth of continuous occu-

JESSICA DEANE ROSNER

FIELDNOTES

pation. Ho Chi Minh said the actions of the government are not always reflective of the people, and it surprised me how little resentment the Vietnamese harbor against Americans. This is even the case for people we met who are directly affected by Agent Orange.

The health care system here is uniquely complex. Visiting a cancer hospital in Hanoi—the only medical center outside of our school of study (Hanoi Medical University) that the government allowed us to see—I learned the main barrier to recovery is insufficient resources. The hospital sometimes closes at 4 p.m., after which no more patients will be seen. Beds are in such short supply that many patients on longer-term treatment who live far away must pay for their own lodging in the expensive surrounding area. Those lucky enough, or in serious-enough condition, to be granted an overnight stay often share a bed with one or two other patients.

Open criticism of the government, in my observation, does not exist. Most of our formal learning came from Ministry of Health officials, who presented little criticism about governmental support and regulation. However, a great many programs focus on important issues, from noncommunicable disease and HIV to working with the fourth generation of families affected by Agent Orange and curbing industrial pollution. Government funding might not cover all (or even most) of the need, but acknowledgment and manpower are good first steps.

It seemed that many Vietnamese live with the assurance and comfort of being able to secure daily necessities in a country that is constantly improving, especially in this novel time of peace. Behind the scenes is a government that curates as much of this image as possible while masking—but perhaps while trying to address—the problem areas.

LAST STOP: SOUTH AFRICA

For our first two weeks here, we lived in Zwelethemba, a "black only" township during apartheid that still struggles with inadequate infrastructure and poor resources. In a large cemetery that was the final resting place for many young adults killed by violence or AIDS-related causes, children pointed to where relatives and friends were buried.

Violence is a large and growing concern. Apartheid banded people together against a common enemy, but its dissolution took with it those ties. The tendency toward violence is exaggerated by heavy drinking, apathy toward education by the young, and a lack of extracurricular activities that leaves kids constantly bored. My 10-year-old homestay sister taught us a hand game that ends with the winner choosing whom to shoot.

I was enjoying my last week in Cape Town, living on one of the most photographed streets in the country within the Bo Kaap, when Nelson Mandela died. The next morning I learned that Bishop Desmond Tutu was speaking at St. George's Cathedral, on my route to class. I stopped and watched the end of his speech. Later a homestay mother said that, although she respected Mandela, all in all, he did not particularly change life for the Cape Malay in South Africa, a Muslim group whose ancestors are Indonesian slaves and Dutch landowners from centuries ago. She offered a unique perspective. "He will never be as important as Muhammad to the people," she said.

South Africa's wildlife, sea, and mountains were more beautiful than anything I've seen before. Leaving the small home in Zwelethemba every morning, with the awe-inspiring mountain ranges in the distance, was like walking onto a movie set. It was a daily reminder of the magnificence of nature and the splendor that can be found in every human being and every community. I've been guilty of habituating to the beauty of the world and getting lost in the obstacles of life, making it hard to remember this calming ideal. My trip was instrumental in helping me tap back into this feeling of gratefulness and wonder.

I was enjoying my last week in Cape Town, living on one of the most photographed streets in the country, **when Nelson Mandela died.**

After graduation, **Dani Grodsky** *will work as an analyst at Ideas42, a behavioral economics consulting company in New York City. She previously wrote for* Brown Medicine *as an editorial intern.*

OPINION

BY DAVID GREENKY MD'16

Make Yourself Useful

Lifesaving skills are needed earlier in medical education.

A few months ago, toward the end of an evening run, I mindlessly ascended the last hill before returning home. Far in the distance I noticed an SUV stopped at an intersection, and as I ran closer, I realized something was horribly wrong. I saw a man lying face down and unconscious with his legs tangled in his bike. He was hyperventilating into a pool of his own blood. Beside him, a woman was screaming. I ran over and told a bystander to call 911. I was luckily joined a few seconds later by a physician who was passing by. Together, we held head stabilization and elevated the patient just enough to allow him to breathe easier. Once the ambulance came, we fitted the patient with a neck collar and flipped him over before he was promptly taken away.

As I finished my run home, I reflected on the irony of the situation I had just left. The skills I used to help this patient I did not learn during the first two years of medical school, but rather from being an emergency medical technician (EMT) in college, a license that expired in 2008. While any second-year medical student can explain the pathophysiology of congestive heart failure or diabetes, very few know what to do when confronted with common emergency situations. Learning these skills earlier in medical school will allow students to help in emergency situations encountered in the real world, something medical students greatly value. It also will provide them with another avenue to engage the clinical side of their future career during an otherwise academically focused preclinical curriculum.

Most medical schools have already incorporated some clinical components into the curriculum during the first two years. At Brown, we are taught CPR during the first week of school and then have a comprehensive course in Doctoring that spans the entirety of medical school. This course teaches students clinical skills such as conducting patient interviews, physical exams, and written and oral presentations. My favorite portion of the course was the afternoon each week I spent with a community physician. During this time I interacted with patients and practiced my newly acquired skills. Still, as a second-year student my contribution to patient outcomes was minuscule.

To give medical students more skills early in their education to treat patients, a small but growing number of schools require students to complete a basic EMT course at the onset of medical school. This certification teaches important lifesaving skills like how to control an airway and the proper technique when moving a patient with a suspected spinal cord injury. At Hofstra, one of the first schools to make EMT training a mandatory component of medical education, a second-year student said while he realized EMT training was only a small portion of the knowledge he would acquire in medical school, it made students "clinically useful from the beginning." The hope is not only will these students be more engaged in their education, but also be better prepared for clinical rotations in the third year of school.

After my experience with the cyclist, I relayed my story to the administration at Alpert Medical School. I suggested it was important to teach more lifesaving skills at the onset of medical training, even if it is not a complete EMT certification. Teaching basic emergency response skills will increase students' self-worth as aspiring physicians and may open the doors to more meaningful interactions with patients in the preclinical years. The request was well received, and starting next year incoming students will receive some of this training. I hope this small step will further empower students, helping to remind them why they chose to enter this field.

ISTOCK PHOTO/MUTLU KURTBAS

David Greenky *completed his undergraduate degree at Cornell University, where he studied Near Eastern studies and political science. He worked for four years in New York at a company dealing with international security before starting at Alpert Medical School.*

BUILDING A DREAM
Brothers Fred Ochieng', left, and Milton Ochieng' earned their MDs in the US and returned to their hometown of Lwala, Kenya, to found its first health clinic.

ADAM MASTOON

ZOOM

BY EILEEN O'GARA-KURTIS

There and Back Again

Kenyan brothers, trained in the US, go home to fulfill their father's vision.

It is 9 p.m. on a Monday night. Milton Ochieng's day at the Erastus Ochieng' Memorial Lwala Community Hospital in Lwala, Kenya, has just concluded, barring the possibility of an overnight emergency. A fellow in gastroenterology at Alpert Medical School, Ochieng', 33, is halfway through a month-long stay in Lwala.

Today, Ochieng's patients have included two perilously ill children—a toddler with life-threatening pneumonia and an infant with malaria and severe diarrhea—and a 26-year-old woman with a disfiguring and debilitating, yet benign, facial tumor. They are among more than 100 patients treated on an average day at the hospital.

The children are better now, 10 hours after delivery of antibiotics and oxygen for the pneumonia and hydration and quinine for the malaria. But "they're not quite out of the woods yet," Ochieng' says.

The woman, who has been reduced to a liquid diet and is wearing a kind of sling, called a *leso*, around her head for lack of the $1,500 needed for surgery, is now scheduled to have her tumor removed at nearby Moi Teaching and Referral Hospital in Eldoret. The nonprofit Lwala Community Alliance—of which the hospital is part—will cover the cost.

On a Skype call from Lwala,

ZOOM

Ochieng's surgical mask still hangs around his neck, his thoughtful, slightly weary demeanor illuminated by a brilliant smile as he describes the work of the Alliance and the hospital, which he founded in 2007 with his brother, Fred, 31, a resident in internal medicine and pediatrics at Vanderbilt School of Medicine, and with support from their family and the community.

Milton Ochieng' will soon return to Providence. But Lwala never leaves him. For the Ochieng' brothers, this work is intensely personal as well as professional.

NOT HOW LIFE SHOULD BE

On Friday evenings, Milton Ochieng' remembers, the coffins would arrive in Lwala, bearing the bodies of people who had died in hospitals in larger, nearby towns and were coming home for burial.

One night, the village awoke to the screams of a woman in childbirth with a breech presentation. The sounds of a desperate scuffle followed, as family members lifted her into a wheelbarrow and pushed her for miles to the road, where they prayed for a passing bus or other vehicle to take her to the nearest hospital, 30 kilometers away. Patricia Min Ben—the mother of the Ochieng' brothers' friend Ben—bled to death that night, in the wheelbarrow, by the side of the road.

It was not an isolated incident, Milton Ochieng' says.

"We experienced death early in life," he explains. "We lost friends and family members in the prime of their lives. We were not in any way special. It was just how life was. But my father taught us that it's not how life should be."

POWER OF COMMUNITY

Ask Ochieng' about his parents and you will get one of his illuminating smiles.

"My father was a high school chemistry teacher, and my mother was a primary school teacher. They instilled love of education in us and really wanted us to understand what community was all about," he says. "Dad was chairman of our Parent Teacher Organization, and he helped build our local primary school. He really believed in service to one's neighbors. We grew up embracing that."

> The Erastus Ochieng' Memorial Lwala Community Hospital is the **largest of any rural Kenyan clinic.**

Erastus Ochieng' believed, in particular, that Lwala deserved a hospital. "Growing up in a rural village, with no running water, no electricity, and very limited access to transportation and health care, you would see the devastation," Milton Ochieng' says. "People would die in childbirth, or from seizures and convulsions caused by malaria. Families would carry patients, on mattresses or beds or in wheelbarrows, to the nearest paved road 7 kilometers away. The lucky ones would make it to a hospital."

Ochieng' says his father would read to him *Where There Is No Doctor*, a book about a village much like Lwala. Later, he would reread it on his own. "It was my favorite book, growing up," he says.

Enrolled in boarding school by fifth grade, Ochieng' excelled at entrance exams required for Alliance High School, the oldest and most prestigious secondary school in Kenya, through which he spent nine weeks in an exchange program with the Brooks School in North Andover, MA. He then earned a scholarship to Dartmouth College, followed by medical school at Vanderbilt, residency at Washington University in St. Louis, and now his fellowship at Brown.

But first, there was the significant challenge of securing the $900 plane ticket needed to travel to the United States. Lwala stepped up. Neighbors sold chickens and livestock to raise the funds.

"Represent us well," Ochieng's neighbors told him. "And come back."

GRIEF AND POSSIBILITY

Ochieng's college years brought growth and loss on an epic scale. He studied, made friends, coached New Hampshire children in soccer, and volunteered on a mission to build a clinic in Nicaragua, where he began to see the possibility of achieving his father's dream.

ADAM MASTOON

COURTESY LWALA COMMUNITY ALLIANCE

FILM STARS
(Left) Milton and Fred Ochieng' watch *Sons of Lwala*, a documentary about their work, at Alpert Medical School in January. (Above) At the Kenya clinic, Milton examines a tiny patient.

He and Fred, who had joined him at Dartmouth, shared their vision of a hospital in Lwala with coaches, professors, friends, and the children on the soccer teams they coached. The local newspaper published a story, and strangers sent money. Children raised $2,000 in pennies. Fred spoke at a weekend conference and returned with more than $9,000 in donations.

Back in Lwala, Erastus Ochieng' began to make preparations—recruiting a committee, securing land at a steep discount, and finding volunteers to prepare the site. But he never saw the dream take flight.

The Ochiengs' mother, Margaret, died of HIV/AIDS in 2004. The disease claimed Erastus the following year, on the day of Milton Ochieng's last college exam—one month before groundbreaking for the clinic that would become the Erastus Ochieng' Memorial Lwala Community Hospital.

"My five siblings and I joined Africa's millions of AIDS orphans that day," Milton Ochieng' says. "We looked at our youngest brother, then 9 years old, and renewed our vow to do something to keep it from happening to other kids."

FULL CIRCLE

Today, the hospital that sprang from Erastus Ochieng's dream provides treatment for more than 1,100 people with HIV annually, as well as people suffering from other diseases. Its staff, including nurses and mid-level providers, is the largest of any rural Kenyan hospital. An ambulance driver is on call to transport patients to facilities in larger towns when needed.

The hospital—which added a new maternity and integrative care wing in 2011, tripling the size of the original clinic—is part of the Lwala Community Alliance, a multidimensional initiative including microenterprise, public health outreach, water and sanitation, and education programs that employs more than 150 people.

Milton Ochieng' reports that more than 96 percent of babies in and around Lwala are born in a hospital now (double Kenya's national average) and that infant mortality has been reduced by 50 percent. Far fewer local residents are dying of treatable diseases and conditions like malaria and pneumonia, which once would likely have claimed the lives of the two children Ochieng' treated today.

When the Erastus Ochieng' Memorial Lwala Community Hospital opened in 2007, the first breech baby Milton Ochieng' delivered was a little girl named Valerie—the daughter of his childhood friend Ben, whose mother died on that desperate night long ago.

"Life has a way of coming full circle," Ochieng' says.

The Lwala Community Hospital serves 32,000 people every year. Financial and volunteer support is gratefully accepted. For more information, visit www.lwalacommunityalliance.org.

Eileen O'Gara-Kurtis *is the founder and president of Silver Branch Communications. She is a frequent contributor to* Brown Medicine.

BY MICAELA HAYES, MD RES'09

Herding Cats

Collaborative care teams offer joys and challenges.

It's 8:30 on Friday morning and once again we are behind before we've started. I can't log onto the computer, half the team is missing, and our agenda is swelling with last-minute additions. My internal voice is exasperated. Why does this happen every week? Why can't we get this routine down?

> I was unprepared for how much **I would benefit from being part of a team.**

Then in a rush everything comes together. The computer cooperates and the room comes alive with the bustle of arriving people. We spend a few minutes exchanging hellos, sharing stories of our week, relaxing and connecting in the way that makes this team and our work possible. This moment is why I love my team.

I haven't searched the literature that doubtless exists on the functioning of multidisciplinary teams. Perhaps someday I will. Nevertheless our motley crew has found its way through deliberation and luck to an equilibrium that works.

Our team was born of a need to better serve patients with eating disorders. Since so many different disciplines address this illness (medical, nutrition, counseling, psychiatry), coordination among providers is essential. You can either spend a lot of time playing phone tag or get everyone in the same room for a discussion. Spurred by the arrival of a therapist with experience at a specialized treatment center, our powers-that-be recognized we had all the components for a multidisciplinary team—we just needed to start working together.

At first we spent a lot of time discussing structure. Who would comprise the team? How often would we meet? Who would set and run the agenda? How and what would we document? How would we handle sharing of information between the organizationally separate counseling center and medical clinic? What kind of therapy groups should be offered? Would patients have to see everyone on the team or could they see just nutrition, just medical, or just counseling? What would we call ourselves?

Once we started meeting, we had to figure out how to work with each other. Some members came with decades of experience. Others were newcomers on the upward slope of the learning curve. Some had worked with multidisciplinary teams before; for others this was a new experience.

We spent the first several months learning the mechanics of discussing cases: how to share enough information while keeping discussion moving forward, knowing when we needed to take more time to get it right. We got to know everyone's personality and clinical temperament and taught each other about our respective disciplines. We rejoiced together when patients improved and released our frustrations and fears when patients remained stuck or worsened. Occasionally we encountered conflict over treatment recommendations and worked through awkwardness when offhand comments struck too close to home. We adjusted as team members left and were replaced. With every meeting our respect for each other deepened and our team cohesion grew.

Going into this project, I knew patients would benefit. But I was unprepared for how much I would benefit—personally and professionally—from being part of a team. I now have colleagues who are with me in the trenches, who understand the challenges of this work and provide a sounding board, an attentive ear, or a comforting hug. When my patients are in crisis, I can "phone a friend" to arrange urgent counseling or nutrition evaluation; other team members can call me and our other physician for urgent medical evaluations.

Instead of burning out doing difficult work, we sustain each other, reinvigorate each other, make possible work that is worth doing. We are integral parts of something bigger, something with purpose that makes patients' lives a little better. In the end, that's what medicine is all about.

Micaela Hayes *provides primary care and women's health services for students and their spouses at Pennsylvania State University's Student Health Center.*

RESIDENT EXPERT

BY ALEXIS DRUTCHAS, MD RES'

Small Miracles Missed

Are we overlooking the inner lives of our patients?

I washed my hands with alcohol suds and felt heaviness settle. The patient I'd just seen was new to care, with critical illnesses unaddressed for decades. After getting oriented, we discussed his goals and next steps. Despite my best attempt to understand and prioritize, every idea was met with barriers: a broken engine, empty bank account, pride preventing acknowledgment of his illness for years. I left feeling down and worried, wondering what else I could have done.

For the next few days this encounter churned in my mind, yet it was not unique. Physicians often run into obstacles with our patients. There are those who want to partner in their health and those who do not or simply cannot. In contrast, some patients' outcomes may never change despite every treatment, and some don't want or can't have any intervention at all.

This broad human continuum is one of the most interesting aspects of medicine, and one I struggle with most. It is common to become a doctor out of a desire to help—to find answers, to prevent, or cure. Embedded within is the desire to use the tools we have to influence or control outcomes so our patients may live well. We hope their cancer will go into remission, that they will have a safe delivery, that they will quit smoking, and so on. But I have learned that so much is out of our control. We all have patients who do not want help, cannot accept help, or for whom nothing can be done. When we sort patients into these general categories, is there a place hidden by our expectations and intentions where their innate humanity still resides and surprises us?

> **We all have patients** who do not want help, cannot accept help, or **for whom nothing can be done.**

One day in medical school I was paged to help admit an elderly man brought in by his wife of more than 50 years. Tormented, she relayed that she could not take care of him anymore. His Alzheimer's was slowly taking over, leaving him a rigid body with little control. With no treatment to offer, I felt helpless.

On his last day in the hospital, I heard an unexpected sound behind me: a faint voice calling out. Turning, I saw his frail hand up in the air, gesturing. He had not spoken since admission. "My wife," he stammered, pointing to a number on a piece of paper. I pressed the keys on the telephone and as it rang I remembered her from days before—she had the same name as a stunning spring flower. She had been beautifully dressed, wearing a hat with that flower gently hanging off its felted round brim.

There were a few rings, then "Hello?" I passed the phone to this new man sitting in front of me. He held it tightly, then with a grin unlike I had seen from him before, he suavely uttered, "Hey, girl ..." Envisioning his wife's smile, my heart melted. How many small miracles do we miss, overshadowed by larger expectations and outcomes unreached?

Alexis Drutchas *is a second-year family medicine resident. Originally from Detroit, she studied environmental health and biology at the University of Wisconsin-Madison and completed medical school at Wayne State University.*

BLAIR THORNLEY

Outbreaks

BY PHOEBE HALL

ILLUSTRATION BY STEPHANIE DALTON COWAN

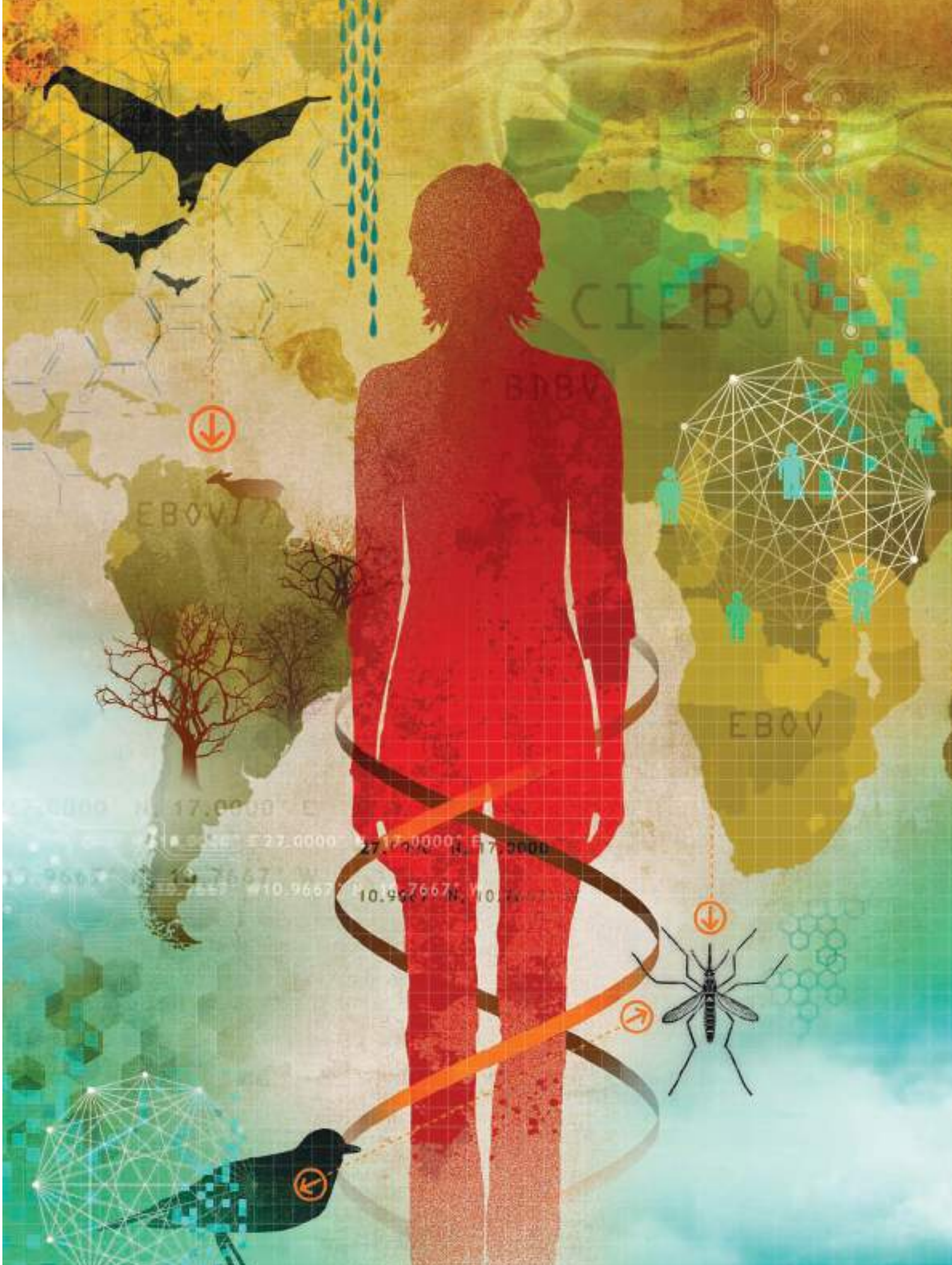
Is environmental change fueling the next pandemic?

A team of researchers looks for answers.

The outbreak of the terrifying hemorrhagic fever Ebola in Guinea this year has claimed more than 140 lives as it has rampaged across the West African nation from remote jungles to its urbanized capital, Conakry, then over the border to Liberia and beyond. The virus, which kills up to 90 percent of its victims, is transmitted by bodily fluids, with an incubation period of up to three weeks—giving infected people plenty of time to travel far and wide before falling ill.

Travel is much easier these days in Guinea as its tropical forests make way for villages, farmland, mines, and the roads that connect them. It's that ease of movement, allowing the virus to quickly spread to a major city and to neighboring countries, that prompted the organization Doctors Without Borders to call this particular Ebola epidemic "unprecedented."

But it's the epicenter of outbreaks like this, where an infectious disease first takes hold, that most intrigues a new team of researchers at Brown. It's unknown yet how, exactly, this happened in this Ebola epidemic, but a common



UNDER ONE ROOF
More than 40 faculty from a broad array of departments are affiliated with ISES, including Amanda Lynch (left) and Jack Mustard (seated) of the Department of Geological Sciences; Leah Van Wey (right) of the Department of Sociology; and Kim Boekelheide of the Department of Pathology and Laboratory Medicine.

In Their Nature

When Katherine Smith, PhD, realized the potential of her human infectious disease research to define the relationship between global epidemics and environmental change, she looked beyond her Department of Ecology and Evolutionary Biology for help parsing the data, forming hypotheses, and finding answers. The interdisciplinary team that she gathered, including faculty and staff from the Department of Geological Sciences and the School of Public Health, embodies the mission of Brown's new Institute for the Study of Environment and Society (ISES).

Integrative scholarship and understanding environmental change are key pieces of the University's strategic plan, *Building on Distinction*. The institute, which draws faculty from fields as diverse as pathology, economics, and Africana studies, is a direct result of the plan, according to ISES Director Amanda Lynch, PhD, professor of geological sciences, who says that as she led the strategic planning effort to grow the environmental research landscape, it became "obvious" that Brown should merge research with undergraduate teaching into one academic unit. "It's better for students to align their classes with research, and professors benefit from having more undergraduates to collaborate with," she says.

Smith's project was an easy choice for the institute's first round of small project grants. "It particularly helped us to start thinking about ways we can integrate public health, biomedical research, and more broadly based scholarly research in the University," Lynch says. The grants, funded this year by a one-time donation, will become part of the ISES operating budget, which also will cover expanded graduate and postdoctoral programs and summer research opportunities for undergrads from underrepresented groups.

The institute also houses the Brown University Herbarium and the Environmental and Remote Technologies Lab, which supports research using geographic information systems and remote sensing. "Brown stands out for its interdisciplinary work," says Dov Sax, PhD, an EEB associate professor and ISES deputy director of education. "It's part of a long tradition. … The barriers are very low here." —*P.H.*

PHOTOGRAPHY RI FOR BROWN UNIVERSITY

means of transmission occurs when people eat fruit bats and monkeys, which host the virus, or come into contact with the animals' bodily fluids during hunting and preparation. Ebola, which was first identified less than 40 years ago, is just one of many diseases whose spread may be abetted, and accelerated, by human-induced environmental change.

"Loggers are cutting their way into the heart of Africa, which gives more access to hunters, who have more access to myriad wildlife that may carry novel pathogens," says Katherine Smith, PhD, assistant professor of ecology and evolutionary biology, who cited HIV as another catastrophic example of that phenomenon. "In places where we were not in contact [with species] before, now there are more opportunities for pathogens to spill over and harm us."

Climate change, furthermore, may exacerbate conditions more conducive to epidemics, including expanding the ranges of disease agents as well as host species. "In my field of disease ecology and biogeography, whether a warmer world will be a sicker world is hotly debated," Smith says. "Some scientists have worried that vectors that transmit tropical diseases will move into regions that are becoming more tropical with climate warming."

"Whether a warmer world will be a sicker world is hotly debated."

But solid data have yet to back up this theory. So two years ago, Smith went looking for evidence. "I was interested in trying to get a better sense of the distribution of human infectious diseases in the context of a changing environment," she says. "There is a surprising lack of information in where [infectious diseases] occur around the world. That's bizarre, right?"

Agencies like the World Health Organization (WHO), it turned out, did have the data she wanted—but not in a format that she could easily mine. Following an epidemic, health agencies offer aid to local medical teams and then write a report with the causal disease, number of cases, locus of the outbreak, and other pertinent information, Smith says. The records were a potential goldmine. Except for one small detail.

"They'd been doing this for decades and had tens of thousands of records, but they were all written like news stories," she says. The dataset she compiled, going back to 1980, encompasses more than 12,000 outbreaks of 215 human infectious diseases, in nearly every country in the world. In all, the reports documented more than 44 million cases. In prose.

Smith turned to a tech-savvy EEB colleague, Sohini Ramachandran, PhD, assistant professor of biology, who with Michael Goldberg '13 wrote a program to encode the data embedded in the text. A year later, their code had generated enormous spreadsheets organized by variables like location, pathogen, vector, and numbers of hospitalizations and deaths.

"We were floored," Smith says. "In disease biogeography, there was nothing like that anywhere."

CRUNCHING THE NUMBERS

Ramachandran, a faculty member in the Center for Computational Molecular Biology who studies the geographical distribution of human genetic variation, says in the past researchers had to comb through outbreak records by hand to analyze a single disease over time and space, or multiple diseases at a particular moment. Her program, which parses sentences to extract pertinent information, changes the game. "Computation is key to generate a data set of this scale," Ramachandran says. "We are contributing a new type of data for this field."

Their spreadsheets include additional text that retains some of the storytelling element of the source material. "The prose made the data set exciting," Ramachandran says. "It wasn't geared toward future aggregate analyses, but it had a lot of details," like an outbreak of 54 cryptosporidiosis cases at a wedding in Pennsylvania that was traced to raspberries; or another of tuberculosis that was associated with an accounting office in Japan.

Climate, including temperature and precipitation, will be another variable in the data set. Smith says that, historically, natural changes in climate have been tied to changes in infectious disease. During the Little Ice Age, in which temperatures worldwide plunged for about 500 years, beginning in 1300, outbreaks flourished

in societies stressed by famine. Could the current warming trend similarly pave the way for more or bigger epidemics? Smith also wondered about the overall impact of human-specific diseases, like measles, versus zoonoses, such as Ebola, which humans catch from an animal host. Which would be worse, globally, for human health? Now, with their database, the team could address some of her field's longstanding debates.

"We had a million questions to go after," Smith says. "But we could only tackle them if we brought in other experts from around campus."

John Mustard ScM'86 PhD'90, professor of geological sciences, says Smith approached him about mapping the data using geographic information systems (GIS), to correlate latitude and longitude with outbreak variables like date, number, and type; and remote sensing, such as satellite imaging, which measures the sun's radiation reflected off the Earth's surface, to track how landscapes have changed over time.

Though Mustard notes that Ebola is a "classic example" of what happens when humans directly interact with wildlife in formerly inaccessible areas, his research focuses on landscapes highly modified by human activities like agriculture. A remote sensing expert, for years he has tracked rapid land use changes in Brazil, where enormous swaths of rainforest have given way to soybean fields, to provide data for ecologists and social scientists to understand environmental, economic, and other implications. Now he's applying remote sensing to human health.

The project, for which the team received a two-year grant from the University's new Institute for the Study of Environment and Society (see sidebar, page 24), is in its pilot stages, and they are now analyzing data for individual countries, including Brazil and India. The latter, Mustard says, presented new challenges. "The [agricultural] fields are small, and the agrarian practices are very different" than in Brazil, he says. "Instead of multiple pixels per field, India has five fields per pixel—so we need different satellite sensors."

Mustard differentiates between frontier landscapes, like what he's studied in Brazil, and patchier mosaics like India's. By layering the infectious disease database with his remote sensing findings, they can explore whether "the initial engagement with the frontier is the area with the greatest number of outbreaks, or if it's in the more complicated, fragmented landscapes," he says.

Once the team has acquired and sifted through the data, he expects they'll find important relationships between land use change and disease. Already the data in India show that "outbreaks are strongly correlated with land use change," Mustard says. "There are states where outbreaks are more common or less common, and we can correlate that with urban versus rural population concentrations."

GIS offers another layer of data analysis, which is where Lynn Carlson, MA, GISP, who manages Brown's Environmental and Remote Technologies Lab, comes in. Though mapping an epidemic and its affiliated data—who, what, when, how—may sound relatively straightforward, the "where" in this project was anything but. Because the reports documented outbreaks by place name, rather than longitude and latitude, accurately pinpointing them on a map presented countless challenges.

"For example, in the text, 500 people were noted to have contracted salmonella in four or five different places, so there's no single longitude and latitude for that outbreak," Carlson says. "So what is the best way to locate that disease outbreak? Do you find the center of gravity? Do you map each one?"

Furthermore, she says, spellings of some place names varied, while others were so obscure that even the most comprehensive geospatial intelligence databases didn't list them. Carlson also had to figure out what to do when an agency reported an epidemic location by region, such as "eastern India." "I made a script

"We had a million questions to go after. But we could only tackle them if we brought in other experts from around campus."

"We can see patterns of anthrax, do a time lapse, and summarize the counts. So imagine ramping this up to the entire world."

in GIS that took every country and divided it into quarters by cardinal direction and located the centers of the quarters, so now we have a longitude and latitude point," she says. "But that has its own troublesome issues—for example, what is 'western Chile'?"

Other variables create further complications. Wealthier countries may have more outbreak records not because they are more prone to disease but because they have better reporting. The data also need to reflect different densities of human and animal host populations. "The maps can give false impressions if you don't understand the underlying premise, the text behind them, the variables," Carlson says.

The project is very much "a work in progress," she adds, but the data hold exciting promise. Patterns are already emerging in the individual countries they've analyzed, such as time lapse maps that can show possible increases in the frequency of certain outbreaks. "For example, we can see patterns of anthrax, do a time lapse, and summarize the counts," Carlson says. "So imagine ramping this up to the entire world."

THE BIG PICTURE

More than 1,400 pathogens cause infectious diseases in *Homo sapiens*; researchers have long mapped the biggest offenders, like HIV and the flu, but even headline grabbers like Ebola haven't received the careful scrutiny that Smith's team is undertaking. At the Centers for Disease Control and Prevention, for example, "individual diseases get their full attention and focus, as opposed to looking at all diseases in aggregate," she says.

Smith hopes their more generalized, global look at hundreds of outbreaks, mapped, over time, against environmental change, will reveal trends in disease distribution, spread, and severity, and make possible forecasts about epidemic risks as well as prevention and timely response.

Their data also allow them to test current conventional wisdom. Research correlates increasing temperature and precipitation with the spread of malaria and dengue fever, for example. But it doesn't follow that all such diseases will expand significantly north and south of the equator, Smith says. "As diseases move poleward out of tropics, they bump up against wealthy nations," she says. "It's a giant public health wall, once [a disease like malaria] hits a nation where they can prevent it and control it and treat it."

An alternative hypothesis, Smith says, is that drought around the equator due to rising temperatures will shift, rather than grow, the ranges of tropical disease hosts or vectors that thrive in wet conditions. Or maybe, she adds, some diseases will decline or disappear completely. "What if climate warming reduces disease *x*?" she says. "We may find, in some cases, that the answers aren't what people expect."

But environmental change, left unchecked, creates known unknowns. Even the most elaborate data set and sophisticated modeling can't predict a novel pathogen for which we have no immunity or treatment. "We regularly see spillover events, like simian foamy virus," a retrovirus in central Africa closely related to HIV that can jump from apes and monkeys to humans, Smith says. Logging, urbanization, rising temperatures, and shifting weather patterns all could fuel a global epidemic—an ecological, public health, and even global security threat.

The infectious disease database is a treasure trove, an unprecedented opportunity to address some of disease biogeography's most current, and vexing, controversies. And like all dedicated treasure hunters, the team will dig until they hit gold. "It's really exciting to have these questions," Ramachandran says. It will be even more exciting to have the answers.

HOUSE CALLS

Residents get a rare, eye-opening glimpse of their patients' lives by visiting them at home.

IN THE AGE OF 15-MINUTE PATIENT VISITS and compressed scheduling, it almost seems inconceivable for a physician to entertain thoughts of seeing a patient in his or her home. Yet the lessons gleaned from just one such visit could affect the patient's care for years to come. Seeing the realities of poverty, family dynamics, and environment could influence many recommendations or interventions a doctor prescribes.

During the General Internal Medicine residency program at Rhode Island Hospital, directed by Associate Professor of Medicine Kelly A. McGarry, MD '87, residents step outside the Medical Primary Care Unit, where they see some 15,000 patient visits per year, most of them with the underserved. They choose one patient, usually someone whom they would describe as "challenging" or "psychiatrically complicated," who has a hard time adhering to treatment or maintaining regular appointments. With the support of their team, the residents visit the patient in his or her home as a group.

The experience is profound, says Clinical Professor of Psychiatry and Human Behavior and Medicine Carol Landau, PhD '70. Landau is cochair of the Psychiatry and Psychology in Primary Care Curriculum and meets weekly with the residents. This is a key part of their training, since most people with psychiatric and behavioral medicine needs are seen by their primary care providers, not by mental health professionals. She oversees the process of selecting and setting up home visits. In groups, she and the residents have visited houses, apartment buildings, and public housing all over greater Providence, and even Rhode Island's Adult Correctional Institution (ACI).

Division of General Internal Medicine Chief Angela Caliendo, MD, PhD, who is also vice chair of the Department of Medicine, says: "Our goal is to provide residents with a broad and meaningful experience in primary care during their training, with hopes of igniting their passion for clinical practice. The impact of house calls and other innovative programs is likely contributing to our success in having residents pursue careers in primary care."

To help the residents process the home visit experience, Landau and her cochair, Associate Professor of Psychiatry and Human Behavior and Medicine (Clinical) Colin Harrington, MD RES'96 F'97, use a narrative medicine tool: reflective writing. Immediately after leaving the home, the residents write a short, stream-of-consciousness-type reflection that captures their observations and feelings about the visit.

Landau says the reflections help the residents accept what pediatrician Sayantani DasGupta, MD, MPH, calls "narrative humility." In an article in *The Lancet* in 2008, DasGupta wrote: "Narrative humility acknowledges that our patients' stories are not objects that we can comprehend or master, but rather dynamic entities that we can approach and engage with, while simultaneously remaining open to their ambiguity and contradiction, and engaging in constant self-evaluation and self-critique about issues such as our own role in the story, our expectations of the story, our responsibilities to the story, and our identifications with the story."

During a home visit, many barriers to communication can be overcome, Landau says. "Our residency program emphasizes accurate empathy and the physician-patient relationship. The home visit-narrative experience allows residents first to experience and then take some time to reflect on the patient's story—the multiple factors that affect the patient outside the exam room. A patient who might first be viewed as 'noncompliant' or a 'poor historian' for one reason or another is transformed into an individual who is actually resilient and trying to cope with the most desperate of circumstances." Sometimes the residents are struck by the poor housing conditions, noise, crowding, and even safety issues they see. By sharing the narratives, Landau says, "we reach a deeper understanding of our cognitive and affective reactions."

The effect extends beyond the individual patient. Julia Jacobs, MD RES'12, who is now a hospitalist in Tennessee, saw a patient at the ACI. "I think about that day more than any one patient I saw in residency," Jacobs says. "When I see anyone in the hospital now who has served time, I feel a deeper understanding. … I know my experience helps me serve that patient better."

"Narrative humility acknowledges that our patients' stories are not objects that we can comprehend or master."

The following pieces are reflections written by residents after home visits.

—Kris Cambra

MARIE

BY MEGHA GARG, MD RES'

I met the most remarkable woman today.

Marie has endured everything: sexual and physical abuse by her father, abandonment by her mother, chronic illness, unemployment. Her husband left decades ago. She had a glimmer of hope earlier in life when she started college, but the rest of life sidetracked her. Now, on her worst of days, she has to figure out how to stretch their food so that she and her two sons can eat one meal for the day. She prioritizes the rent for her Section 8 housing apartment so they don't end up on the streets. It is a diminutive home for three adults, with a lawn full of cigarette butts, rickety stairs, thin walls, and mentally ill neighbors whose lives can be heard all the time through those thin walls. She is afraid of being alone, even for a moment. It causes her to have a panic attack. She relies on her sons to keep her company; they do not have jobs or contribute to the household chores. She often misses her doctors' appointments because it takes time away from dealing with all the other problems she faces. Her life is insufferable.

"I don't have any plans to hurt myself," she said. "But I don't feel like living like this anymore."

Yet, she welcomed us into her home. She showed us her world and articulated so beautifully the details of her life, her anger and frustration at the unfair hand she's been dealt. What struck me most were her expressions of forgiveness. "I didn't deserve to be treated like that, but

I get why he did it," she said of her father. She was able to stand outside of herself and observe her world.

"I don't expect to not have any problems," she said. "But I think everyone should be able to have moments of peace."

So what does Marie want, amid all of these problems, more than anything else?

Not more money or more things. Not even a better apartment.

"Purpose."

Marie wants to have the strength and ability to go read to kids. Or work with the elderly. Meaning. Because that would "allow me to get through everything else."

Marie isn't perfect. Many of the barriers to her escaping this cycle of poverty are her own—enabling her sons to be nonproductive members of society and her refusal to put herself first, even just to get psychiatric and medical care. I can't help but wonder, though, given a different set of circumstances, what this woman might achieve. She is smart. She is well-read, thoughtful, and perceptive. She is kind and accepting.

Her obstacles are insurmountable in the span of a doctor's appointment.

She is living in a cycle of poverty from which I see no easy way out. We live in different worlds. How can I worry about whether I've made dinner reservations while she worries about whether she is going to eat at all? No politician can ever tell me that she would be able to pick herself up by her bootstraps and overcome the position into which she was born. I wonder if they saw Marie's life and the lack of any "bootstraps," where they would suggest she begin?

I left her home thinking about what I could do for her. Her obstacles are insurmountable in the span of a doctor's appointment. I can't give her money. I can't fix her anxiety. I've concluded that for now, the thing I can do is tell her story. Maybe that's the purpose of her life: to help others understand the injustice of poverty.

THE PATIENT HOME

BY ROSS HILIARD, MD RES'

A person's home can tell you so much about their lives. As physicians, we often hear only snippets about a patient's home. We know when they struggle to keep the lights on, sometimes we know a bit about what they're eating. We might hear a bit about their struggles with others in the home, arguments with children who have moved home (or never left), or burdens of caring for elderly parents. Learning all of these takes time, patience, and a rapport that can be difficult to build. In most cases doctors will never know what it is like to live day to day for our patients.

The opportunity to visit the home of a patient, particularly a person with multiple comorbid medical and psychological struggles, offers an incredible insight into the person's behaviors, emotions, and challenges. As health care providers we all develop a keen ability to observe patients, but in the sterility of a hospital or exam room there is only the person. At home we are able to see the patient in their own environment, the space they live in (and often must share), the neighborhood, sometimes the neighbors, the pets, the food. If the scene hasn't been sterilized (cleaned) prior to the visit we can understand a bit more about what confronts them on a daily basis. What a privilege to have the chance to view a point in time within a person's home, a place we all consider sacred in our own ways. How much easier it is to understand why a routine recommendation for "diet and exercise" may be so far out of reach for a patient, why our encouragement of physical activity may be impossible in a cramped home filled with many family members, and moreover, why it seems impossible for a patient to stop smoking when faced with a child who smokes right across the table.

To view someone's life completely, by seeing them in their home, can allow so much insight into how we might best help as physicians. An incredible resource, one that physicians before us had easily when house calls were a matter of routine and that now seems so far out of reach.

A VISIT TO THE ACI

BY JULIA JACOBS, MD RES'12

It's not that it looks fun. Fun is not the way it looks at all. It looks organized. Uncomplicated. Simple. Fulfilling? Get up, stand in line, eat, get counted, stand in line, eat, play basketball, stand in line, eat, get counted, read, sleep. You know, I've had some fun times standing in line. Camp. Bars. Sports.

I know what it is. In this place, there is a good and a bad. There is a way to live and a way to survive. If you do things right, then you get rewarded. If you do things wrong, well, you get punished. Like high school reincarnated where a higher power made all the rules for you and your only job was to follow them. Of course, I always did things right in high school.

Oh no, now my stomach hurts. I'm not supposed to think that prison looks appealing. What's wrong with me? I'm supposed to be sad. I'm supposed to be pained at what we do to our criminals in this society. Look at how we treat our mentally ill. This is just like the time I read *One Day in the Life of Ivan Denisovich* and thought the porridge in a gulag sounded tasty. Maybe I'm remembering it wrong. I think that book is about pain and suffering.

I'm supposed to be pained at what we do to our criminals in this society.

OK, look around, Julie. Look at their faces; of course they don't like it here. Look at the signs on the walls repeating the basic laws they have to live by: no feet on the walls. Look at the simplicity of the buildings. Fences with barbed wire in case you forget where you are. No smiles anywhere.

The cells have some character, though. I think I saw a dorm room this size in college. One bin for all your stuff. Sure makes that stuff important if that's all you have. No room for that old pair of jeans that you might fit in again.

Why do I keep coming back to me? Can I really stand here in the middle of a thousand men who have ruined their lives, their health, the lives of the people who love them, not to mention the million taxpayers who support them living here, and think about little ol' me? How can I be so selfish?

A WOMAN WHO IS A BANK TELLER

BY MELISSA SCULL, MD RES'

I could go to a bank to cash a check (what a pain, who goes into banks anymore?). I may wait in line longer than I want, get to the front, rush a quick, small, semi-friendly greeting to the bank teller (whom I think of as a "woman who is a bank teller"), and rush off to my next engagement. It is amazing to me that I could have no way of knowing this woman is only 23 years old. She started college even though she is probably the first person in her family to do so. She stopped not because she had academic trouble, but because her mother, who has always been incredibly loving and supportive, was diagnosed with a serious, progressive neurological disease. She couldn't breathe or eat on her own. This 23-year-old has been the main caretaker for her mother for three years. She's continuing school part time, working at a bank, and hoping to have business school paid for by the company.

Had I known all of this, the unspoken, perhaps unrealized dynamic would not have been busy resident and friendly bank teller, but amazed and enriched student and incredibly resilient, motivated, and inspirational teacher. It's too bad she doesn't get the recognition she deserves for this, but I'm sure she has all the personal reward she needs.

MATCHDAY

BY PHOEBE HALL AND JOSEPHINE BENSON '17
PHOTOGRAPHY BY KAREN PHILIPPI

A Date with Destiny

Four years of hard work lead to one defining moment: Match Day.

THE THIRD FRIDAY IN MARCH is known at medical schools across the country as Match Day. It's the day the graduating fourth-years find out where they have been placed for residency training. It's a day when dreams are realized—and sometimes, deferred. We talk to seven members of the MD Class of 2014 about their journey to Match Day, and what comes next as they begin their lives as physicians. But future doctors face an uncertain matching process, as medical schools graduate more students than there are residency spots to accept them. Here's a deeper look at the Match Day experience, present and future.

Nachiketa Gupta, PhD MD'14

31 YEARS OLD | EMERGENCY MEDICINE

With multiple degrees in math, computer science, and economics, and careers in missile defense and finance already under his belt, med school seemed to Gupta like a next logical step. "I like the service-oriented field of medicine, and I wanted to bring mathematical methods to medical applications," he says. After earning five degrees in three years at Penn, Gupta spent a year at MIT Lincoln Laboratory before pursuing his doctorate in England; he then worked at a hedge fund in Washington, DC, but second-guessed his new field. "I wanted to see people, to do something that felt better," he says. The summer after his first year at Brown, Gupta gained clinical and surgical experience at a small hospital with intermittent electricity and no running water in Gombe, Uganda, and left his camping lantern behind so the operating room would have light at night. "It was really rewarding," Gupta says. A snowboarder and bass player, he's thrilled to finally fulfill his lifelong dream to live in New York. He's certain the city, and the emergency department, will keep him on his toes. "You learn the best way to treat things, you know the health care system," he says. "You never know what you're going to see." ***—P.H.***

Hometown	Undergrad & grad school	Grad school	Postbac	Med school	Residency
Philadelphia	University of Pennsylvania	Oxford University	Bryn Mawr College	Alpert Medical School	Icahn School of Medicine at Mount Sinai

Matthew Klein, MPH MD'14

27 YEARS OLD | EMERGENCY MEDICINE

Klein has wanted to be a doctor as long as he can remember—though he's not sure where the instinct came from. "No one in my family can stand the sight of blood," he says. When he was in middle school, "I changed the gauze for my [younger] brother when he got his teeth pulled, because my mom couldn't do it." At Yale he joined the EMS group and worked nights as a tech in Yale-New Haven Hospital's ED. "I was hooked," he says. During med school, Klein volunteered with the Brown Student Community Clinic and did research with EM professors Esther Choo, MD, MPH, and Megan Ranney, MD RES'08 MPH'10; in 2012 he presented a poster, of their study on the correlation between risky behavior by youth and the age they start drinking, at the American Public Health Association meeting. "It was my first opportunity to present at a big conference," he says. The former cross country athlete also made time to train for and run three marathons, including Boston and Chicago. He feels well prepared for the residency marathon to come. "I'm ready to take the next leap," Klein says. "This is what I've wanted to do for a long time." ***—P.H.***

Hometown	Undergrad	Grad school	Med school	Residency
Park Ridge, IL	Yale College	Yale University School of Public Health	Alpert Medical School	McGaw Medical Center of Northwestern University, Feinberg School of Medicine

Hometown	Undergrad	Grad school	Med school	Residency
Toronto, Ontario, Canada	**Brown University**	**Columbia University Mailman School of Public Health**	**Alpert Medical School**	**Rhode Island Hospital, Alpert Medical School**

Alisha Lakhani, MPH '08 MD'14

27 YEARS OLD | MEDICINE

Lakhani describes her decision to attend medical school as an evolution. "I wanted to work in the health care space, but I wanted more tools," she says. She elected to earn her MPH to gain real-world skills to complement her academic knowledge. Her desire to become a doctor was born in Mozambique, as she was finishing her master's. "I was going hut to hut in the village, asking mothers about the burden of waterborne disease in their children," Lakhani says. "I saw these very serious problems and ill children, but lacked the tools to advise the mothers." Her resolve was strengthened during her time working at a pharmaceutical consulting company: "The strongest voices in the room were always the doctors. They had real-world experience and the knowledge to run a large organization." She fondly remembers signing the wall of the anatomy lab in the Bio-Medical Center on the main campus—the MD Class of 2014 was the last to study in that building, and the last to leave their autographs. "Even though no one will get to see it now," she says, "there was something special about putting your name on the wall with all your other peers." ***—J.B.***

Beyond the Party, Rising Pressures

Every year, at Alpert Medical School's Match Day celebration, there are ebullient shrieks and bear hugs and happy tears. There are parents and siblings and friends lined up in endless photographic iterations. There is champagne and a band. The air is electric.

But at the celebration in March, on the balcony that rings the Medical School's soaring lobby, a handful of fourth-year students escaped the din. "I don't think most people understand how hard this is," said one, leaning against a railing, letter in hand.

"They have no idea," another replied.

The Match marks the conclusion of months of interviews and travel and worried anticipation, built on years of grueling study and sacrifice. It is the launch of a medical career. It is decisive and defining.

And recently, these pressures seem to be rising. "Many of us in the GSA [Association of American Medical Colleges' Group on Student Affairs] definitely feel that the Match is getting more and more competitive—especially in the very competitive specialties like orthopedics, plastics, and dermatology," Director of Student Affairs Alexandra Morang says.

This year's Match was the largest since 1952, when it was launched by the National Resident Matching Program (NRMP). From 1980 to 2000, the number of medical school graduates was stable. But in response to the mounting physician shortage, Alpert Medical School and other schools of medicine have begun to increase enrollments. Additionally, more than a dozen schools, both allopathic and osteopathic, have been established in the last five years. US-born and foreign graduates of international medical schools have expanded the applicant pool further.

As the number of new doctors has grown over the past two decades, however, the number of federally funded residencies has increased only minimally, due to a cap that Congress imposed as part of the 1997 Balanced Budget Act. The result is an approaching mismatch between the number of graduating students and the number of available residency slots.

This year, according to the NRMP, 26,678 first-year residency positions were offered. Although heralded as a successful Match overall, the 2014 result can in part be explained by a large drop in applications from the most competitive group—US-based seniors—with 8 percent fewer allopathic students applying this year than last. One possible explanation for this decrease is that more students are staying put for more than four years to complete dual-degree programs, Mona M. Signer, executive director of the NRMP, told the medical news website *MedPage Today* in March.

Nonetheless it appears that several hundred US medical students did not match this year. As the Association of American Medical Colleges (AAMC) put it in a statement released after the Match, "There may be too few residency positions for all the newly graduated doctors in the not-too-distant future."

At Alpert Medical School, the impact has been minimal to date: 2014 saw a highly successful Match, with 99 percent of students placing, and approximately 90 percent in one of their top three choices, Morang says.

But there is evidence of growing difficulty. In the past, Morang says, students typically interviewed at seven to 10 programs. Now they're logging twice as many interviews—and this year, top students who received early interview offers held onto them. "Previously, these same students would have dropped some of those interviews," she says. These declined interviews would typically go to the next tier of students. "But we saw very few students in that second tier get additional interview offers after the initial wave—very few opened up."

In 2016, entering US medical classes will be 30 percent larger than they were in 2002. To prevent a major med student-residency slot mismatch and to mitigate the growing physician shortage, Congress has reintroduced bipartisan bills to add 15,000 Medicare-funded residency positions over the next five years—legislation supported by both the AMA and AAMC. "It will help," Morang says. But passage is not guaranteed, due to the projected $9 billion cost to close the gap.

Many are worried—and not just because they want to be among the revelers on their own Match Days. "Medical students across the nation are concerned that there won't be enough slots to train," Grayson Armstrong, MPH MD'15 told *MedPage Today*. "It's not about getting a job. It's about patients getting the care they need." ***—Kylah Goodfellow Klinge***

Linda Ratanaprasatporn '10 MD'14

25 YEARS OLD | RADIOLOGY

Lisa Ratanaprasatporn '10 MD'14

25 YEARS OLD | RADIOLOGY

The Ratanaprasatporn twins were always encouraged to be individuals, and say they've never tried to do the same things. But nature—or is it nurture?—keeps bringing them together, from childhood dreams of being actors, to their application to Brown's Program in Liberal Medical Education, to their choice of specialty. Still, they didn't intend to couples match. "We weren't sure what the feedback would be. ... There's a point where this [twin] thing stops being cute and just becomes weird," Lisa laughs. "We didn't want to compromise our ability to get into the best program," adds Linda. "It was actually the people who interviewed us who made us think we should do the couples match." But it wasn't until each had made her match list that they decided to go for it. "Our lists were identical," Lisa says. Now that the suspense is over, they're thrilled they'll be together after all. "I look forward to having Linda as my colleague. ... We work professionally well together, and it will be fun to collaborate in the future," Lisa says. Her sister adds, "There's something synergistic when we work together." They enjoy a similar harmony in their free time, whether they're dancing, gardening, or baking 250 cookies in one day when they should be studying for a shelf exam. As for most new MDs, PGY1 will mean big lifestyle changes—most notably, they'll live in different cities for the first time in their lives, if only for a year. "Even though [Cambridge] is only an hour away," says Linda, who will stay in Providence for her prelim, "I'm already looking forward to when we can be reunited." ***—P.H.***

LINDA (left)
Prelim
Roger Williams Medical Center, Boston University School of Medicine

Hometown
Staten Island, NY

Undergrad
Brown University

Med school
Alpert Medical School

LISA (right)
Transitional
Cambridge Health Alliance, Harvard Medical School

Residency
Brigham & Women's Hospital, Harvard Medical School

MATCHDAY

Jordan Sack '10 MD'14

26 YEARS OLD | MEDICINE

Most of us don't recall learning to hear and speak, but for Sack—born with severe to profound hearing loss and unable to hear his teachers, the TV, or the sound of his own voice—it's a recent memory. At age 10 he underwent surgery to receive a cochlear implant, which converts sounds into electrical impulses that are transmitted to his inner ear. Though it helped him hear, it wasn't a quick fix. Sack was two grade levels behind in vocabulary and needed intensive speech therapy to catch up. "Going through this journey, learning to hear and to speak, really made me want to give back," he says. Sack works to empower others with hearing loss as chairperson of the Rhode Island Commission on the Deaf and Hard of Hearing, and says a medical career promises to be a rewarding way to support the community that has supported him. Sack uses numerous strategies to ensure he can hear everything, including a special stethoscope that plugs into his implant so he can fully assess a patient. He says internal medicine seemed the best specialty to connect with patients. "I enjoy getting to know my patients, learning about their complex medical problems, and caring for them," he says. ***—J.B.***

Hometown	Undergrad	Med school	Residency
East Greenwich, RI	**Brown University**	**Alpert Medical School**	**Yale-New Haven Hospital, Yale School of Medicine**

Catherine Chamberlain MD'14

31 YEARS OLD | FAMILY MEDICINE

Long before she'd even applied to medical school, Chamberlain worked in primary care—she just didn't know it. After college, she took a job at Adult Protective Services in Texas before serving for two years in the Peace Corps, as a health educator in Albania. She then worked for the Baltimore City Health Department, assisting the health commissioner and writing grants. "All of this is primary care to its core—helping this underserved population," she says. Her decision to attend med school was largely influenced by her time in the Peace Corps. "I was telling people, 'Stop smoking cigarettes, they're bad for you,' but I realized that I didn't know exactly why they were harmful, and I couldn't help people who were already sick," she says. "I wanted the whole picture." At Brown, Chamberlain took care to nurture her other interests, running two half-marathons, gardening, and volunteering for Habitat for Humanity. She'll continue giving back after graduation, too: as part of the National Health Service Corps, she's bound to work a few years at a clinic in an underserved area. But first she's focused on relocating and transitioning to residency. "At this point, we [med students] know how much we don't know," Chamberlain says. "The next step is starting to fill in all of those pieces." ***—J.B.***

"At this point, we know how much we don't know. The next step is starting to fill in all of those pieces."

Hometown
Clarendon, TX

Undergrad
Austin College

Postbac
Johns Hopkins University

Med school
Alpert Medical School

Residency
University of Maryland Medical Center, UM School of Medicine

MATCHDAY

TEARS OF JOY
Jenna Lester MD'14 celebrates with her family.

The List

• *Anesthesiology*

ZACHARY HOFFMAN
NewYork-Presbyterian Hospital/Weill Cornell Medical College

RASHID HUSSAIN
Medicine-Prelim: University of Maryland Medical Center/UM School of Medicine; University of Virginia Hospital/UVA School of Medicine

• *Dermatology*

JACK COSSMAN
Transitional: Yale-New Haven Hospital/Yale School of Medicine; Roger Williams Medical Center/Boston University School of Medicine

JENNA LESTER
Medicine-Prelim: Beth Israel Deaconess Medical Center/Harvard Medical School; University of California, San Francisco/UCSF School of Medicine

ZACHARY SCHWAGER
Medicine-Prelim: Roger Williams Medical Center/Boston University School of Medicine; New York University School of Medicine/NYU School of Medicine

• *Emergency Medicine*

BRIAN BAO
Oregon Health & Science University/OHSU School of Medicine

BRIAN CHANG
University of California, San Francisco/UCSF School of Medicine

NACHIKETA GUPTA
Icahn School of Medicine at Mount Sinai/Icahn SOM at Mount Sinai

DAVID KIM
Ronald Reagan University of California, Los Angeles Medical Center/David Geffen School of Medicine at UCLA

MATTHEW KLEIN
McGaw Medical Center of Northwestern University/Northwestern University Feinberg School of Medicine

ERIC LEE
Icahn School of Medicine at Mount Sinai/Icahn SOM at Mount Sinai

JASON LOPEZ
NewYork-Presbyterian Hospital/Columbia University College of Physicians and Surgeons

RYAN MASON
University of Washington Affiliated Hospitals/UW School of Medicine

JENNIFER NYKIEL
University of Chicago Medical Center/University of Chicago Pritzker School of Medicine

ARKADY RASIN
University of Massachusetts Medical School/UMass Medical School

STEVEN STRAUBE
University of California, San Francisco/UCSF School of Medicine

• *Family Medicine*

AERIELLE BOOKER
Providence Hospital/Georgetown University School of Medicine

CATHERINE CHAMBERLAIN
University of Maryland Medical Center/UM School of Medicine

JAYNE GAUBATZ
Swedish Medical Center-Cherry Hill/Swedish Medical Center

ANNA HSU
University of Massachusetts Medical School/UMass Medical School

NEIL JACKSON
Contra Costa Regional Medical Center/University of

DAVID DELPOIO

THIS IS IT: Ryan Mason MD'14 meets his match.

HANK RANDALL; DAVID DELPOIO

California, San Francisco School of Medicine

RYE-JI KIM
University of California, Irvine Medical Center/UC Irvine School of Medicine

KATE LAMANCUSO
Memorial Hospital of Rhode Island/Alpert Medical School

DAVID PENN
Providence Hospital/Providence Health & Services

GRACE PRICE
University of Arizona College of Medicine/UA College of Medicine

• *Medicine*

RAHUL BANERJEE
Hospital of the University of Pennsylvania/Perelman School of Medicine at the University of Pennsylvania

BRYANT FARIA
Einstein/Montefiore Medical Center/Albert Einstein College of Medicine

JUDE FLEMING
NewYork-Presbyterian Hospital/Columbia University College of Physicians and Surgeons

RABIH GEHA
University of California, San Francisco/UCSF School of Medicine

MATTHEW GRIFFIN
Yale-New Haven Hospital/Yale School of Medicine

JENNY JUN
Olive View-University of California, Los Angeles Medical Center/David Geffen School of Medicine at UCLA

AARON KOFMAN
University of California, San Diego/UC San Diego School of Medicine

SHEELA KRISHNAN
Massachusetts General Hospital/Harvard Medical School

ALISHA LAKHANI
Rhode Island Hospital/Alpert Medical School

STEPHANIE LE
Boston Medical Center/Boston University School of Medicine

RALPH ROGERS
Rhode Island Hospital/Alpert Medical School

JORDAN SACK
Yale-New Haven Hospital/Yale School of Medicine

MAE SHEN
Rhode Island Hospital/Alpert Medical School

HYE GI SHIM
Einstein/Montefiore Medical Center/Albert Einstein College of Medicine

JINYU ZHANG
Thomas Jefferson University Hospital/Jefferson Medical College

SURPRISE: Hong Gi Shim '13 MD'17, left, and his sister Hye Gi Shim '09 MD'14, right, find out where she's going next.

• *Medicine-Pediatrics*

CHRISTINA GUZMAN
University Hospitals Case Medical Center/Case Western Reserve University School of Medicine

MADELINE MAHOWALD
University of Michigan Health System/UM Medical School

MATCHDAY

JOHN MOLINA
Rhode Island Hospital/
Alpert Medical School

• *Medicine-Prelim*

DANIEL JAMORABO
University of Massachusetts Medical School/UMass Medical School
JENNIFER YONG
Yale-New Haven Hospital/
Yale School of Medicine

• *Medicine-Primary*

SAMUEL MILLER
University of California, San Francisco/UCSF School of Medicine

• *Neurosurgery*

MICHAEL KIM
Westchester Medical Center/
New York Medical College
FARAH LAIWALLA
University of Utah Affiliated Hospitals/University of Utah School of Medicine

• *Neurology*

NEISHAY AYUB
Medicine-Prelim: Rhode Island Hospital/Alpert Medical School; Beth Israel Deaconess Medical Center/
Harvard Medical School

• *Obstetrics/ Gynecology*

NINA AYALA
McGaw Medical Center of Northwestern University/
Northwestern University Feinberg School of Medicine
LIBERTAD FLORES
Women & Infants Hospital of Rhode Island/Alpert Medical School
JULIA KIM
NewYork-Presbyterian Hospital/Weill Cornell Medical College
TONG LIU
Baystate Medical Center/
Tufts University School of Medicine
JESSICA MITCHELL
Strong Memorial Hospital/
University of Rochester School of Medicine and Dentistry
MELISSA PAULEN
Indiana University School of Medicine/IU School of Medicine
MARY ALICE RICHTER
Tulane University School of Medicine/Tulane University SOM
HILDRED ROCHON
Howard University Hospital/
Howard University College of Medicine
DEEPIKA SAGARAM
NewYork-Presbyterian Hospital/Columbia University College of Physicians and Surgeons

• *Ob/Gyn-Prelim*

BENEDICT LANDGREN-MILLS
Einstein/Montefiore Medical Center/Albert Einstein College of Medicine

• *Ophthalmology*

JONATHAN HERNANDEZ
Medicine-Prelim: Oakland Medical Center/Kaiser Permanente; California Pacific Medical Center/Sutter Health
ALEXIS MANCINI
Transitional: Scripps Mercy Hospital-San Diego/UC San Diego School of Medicine; University of Maryland Medical Center/UM School of Medicine

• *Orthopaedic Surgery*

PAUL SHULTZ
University of Chicago Medical Center/University of Chicago Pritzker School of Medicine
JOSEF TOFTE
University of Iowa Hospitals & Clinics/UI Carver College of Medicine

• *Pediatrics*

SANDO BAYSAH
Children's Hospital of Philadelphia/Perelman School of Medicine at the University of Pennsylvania
KIMBERLY DICKINSON
Johns Hopkins Hospital/
Johns Hopkins University School of Medicine
HEATHER JONES
Dartmouth-Hitchcock Medical Center/Geisel School of Medicine
RACHEL MARANO
Children's Hospital Los Angeles/Keck School of Medicine of the University of Southern California
LAURA MERCURIO
Rhode Island Hospital/
Alpert Medical School
ALEJANDRA NAVARRO
Harbor-University of California, Los Angeles Medical Center/David Geffen School of Medicine at UCLA
ARIANA RAUFI
McGaw Medical Center of Northwestern University/
Northwestern University Feinberg School of Medicine
MANSI SHAH
duPont Hospital for Children/
Jefferson Medical College

• *Pediatrics-Primary Care*

CAMERON LANG
University of North Carolina

CHECK IT OUT: Paul Shultz MD'14, left, celebrates his residency appointment with Ross Beckman '09 MD'13.

DAVID DELPOIO

PROUD MOM: Clinical Assistant Professor of Pediatrics Angela Grenander-Raufi '78 MD'81, P'08MD'13, '09MD'14, left, beams at the newest doctor in the family, Ariana Raufi '09 MD'14.

DAVID DELPOIO (2)

Hospitals/UNC School of Medicine

• *Pediatrics-Social*

LAURA MARCUS
Einstein/Montefiore Medical Center/Albert Einstein College of Medicine

• *Psychiatry*

COLIN BURKE
Massachusetts General Hospital/Harvard Medical School

SPEECHLESS David Kim MD'14 takes a moment to process his match.

MELISSA CRANFORD
Yale-New Haven Hospital/Yale School of Medicine
ANTOINETTE DAWSON
Tripler Army Medical Center/Tripler AMC
LISA JACOBS
Hospital of the University of Pennsylvania/Perelman School of Medicine at the University of Pennsylvania
ELIZABETH JANOPAUL-NAYLOR
Cambridge Health Alliance/Harvard Medical School
LAURA PEREZ
Boston Medical Center/Boston University School of Medicine

• *Radiation-Oncology*

JASON CHAN
Medicine-Prelim: Kaiser Permanente San Francisco/Kaiser Permanente; University of California, San Francisco/UCSF School of Medicine
JENNA KAHN
Transitional: Newton-Wellesley Hospital/Tufts University School of Medicine; Virginia Commonwealth University Health System/VCU School of Medicine

• *Radiology*

KATRINA CHU
Transitional: Cambridge Health Alliance/Harvard Medical School; Massachusetts General Hospital/Harvard Medical School
STEVEN HANG
Medicine-Prelim and Residency: University of Virginia/UVA School of Medicine
ROXANNA JUAREZ
Medicine-Prelim: Greenwich Hospital/Yale School of Medicine; MedStar Georgetown University Hospital/Georgetown University School of Medicine
DENNIS KWON
Medicine-Prelim: Einstein/Montefiore New Rochelle Hospital/Albert Einstein College of Medicine; Hospital of the University of Pennsylvania/Perelman School of Medicine at the University of Pennsylvania
LINDA RATANAPRASATPORN
Medicine-Prelim: Roger Williams Medical Center/Boston University School of Medicine; Brigham & Women's Hospital/Harvard Medical School
LISA RATANAPRASATPORN
Transitional: Cambridge Health Alliance/Harvard Medical School; Brigham & Women's Hospital/Harvard Medical School

• *Surgery*

SHREYUS KULKARNI
University of Pittsburgh Medical Center Medical Education/University of Pittsburgh School of Medicine
RAJ VAGHJIANI
Einstein/Montefiore Medical Center/Albert Einstein College of Medicine

• *Urology*

CHRISTI BUTLER
Surgery-Prelim and Residency: University of California, San Francisco/UCSF School of Medicine
JESSICA DAI
Medicine-Prelim and Residency: University of Washington Affiliated Hospitals/UW School of Medicine

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ALUMNI ALBUM

CHECKING IN WITH BROWN MEDICAL ALUMNI

BUILDING MOMENTUM

Mac V. Edds, director of medicine in the Division of Biological and Medical Sciences (left), and Ray Heffner, 13th president of Brown, inspect plans at the site of the BioMedical Center on Meeting Street, which opened 45 years ago, in 1969.

ALPERT MEDICAL SCHOOL ARCHIVES

CLASSNOTES

ALUMNI

1975

Pardon Kenney '72 MMSc'75 RES'80, P'03 marked his 25th year as chief of surgery at Brigham and Women's Faulkner Hospital in February. He was appointed to the Massachusetts Board of Registration in Medicine Quality and Patient Safety Committee, which evaluates hospital and physician quality programs.

1978

Alan T. Kaell '75, P'04 and his wife, Diana, are expecting a new grandchild from their son, Steven H. Kaell '04. Alan, a rheumatologist, recently retired from clinical practice. He is a clinical professor of medicine at SUNY Stony Brook and mentors scholarly development of residents, fellows, and faculty.

1979

Michael Cropp '76, P'05, '09 is CEO of Independent Health, a $1.9 billion HMO

EYE ON ALUMNI

Colors on the Autism Spectrum

A mother and her son help a researcher find purpose.

Susan Hyman

Like many medical students, Susan Hyman '76 MD'79 initially chose her specialty based on an intellectual engagement with the topic, but it was a particular child who gave special meaning to her life's work.

Hyman is double boarded in neurodevelopmental disabilities and developmental pediatrics, subspecialties that cover a broad group of patients including those with spina bifida, cerebral palsy, ADHD, and autism spectrum disorders. After her internship and residency in pediatrics at University of North Carolina Hospitals, she completed a fellowship in developmental pediatrics at Johns Hopkins Hospital. "Developmental pediatrics is a microcosm of all the things I found interesting about pediatrics: family systems, neurobiology, and the opportunity to make a difference," she says.

During a visit from her friend and Brown roommate Karen Margulis London '76, Hyman had a moment of clarity. When London's 2-year-old son was diagnosed with autism, it became the impetus for Hyman's increased focus on autism spectrum disorders. "A lot of my success had its roots in learning from Karen and her son," Hyman says.

Today Hyman is professor of pediatrics and division chief of Neurodevelopmental and Behavioral Pediatrics at the University of Rochester Medical School and chair of the American Academy of Pediatrics (AAP) subcommittee on autism. She received the 2013 Council on Children with Disabilities Arnold J. Capute Award, which is presented to an AAP fellow who has made a significant contribution to pediatric disabilities.

At the University of Rochester, which is an Autism Speaks Autism Treatment Network site, Hyman's research includes the medical management of autism, the impact of diet and nutrition, and differentiating autism spectrum disorders from other developmental conditions.

There's plenty of fodder for the research. "There are gaps in our understanding about the basic neurobiology of autism, what we understand about environmental and genetic predisposing factors, and how to marry what we observe when we treat the symptoms of autism with our understanding of the neurobiology," she says. There are also societal gaps in providing effective treatment to all children and serving the increasing number of adolescents and adults diagnosed with autism, she adds.

Academic centers need continued support for translational studies related to autism, she says. "That is the only way to understand both prevalence and treatment."

Hyman cautions that screening for and identifying autism early and treating its symptoms should in no way diminish the experience of people with autism. She points to Karen London as a model. "She took autism by the horns and now she has this wonderful, beautiful, mid-20s son who has modest language ability, but is happy and an integral part of their family," Hyman says. ***—Mary Stuart***

COURTESY SUSAN HYMAN

PLEASE SHARE.

Career news, weddings, births—your classmates want to know. Go to **med.brown.edu/alumni** and click on **"Updates and Class Notes."**

in western New York. Independent Health was recently named one of the region's most admired companies on the bases of company growth, employer success, and local community connections.

Roberta Haynes de Regt '76 joined the board of the Brown Medical Alumni Association and is the area chair of the Alumni Interviewing Program for Seattle and the Northwest. She writes, "Looking forward to the 2014 Commencement and Reunion activities with Mark de Regt '74 and other old friends." Robin is a perinatologist at Eastside Maternal Fetal Medicine in Bellevue, WA, and an assistant clinical professor of obstetrics and gynecology at the University of Washington School of Medicine.

EYE ON ALUMNI

Power Tools

Yu fights cancer, one byte at a time.


Peter Yu

After living and working more than two decades in the heart of Silicon Valley, it follows that medical oncologist and hematologist Peter Yu '77 MD'80 believes information technology can help advance cancer care. But the importance of new thinking is a concept he learned at Brown.

"Being part of such a new medical school, grafted on top of a 200-year-old institution ... when I look at what I am doing now, that's the root of it: that things don't have to be the way they always were. We need creative solutions," he says.

As president-elect of the board of the American Society of Clinical Oncology (ASCO), Yu plans to use his leadership position to push for innovations in cancer research and care delivery, with a focus on understanding the cultural and ethnic diversity that affect care.

> "We need to **know more about the basic causation,** the drivers of cancer in a particular patient."

"We think of infectious diseases when we hear the term 'global health,' but recent statistics have shown that the fastest rising cause of mortality in the world is cancer, even in low-resource countries," says Yu, who practices at the Palo Alto Medical Foundation in Sunnyvale, CA.

But all cancers are not the same. For example, he says, hepatitis B causes many liver cancers worldwide, but obesity and fatty liver may be a primary risk factor in the US. "We need to know more about the basic causation, the drivers of cancer in a particular patient," he says. "Global collaboration can help us understand those nuances in the United States, with its ethnically diverse population."

Yu worries that the decline in federal research spending, and increasing reliance on corporate and private dollars, will exacerbate health disparities, as philanthropists and industries fund cancers to which they have a personal connection or whose treatment has the most commercial potential—often diseases more likely to afflict Caucasians.

That's why ASCO is delving into the world of big data with CancerLinQ, which is now under development. It will follow a "rapid-learning health system model," Yu says, to amass oncologists' medical records to "create apps and other support tools to take that knowledge and accelerate it into patient care."

"ASCO will pull data into a central data repository so it can be shared, analyzed, and aggregated to drive research questions and find answers faster than randomized clinical trials, which are slower and more expensive," he says. This, in turn, could make care more affordable and accessible. "Our hope is the rapidly expanding knowledge base ... will allow us to be much more guided in how we direct our research and fruitful in the products of our research," he says.

CancerLinQ will ultimately close the loop, as providers bring the data back to the bedside. "Care delivery is really where the rubber meets the road," Yu says. "All this leads to nothing if you don't actually apply it to taking care of patients."

—Phoebe Hall

COURTESY PETER YU

1984

Brian Morris '78 received a second two-year appointment to the Federal Motor Carrier Safety Administration Medical Review Board. He is the associate medical director of AllOne Health.

1986

Jeffrey Hines '83 ran the 26.2 with DONNA, a marathon in Jacksonville, FL, that raises funds to end breast cancer, in February. Jeff completed the course, in the rain, in 4 hours and 42 minutes.

1988

Cynthia M. Alves was elected president of the medical staff at Roger Williams Medical Center in Providence. Cynthia, whose expertise is in clinical, non-invasive, and preventive cardiology, has subspecialty training and board certification in nuclear cardiology, is a fellow of the American College of Cardiology, and is a member of the Cardiovascular Institute of New England. She is on the internal medicine faculty at Roger Williams, where she completed residency and fellowship training, and has held various leadership positions there, including service on the Medical Executive Committee.

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1991

Joel Stern is the executive vice president of the South Division of EmCare, an organization that offers outsourced physician services. Joel is a past president of the Florida State Chapter of the American Academy of Emergency Medicine, which he helped to found. He serves on the board of directors of the Florida College of Emergency Physicians and lives in Clearwater, FL.

1998

Margaret A. Kelley '94 is serving a two-year term as president of the Texas Association of Obstetricians and Gynecologists. She works in San Antonio, TX, in private practice with her father.

Georgios Tsoulfas '94 is an assistant professor of surgery at the Aristotle University of Thessaloniki, Greece. He is also the European federation secretary of the International College of Surgeons and an international guest scholar of the American College of Surgeons. Georgios and his wife, Polyxeni Agroastou, MD, live in Thessaloniki with their 3-year-old daughter, Suzy, who is taking charge of everything.

2010

Lauren de Leon RES'13 is a physician at Coastal Medical in Greenville, RI. She completed her residency in internal medicine at Rhode Island Hospital and The Miriam Hospital. Her interests are women's health, gastrointestinal disorders, and pre-pregnancy counseling.

RESIDENTS
1992

Richard Renzi, MD, joined the medical staff of the emergency department at Franklin Memorial Hospital in Farmington, ME. Richard completed his residency and a fellowship in critical care medicine at The Miriam Hospital and, while at Brown, received the Excellence in Teaching Award. He lives in Wyman Township, ME, with his wife, with whom he has two adult children.

2008

Matthew Siegel, MD, was second author of a new national guideline setting standards for the assessment and treatment of children with autism. The guideline, "Practice Parameter for the Assessment and Treatment of Children with Autism Spectrum Disorder," was published in the *Journal of the American Academy of Child and Adolescent Psychiatry*.

2013

Anne McKinley, MD, joined Beth Israel Deaconess HealthCare, Chestnut Hill, MA, where she provides primary care. Her interests are women's health, preventive medicine, and geriatrics. She completed the categorical internal medicine residency at Brown.

FELLOWS
1990

Phyllis Bogard, MD, was selected by the International Association of Healthcare Professionals to represent psychiatry in *The Leading Physicians of the World*. Phyllis works with the Behavioral Health Unit of the Moses H. Cone Memorial Hospital in Greensboro, NC. Her specialties are child and adolescent psychiatry, and she is a distinguished lifetime fellow of the American Psychiatric Association. She completed her fellowship in surgical pathology at Rhode Island Hospital.

EYE ON ALUMNI

The Summit

An eye surgeon sets his sights on curing blindness.

Geoffrey Tabin, MD RES'93 has always aimed high. As one of the earliest climbers to reach the highest peak on all seven continents, he counts Reinhold Messner and other mountaineering legends as his company.

But a goal he set 20 years ago is one he knows won't be met in his lifetime. To Tabin, summiting Mount Everest has nothing on curing blindness worldwide.

Tabin found his true calling as a general doctor in Nepal. "I saw the miracle of cataract surgery," he says. "Twenty million people can't see fingers held up in front of their faces because of treatable cataracts. I saw these people were depressed and waiting to die—and this surgery was bringing them back to life. I also realized this surgery would be a challenge similar to climbing—that kind of focus. It was perfect for me."

A ski vacation in Utah led to a chance encounter on a chairlift between his then-girlfriend and a retinal specialist from Providence. The doctor knew of an opening at Brown University and Tabin found himself on a next-day flight to meet William Tsiaras, MD, director of the residency training program in ophthalmology.

The world traveler says Providence is among the most important places he's been. "The residency gave me the attention I needed," Tabin says. "We actually only had two residents a year. You received an amazing volume of experience, which helps when you consider the high volume you'll come across in developing countries."

Tabin eventually was mentored by and became a partner of the Nepali ophthalmologist Sanduk Ruit, MD, who taught him an inexpensive, sutureless cataract surgery for resource-poor settings. "He really originated showing doctors from these areas not just technique but an understanding of reimbursement," Tabin says. "It made financial sense for more doctors to perform the surgery, and the number of blind people has gone down dramatically."

According to Tabin, when he and Ruit started what became the Himalayan Cataract Project, in 1994, there was a backlog of 200,000 patients with cataracts, with 60,000 people going blind annually; Nepalese eye surgeons had the capacity to treat just 15,000 patients a year using older, more expensive, and labor-intensive techniques. "Last year, 275,000 surgeries were done," Tabin says, "and it's as good as cataract surgery in the United States. I can't tell you just how much things are changing."

What he can tell you is that eradicating blindness is a real possibility and one he won't give up on. "We have to keep moving forward," he says. "It's sad how many people are blind who just don't have to be."

For a climber whose eyes have seen sights few have, Tabin realizes that the most important view is any at all.

—Eric Butterman

For more information, visit cureblindness.org.

Geoffrey Tabin (right) with a patient.

COURTESY GEOFFREY TABIN

OBITUARIES

ALUMNI

CHRISTOPHER C. BADGER '73 MD'76

Christopher C. Badger, 62, of Morrisonville, NY, died January 7, 2014. Chris was born in Cleveland, OH, and grew up both in Fulton, NY, and Cleveland Heights, OH. He and his wife, Elizabeth Vallee, met at Brown and, in 1979, they married. After he completed his internship and residency in Providence, the couple moved to Seattle, where Chris was a research oncologist at the Fred Hutchinson Cancer Center and enjoyed camping in the Olympic National Forest, hiking, canoeing, traveling, and visiting the ocean. In 1996, Chris turned his focus to internal medicine and moved to Plattsburgh, NY, to work at Great North Woods Medical Center. After retiring from practice, Chris became medical director for Hospice of the North Country and served on the board of Planned Parenthood of the North Country, and spent time riding his tractor and restoring the family cottage in Ripton, VT. Chris had a voracious appetite for literature and enjoyed gardening, cooking, playing Free Cell, and sharing his knowledge with the world, especially his grandchildren. He is survived by his wife; two sons, Gregory and Phil; his mother; three brothers; and three grandchildren. Donations in his memory may be made to the Pulmonary Fibrosis Foundation, Planned Parenthood of the North Country, or Hospice of the North Country.

JENNIFER A. DARU MD'97

Jennifer A. Daru, 42, died March 23, 2014, in Kentfield, CA, after a two-year battle with cancer. Born in Massachusetts, she grew up in Tiburon, CA, and received her bachelor's degree from Carleton College. She earned her medical degree via the Brown-Dartmouth Program and completed her residency in pediatrics at Northwestern University's Children's Memorial Hospital in Chicago. She served as chief of Pediatric Hospital Medicine for California Pacific Medical Center, after roles at Advocate Illinois Masonic and Children's Memorial in Chicago. She was elected to serve as the chair of the American Academy of Pediatrics Section on Hospital Medicine, setting standards of care for hospitalized children across the country. Jenn was kind and generous and devoted to her family and many friends. She loved to bring people together and was always up for new adventures. She was an avid athlete who enjoyed working out, playing tennis, and spending time outdoors, especially hiking on Mt. Tam. She is survived by her husband, Jon Laudenbach; her son, Carson; her parents, Sid and Janet Daru; her in-laws; and several nieces and nephews. Donations may be made in Jenn's memory to the National Brain Tumor Society.

FACULTY

MARVIN S. KERZNER, MD

Marvin S. Kerzner, 83, of Providence, died December 5, 2013. The Providence native earned a bachelor's degree from Boston University and a master's in physical chemistry from Tufts University. He was a chemist for US Steel before attending medical school at the University of Bologna, Italy. From 1968 until 2004, Marvin was a clinical assistant professor of medicine at Brown Medical School. A dedicated educator, he received the Preceptorship Award for outstanding teaching in the field of internal medicine from The Miriam Hospital and Rhode Island Hospital. For 50 years, Marvin also maintained a large practice on the city's East Side, which for many years served as a clinical rotation site for the physician assistant program at Northeastern University. Marvin was an avid sailor and lifelong runner, competing in many marathons with his wife. He was a loving and supportive father and a tireless advocate for his patients. He is survived by his wife of 57 years, Thelma; his daughters, Irene, Debbie, and Lisa; two sisters; one brother; and six grandchildren.

WILLIAM R. THOMPSON, MD

William R. Thompson, 84, of Warwick, RI, died January 15, 2014. Bill, a clinical professor of surgery emeritus at Alpert Medical School, grew up in the logging and paper mill town of Livermore Falls, ME. In 1951, he earned a bachelor of science from the University of Maine. He earned his medical degree from Cornell University Medical College in 1955 and began his surgical training at Rhode Island Hospital. Two years later, Bill joined the US Navy Reserve, serving as an active flight surgeon first in Pensacola, FL, then Quonset, RI, attaining the rank of lieutenant commander. Upon leaving the Navy, Bill joined the staff of Rhode Island Hospital and Women & Infants Hospital. He was the chair of the Brown Department of Surgery and twice was the acting surgeon-in-chief of Rhode Island Hospital. In the early 1960s he helped to form Surgical Group Inc., one of the first organized medical groups in the state. Bill held numerous committee and association assignments, served on many boards and commissions, and earned awards for services performed for his profession, patients, and the community. In recognition of his 34 years of dedication, University Surgical Associates established an endowment upon his retirement supporting the William R. Thompson, MD, Annual Lectureship in Esophagogastric Surgery, The Thompson Library at Rhode Island Hospital, and various resources for residents, in-

cluding the annual sponsorship of a resident for surgical training in Africa. Over the past two decades, Bill indulged his love for Maine at his rustic camp on a wooded point of land at Kennebago Lake, where he went fly-fishing, observed moose and other wildlife, and welcomed a steady flow of friends and family. He is survived by his wife, Diane; his stepson, Daniel Brouillard; his children, Mary, John, Kathryn, Norma, and Bill; several grandchildren; and a great-granddaughter. Donations in his memory may be made to the USA William R. Thompson Fund, PO Box 16149, Rumford, RI 02916.

MILTON W. HAMOLSKY, MD

Four Decades of Leadership

BY STANLEY M. ARONSON, MD

A decade before Brown University's medical school became a reality, Brown already had a professor of medicine. Back in 1963, Rhode Island Hospital recognized that its future as a tertiary care medical center, as well as its contemplated role in providing a site for the clinical training of medical students, depended upon the recruitment of a full-time director of an internal medicine service. This appointment would represent the first crucial step in transforming the hospital from a community institution managed by physicians in private practice to one with an expanded role to include medical and health care education at all levels, basic and applied research, as well as rigorous supervision of the care rendered to its patients.

The appointment of a director of internal medicine is typically the first critical undertaking in the transition of a community hospital to an academic medical center. A search committee examined the credentials of many candidates for this critical post. They finally selected a 42-year-old Massachusetts physician, then an assistant professor of medicine at Harvard Medical School and an attending physician at Boston's Beth Israel Hospital. His name was Milton William Hamolsky.

Hamolsky was born in Lynn, MA (not Milton, MA, as some of his admirers had claimed). He was the son of a local shopkeeper and a member of a close-knit family that cherished learning above all other graces. Milton, named after his grandfather, Mordecai, attended Harvard College, graduating summa cum laude. He then went on to Harvard Medical School, in 1943.

The nation was in the depths of World War II and medical education was accordingly shorn of all its summer vacations, thus accelerating the process of educating future physicians to three years. Hamolsky received his medical degree in 1946 and his diploma bore those seldom-imprinted words, magna cum laude, signifying his station as the school's outstanding student.

In the summer of 1946, Hamolsky entered into a long and productive relationship with Beth Israel Hospital, beginning with an internship on the medical service, followed by a three-year residency that culminated in his appointment as chief resident physician in medicine. In the midst of his graduate training, Hamolsky entered the armed services and was assigned to the Army Medical Research Facility at Fort Knox, KY, where he conducted extensive investigations on the diagnostic and therapeutic uses of newly devised radioactive chemicals in a variety of human diseases. He was discharged in 1950, with the rank of captain, returning then to his beloved Beth Israel Hospital. In 1951, he was appointed both to the hospital's attending staff and to Harvard's Department of Medicine. For the succeeding decade he established himself as one of the hospital's authorities on endocrine diseases, particularly ailments of the thyroid gland. By 1958, he was chief of endocrinology and assistant professor of medicine at Harvard.

During much of this productive interlude, Hamolsky invested his spare time in studying the role of iodine in the metabolism of the thyroid gland, both in normal and abnormal conditions. This investigation was so promising that the Commonwealth Foundation underwrote a research fellowship allowing Hamolsky to devote an entire year (1961-1962) to his investigative pursuits. He chose the College de France, in Paris, to undertake this research, which led to the discovery of a laboratory test, used to this day, as a standard diagnostic procedure in determining the status of thyroid function.

There are hundreds of practicing internists **who learned from Milton Hamolsky.**

This research brought him to the attention of medical centers beyond Boston. And, in 1963, Rhode Island Hospital recruited him as their physician-in-chief, a position he held until 1987. During those 24 years, he maintained a superb residency training program, certainly the finest in Rhode Island and one of the best in New England. There are, here in Rhode Island and elsewhere in the United States, hundreds of practicing inter-

nists who learned both their clinical skills and their high ethical standards from Milton Hamolsky. In addition, he recruited outstanding full-time chiefs of the subspecialties of internal medicine, including cardiology, pulmonary, gastroenterology, and nephrology. In doing so, he created the groundwork for a multidisciplinary clinical service that could easily accommodate the educational needs of a medical school. Brown, in its wisdom, appointed him as professor of medicine in 1963, despite the absence of any medical school, or even a corporate commitment to create one in the foreseeable future.

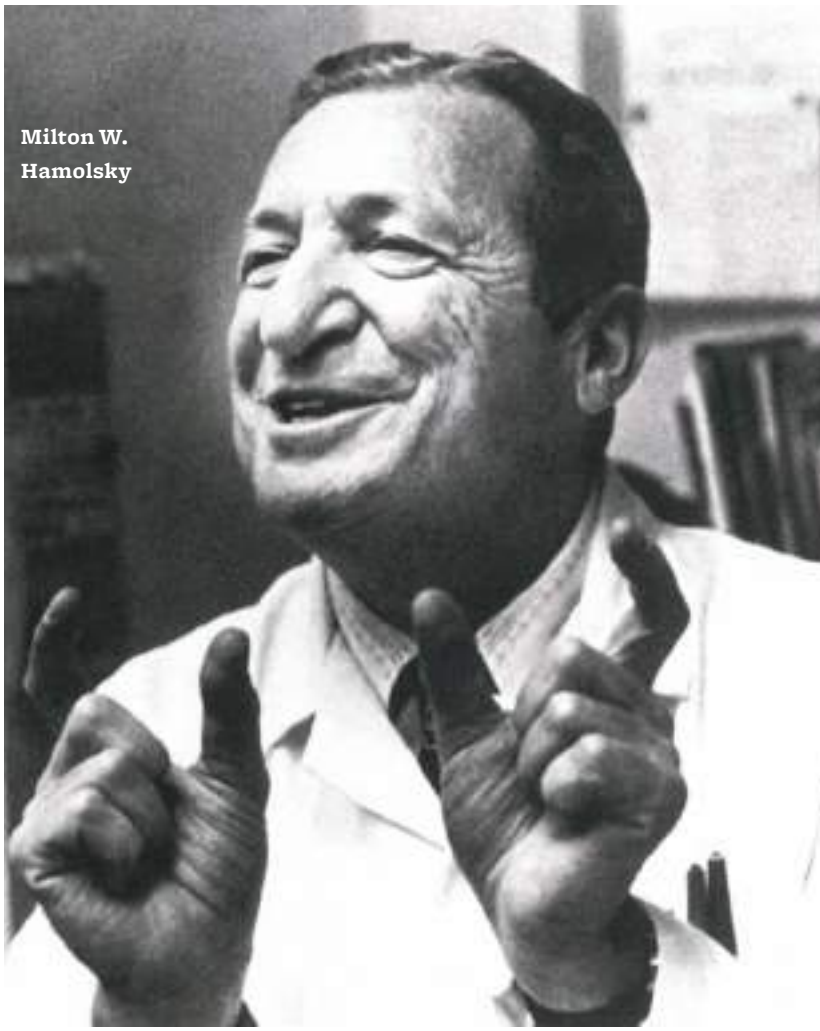
The application for permission to initiate an accredited academic program leading to the MD degree at Brown University was approved by federal authorities in the summer of 1972; clinical training of a pilot group of 12 students commenced in August of that year.

This was an important, indeed critical, undertaking by the University, something that went beyond mere excellence in laboratory science or lecture hall instruction; this involved the teaching of young men and women in the complex nature of the physician-patient relationship, the rare skill in imparting the truth humanely while conveying clinical instructions with compassion and commitment to the welfare of the patient. Accordingly, this demanded a cadre of teacher-clinicians certainly knowledgeable in their field but in addition both willing and able to teach these humane abilities to others.

These are rare yet vital skills representing the very core of successful medical education, and for this critical task in facilitating the transition from the lecture hall to the bedside, the University relied upon the teaching capabilities of four experienced internists, led by Hamolsky.

Hamolsky's contributions to health care in Rhode Island extended beyond the portals of Rhode Island Hospital. He was senior consultant to The Miriam Hospital and the Providence VA hospital, served concurrently as chief at Women & Infants Hospital, and worked on countless committees under the aegis of the state government, the state medical society, and private organizations such as Planned Parenthood of Rhode Island. During those active years he also served as chairman of the Rhode Island Heart Association, president of the Rhode Island Diabetes Association, and governor of the American College of Physicians.

In 1987 Hamolsky left Brown to become the chief administrative officer of the state's Board of Medical Licensure and Discipline. Under his inspired stewardship, the board was transformed into a superbly managed agency that has become a model for other states to emulate. And when the directorship of the Rhode Island Department of Health became vacant, it was Hamolsky who was called upon to briefly assume its leadership.



Milton W. Hamolsky

ALPERT MEDICAL SCHOOL ARCHIVES

In 2002, he retired as a practicing physician. He gave the state four decades of dedicated and exemplary leadership as an administrator, as a teacher, and as a wise and humane practitioner. Rhode Island, its medical school, and its teaching hospitals are indebted to that anonymous search committee that, some 40 years ago, brought a gifted physician named Milton Hamolsky to this community.

He was an active board member of Home & Hospice Care of Rhode Island, which honored him with its Human Dignity Award last fall. Beloved by his colleagues, he has numerous awards within the medical community named in his honor, including the Milton Hamolsky Outstanding Physician Award, the highest honor given by the Rhode Island Hospital medical staff to one of its own.

Hamolsky died January 18, 2014, at the age of 92. He is survived by his wife, Sandra Rosman Hamolsky; his children, Deborah Hamolsky, David J. Hamolsky, Joy Scharfman, and Robin Folk, and their spouses; his brother and sister; and six grandchildren. He was predeceased by his son John S. Hamolsky, his grandson Spenser Scharfman, and his first wife, Virginia Maglin Hamolsky.

MOMENTUM

The Head and the Heart

A new professorship in neuroscience honors a legacy.

Philanthropic gifts are not created in isolation: they are born from a context of dedicated service and generosity—sometimes over a lifetime. The bequest of Grace Kennison Alpert '51 to establish the Samuel I. Kennison, MD, and Bertha S. Kennison Professorship in Clinical Neuroscience is one such gift. By supporting critical research and teaching that will improve the lives of patients, the gift honors the legacy of both its namesakes and donor.

The daughter of the late Samuel and Bertha Kennison, Alpert was born in Providence and was a lifelong resident of the city. Her father was a general family practitioner and pathologist at The Miriam and president of its medical staff; her mother was one of the first life members of The Miriam Hospital Women's Association. Grace Alpert was a generous longtime supporter of the hospital—and served as a Miriam Hospital governor and on the board of the Women's Association, of which she was a life member. In 2005, she received the association's recognition award.

Karen L. Furie

Like her father, Alpert served her community as a clinician. She received her AB in psychology from Brown in 1951 and worked as staff clinical psychologist for the Rhode Island Mental Hygiene Services; clinical psychologist and consultant for Project Grow, a program of the Providence School Department; a consultant for the Rhode Island Training School for Girls; and a clinical psychologist in solo private practice. At Brown, she was active as a reunion volunteer and member of the College Hill Society.

Alpert died in August 2013, and is survived by her husband, Wesley Alpert, former president and CEO of Alpert Brothers Inc. Grace Alpert was inspired by Brown's national prominence in brain science to make a gift in this area. She wished to support the applications of neuroscience discoveries that would benefit patients not just in Providence, but all over the world.

The inaugural Kennison Professor, Karen L. Furie, MPH '87 MD'90 RES'94, chair of Alpert Medical School's Department of Neurology, can fulfill that promise. Furie, who received her Master of Public Health from Harvard, completed her medical internship at The Miriam Hospital and a neurology residency and fellowship in cerebrovascular disease at Rhode Island Hospital. She then joined the faculty of the Massachusetts General Hospital Stroke Service, where she served as director for several years.

Furie was then recruited as chair of neurology at Alpert Medical School and chief of neurology at Rhode Island, The Miriam, and Bradley hospitals. This joint recruitment was a key strategy in the Brown-Lifespan partnership to advance research, teaching, and patient care in brain science. She is also the executive chief of neurology at Butler Hospital and the Providence VA Medical Center.

Furie's prodigious research endeavors have defined optimal therapy for stroke prevention, clarified the role of high-dose vitamins for treatment of hyperhomocysteinemia, and provided insight into the pathophysiology of ischemic stroke. She studies developing novel therapeutic targets for intervention and mentors medical students, residents, and fellows who are focused on patient-oriented research.

Grace Alpert's gift will support this critical work, advancing research, teaching, and clinical care in neurology. "Grace Alpert's bequest represents a tremendous opportunity for the department and a new chapter in our growth," Furie says. "It's consistent with the considerable enthusiasm and investment that we've seen across Brown and Lifespan in developing the neurosciences as a premier program and an academic partnership." ***—Kylah Goodfellow Klinge***

ADAM MASTOON

"Thanks to funding from Brown, I was able to return to Liberia, where I was born, to conduct family planning research and work in the country's only tertiary hospital. Aḍer seeing the similar struggles of people in Providence, I intend to work to upliḍ low-income communities, both internationally and domestically."

— Sando Baysah MD'14

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