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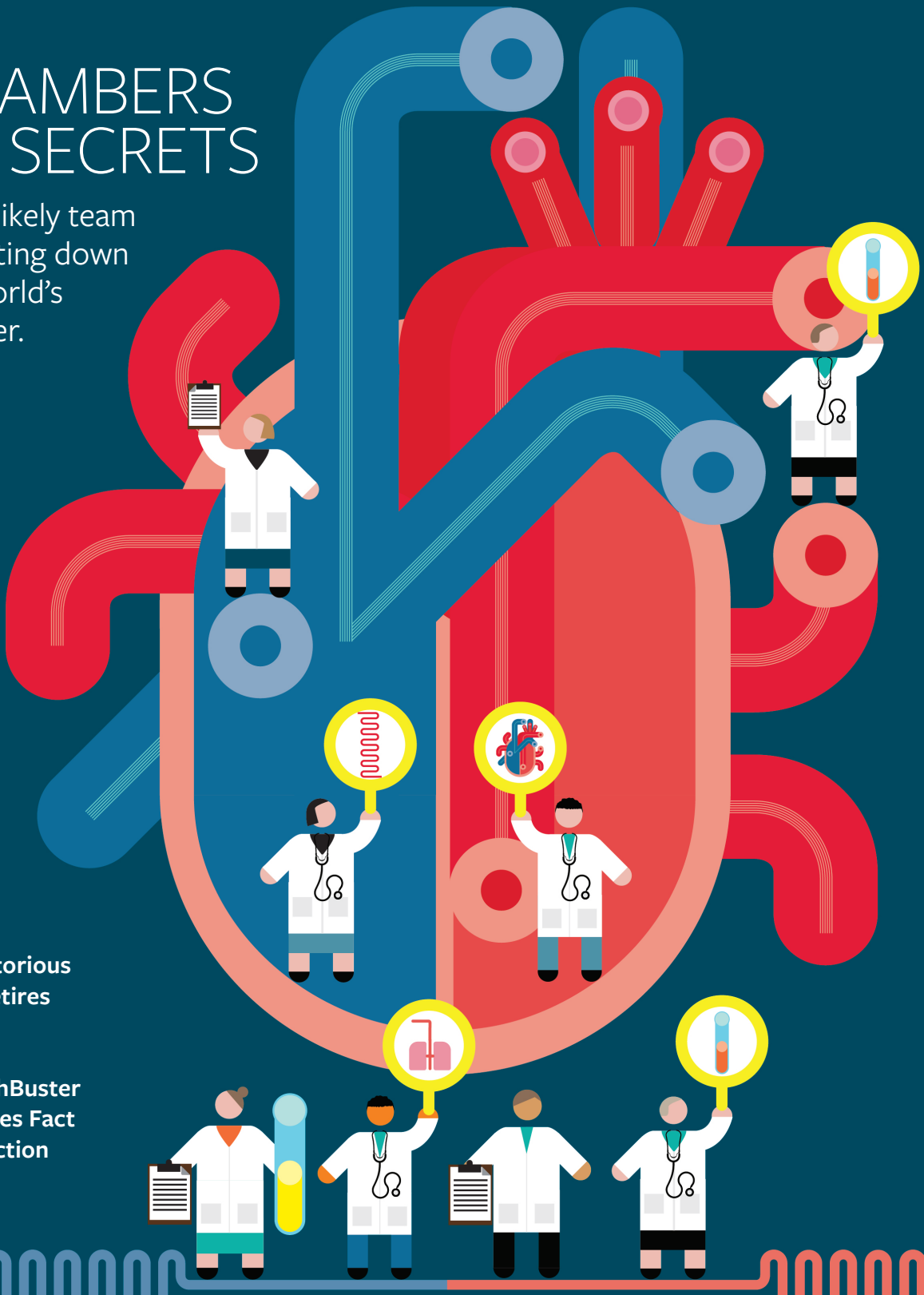
MEDICINE@BROWN

p22

CHAMBERS OF SECRETS

An unlikely team is hunting down the world's #1 killer.



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The Notorious RWB Retires

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Dr. MythBuster Separates Fact from Fiction

EXPOSURE

***WINGS*, BY JORDAN EMONT MD'20**
ONE WORLD TRADE CENTER
NEW YORK, NY, NOVEMBER 2016
My mantra when I am out taking photos is "look up." People spend so much time looking down, at where we are walking, at our phones, at other people on the street; it's easy to forget the world of design and beauty that exists above our heads. I became interested in photography when I was young because it was a pastime for my father. In college I worked as a photographer and later photo editor for my college newspaper. What makes a great photojournalist is the ability to photograph something that everyone has seen before in a completely different manner. I try to bring this perspective to all my photography. So I look up.

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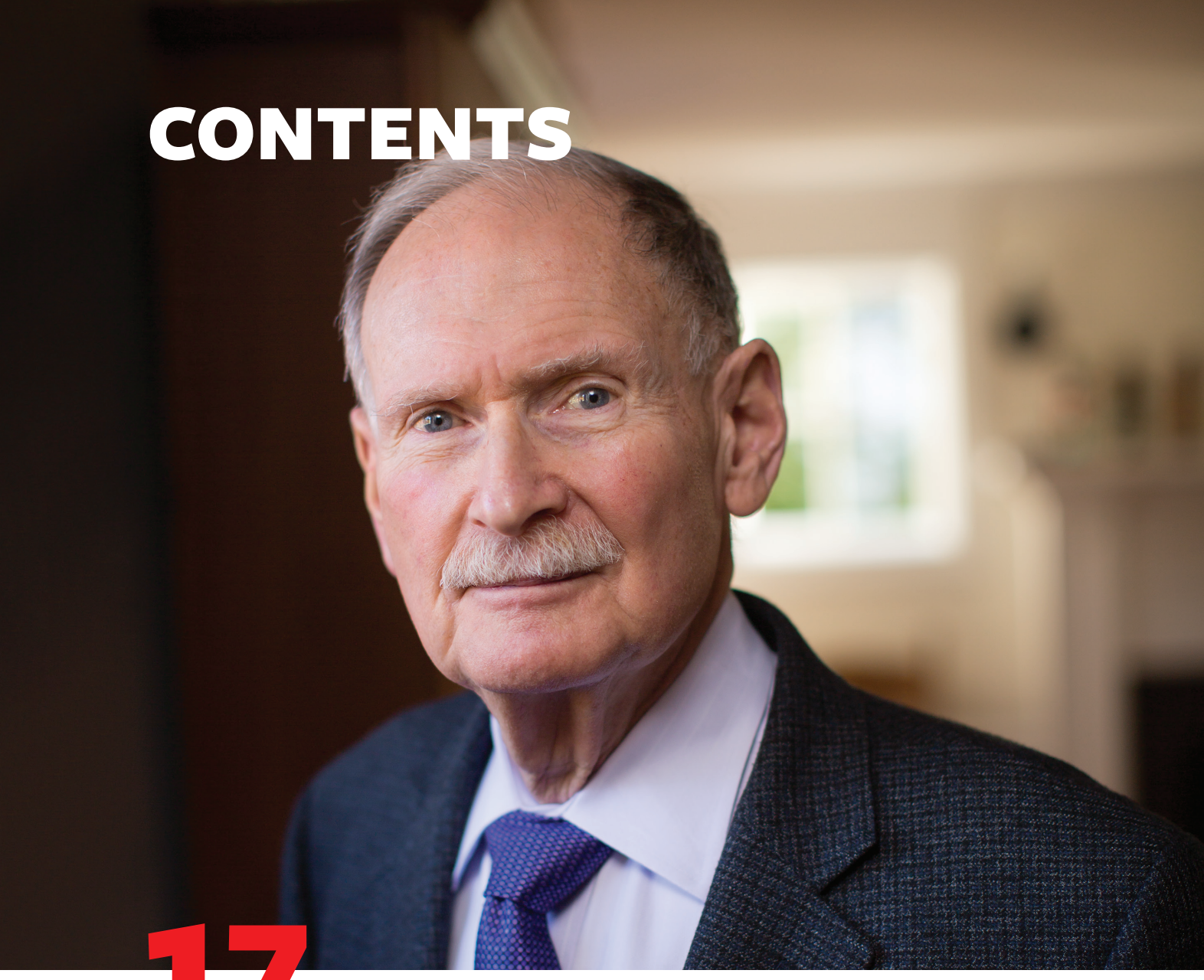

IN EVERY ISSUE

ON THE COVER:

ILLUSTRATION BY INFOMEN

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"Although I didn't identify the cause of her anemia, I did learn that some questions are more important to ask than those about stairs and home services."

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A residency alum returns to the fold.

A Virtuous Cycle

Welcome to the first issue of *Medicine@Brown*. We hope you will enjoy this fresh approach to news from the Warren Alpert Medical School and our alumni around the world.

In this issue, you'll read about the CardioPulmonary Vascular Biology Center of Biomedical Research Excellence (CPVB COBRE), which takes a fresh approach to diseases of the heart and lungs. As the article points out, we benefit tremendously from COBRE grants that are meant to boost research infrastructure in small and/or sparsely populated states such as Rhode Island. What the state lacks in size, however, is overcome by the strong collaborations among Brown, our affiliated hospital systems, the Providence VA Medical Center, and the University of Rhode Island. As a result, we have a long history of success with research development grants of this sort.

In fact, last fall we celebrated the funding of two new COBREs within weeks of each other. The first is based at Rhode Island Hospital and will focus on developing investigators specializing in opioid use disorder. The $11.8 million grant will be led by professors Josiah Rich, MD, MPH, and Traci Green, PhD, MSc. The second is a $9.4 million grant to establish a COBRE on drug-resistant pathogens, or "superbugs." The principal investigator is Eleftherios Mylonakis, MD, the Charles C. J. Carpenter Professor of Infectious Diseases.

Some existing COBREs were also re-funded in 2018 for an additional five years, including the Center for Central Nervous System Function, part of the Robert J. and Nancy D. Carney Institute for Brain Science at Brown; and the CPVB, which you'll be reading more about. This brings the total number of COBREs in BioMed to 11, totaling roughly $120 million in funding.

The incredible efforts of the faculty and staff on these grants and many more, as well as the recruitment of some outstanding scientists, have resulted in an 88 percent increase in campus-based research funding since 2013. This makes us one of the fastest growing research institutions in the USA. I am very proud of the work we are doing to grow Brown's research footprint and the educational opportunities that come from these programs. This funding is the backbone of a virtuous cycle that has allowed us to grow our new MD/PhD program and train more graduate and medical students interested in research. The result will be discoveries that improve our knowledge of disease pathogenesis and new therapies for previously untreatable diseases.

—JACK A. ELIAS, MD
Senior Vice President for Health Affairs
Dean of Medicine and Biological Sciences

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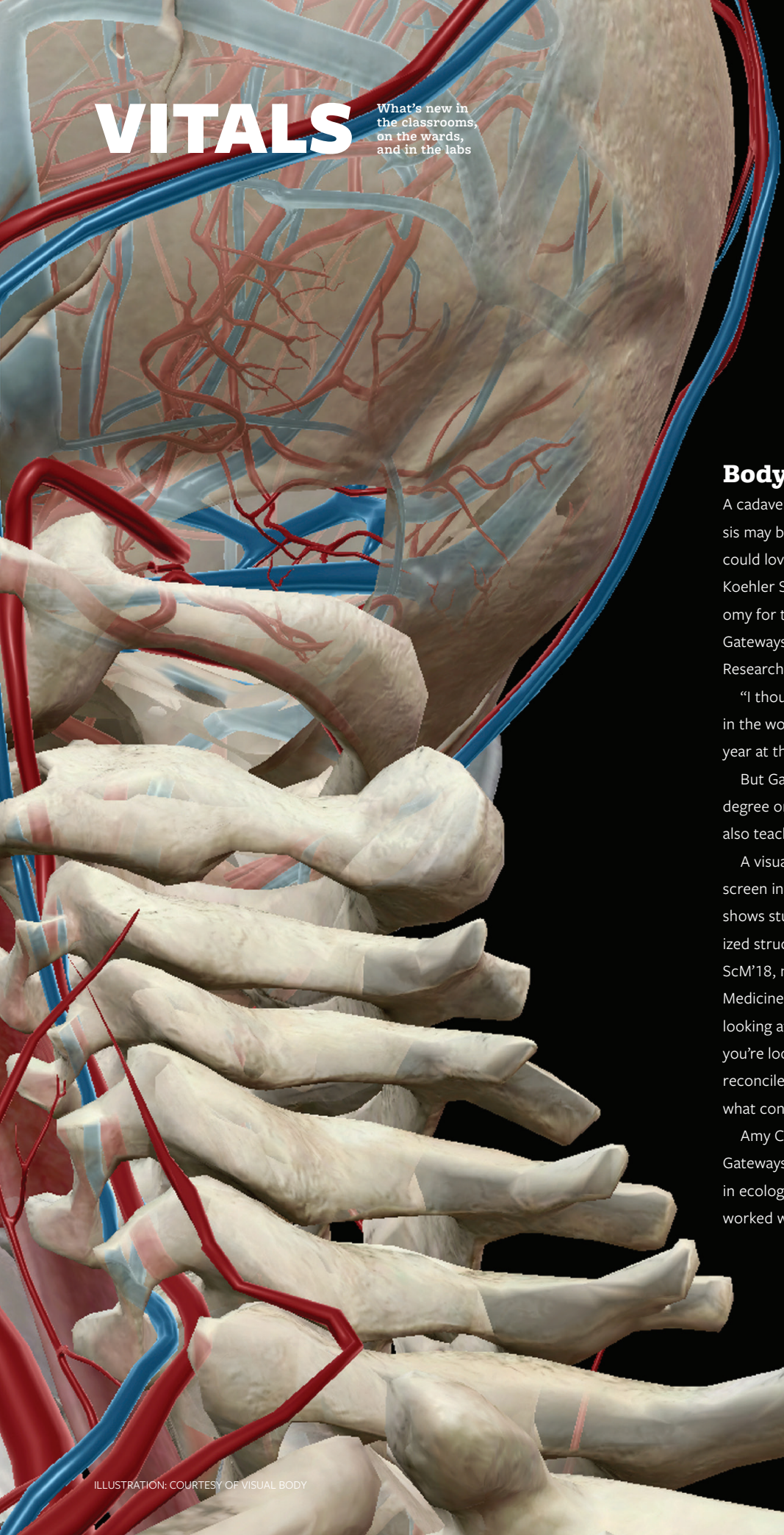
VITALS

What's new in the classrooms, on the wards, and in the labs



Body Double

A cadaver's spine crippled by severe scoliosis may be a sight only an aspiring doctor could love. And it enthralled Christopher Koehler ScM'18 MD'22 when he took anatomy for the inaugural class of the Brown Gateways to Medicine, Health Care, and Research Program last year.

"I thought it was the coolest experience in the world," says Koehler, now in his first year at the Warren Alpert Medical School.

But Gateways—which grants a master's degree or a certificate in medical science—also teaches anatomy digitally.

A visualization app hooked up to a large screen in the anatomy lab, for example, shows students complete and idealized structures. But, says Adam Howard ScM'18, now at the Mayo Clinic School of Medicine, "It's very different when you're looking at a fixed specimen than when you're looking at a 3-D model. You try to reconcile the differences and understand what constitutes anatomic variation."

Amy Chew, PhD, director of the Gateways anatomy course and a lecturer in ecology and evolutionary biology, has worked with apps, → continued on p06

ILLUSTRATION: COURTESY OF VISUAL BODY

continued from p05 →

virtual reality programs, and even digital tables that display detailed models based on photos of a dissected cadaver. But in her 15 years of teaching anatomy she has yet to encounter a substitute for real bodies.

While the dynamic imagery offers reliable depictions of typical anatomy, "there are a lot of things that you can't do," says Chew, who opened cadavers to point out structures to Gateways students.

Cadavers offer benefits beyond dissection, too, like teaching students to respect and honor the bodies themselves. Chew keeps the cadavers' eyes covered during the course, and she introduced one as the students' first patient.

"It's a human body. It's not a collection of hydrocarbon," Howard says. "It represents a sort of existential growth where you learn about, simultaneously, the beauty but also the horrifying ephemerality of our lives."

—ELENA RENKEN '19

Abbas Rupawala, left, and Sean Fine say by focusing on IBD, they can better help patients manage the disease.

Right at Home

A new center focused on inflammatory bowel disease brings high-quality care to Rhode Islanders.

Melissa Cote started feeling sick a few days after her 40th birthday in 2017. At first, she thought it was the stomach virus making its way around the office. But as the abdominal pain and diarrhea persisted, she worried it was something more serious.

Cote's primary care doctor referred her to gastroenterologist Abbas Rupawala, MD, a physician at Brown Medicine's Division of Gastroenterology. He scheduled a colonoscopy, and found severe inflammation that extended into the small intestine.

That confirmed a diagnosis of Crohn's disease. "He said my case was the worst he had ever seen," Cote says.

'ONE-STOP SHOP'

Rupawala and Sean Fine, MD, both assistant professors of medicine, established a center for inflammatory bowel disease (IBD) in 2017—the first of its kind in Rhode Island. IBD services are designed around a three-pronged approach: clinical care, research, and education.

OVERHEARD

"Many doctors are gun owners. Most people who own guns are doing so safely. This whole approach is not about taking away guns from safe, lawful gun owners. It's about making sure that people who are at risk of hurting themselves or others are protected to keep our families and our communities safe."

—MEGAN RANNEY RES'08 MPH'10, MD, commenting on physicians' role in ending gun violence and the #ThisIsOurLane movement, The Public's Radio, December 7, 2018.

PHOTOGRAPHY: ALEX GAGNE; COURTESY RANNEY

"The idea is to create a patient-centered medical home," similar to those for other chronic diseases that require input from a number of different disciplines, Rupawala says. "We want to create a one-stop shop where we can treat psychosocial issues, nutrition issues, and so on."

The clinic's unique focus on IBD is a huge benefit to patients, Fine and Rupawala say, because treatment options are rapidly evolving.

"There are 50 new drugs [to treat IBD] in the pipeline. It's hard to keep up unless you are totally devoted to learning everything about these diseases," Rupawala says.

That's where research comes in. The IBD service is becoming a site to enroll patients in clinical trials. This is a great option for patients, Fine says, who won't have to travel to participate in studies.

The third prong is education. Fine and Rupawala are working with medical residents on research projects related to IBD. They plan to develop a fellowship program focused solely on IBD, similar to the one Fine completed at Beth Israel Deaconess Hospital in Boston.

Fortunately for patients like Cote, there are a number of treatments available for Crohn's. Rupawala started her on a course of prednisone to bring down the severe inflammation. She takes one immunosuppressant drug daily and every eight weeks gets an intravenous infusion of another.

"It's a complete lifestyle change," Cote says. "I have Crohn's disease, but it doesn't define me. I don't let it become who I am."

That mentality mirrors how Fine and Rupawala approach their patients. "We know they have a whole life outside of this doctor's office," Rupawala says. They focus on keeping patients well so that the disease doesn't disrupt their entire lives.

By focusing on IBD, Fine says, they can also be there at times when patients need closer attention. For example, he says, "I tell my female patients to talk with me as soon as they are thinking about getting pregnant." For the most part, women can safely stay on their medications through pregnancy.

Another critical time is when young adult patients begin receiving care at the center, which only treats adults, after transitioning from their pediatric gastroenterologists. They want to ensure that kids are ready to assume responsibility for their own care and don't fall through the cracks. "We're working out the best practice model," Fine says.

The patient-centered medical home model should help patients access the care that is part of successful IBD management. It's something Melissa Cote appreciates.

"Everything is at the East Providence building," she says. "The infusion center and lab for bloodwork are on the first floor, my primary care doctor and Dr. Rupawala are on the second floor, and my nutritionist is on the third floor. It's so convenient."

—KRIS CAMBRA

COOL TOOL

BOOSTING THE SIGNAL

The human brain contains about 90 billion neurons, but Stephanie Jones, PhD, associate professor of neuroscience, doesn't let that number faze her.

She just released user-friendly software that models the neural circuits in the outer layers of the brain, which produce the electrical activity monitored by noninvasive techniques like EEG. This version of her existing neural model was made possible by a $1.6 million BRAIN grant from the NIH.

"This software is a hypothesis development and testing tool for neuroscience researchers and clinicians," says Jones, who is affiliated with Brown's Carney Institute for Brain Science and the Center for Neurorestoration and Neurotechnology, a collaboration led by the Providence VA Medical Center. "I hope it is transformative to medicine."

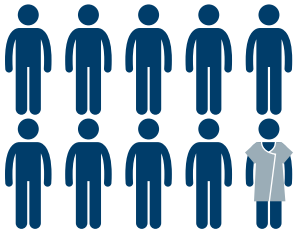
Despite the prevalence of EEG in clinical settings, Jones says, the electrical activity that the technique monitors isn't established as a biomarker for any condition other than epilepsy.

The software, called the Human Neocortical Neurosolver, is free and open source; it includes tutorials to help users understand normal brain function and abnormal brain activity in patients and make predictions about the neural circuits. Researchers can upload EEG recordings from patients and then adjust various parameters of the neural circuits to match and explain the patient data.

—MOLLIE RAPPE

BY THE NUMBERS

PAYING OUT THE NOSE



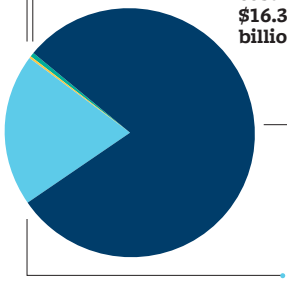
Nearly 1 in 10 people went to the hospital in 2013 for nonfatal injuries

$1.853 trillion Cost of injuries that same year

Amount lost due to permanent disability **$223 billion**

10,772 near drownings cost **$3.89 billion**

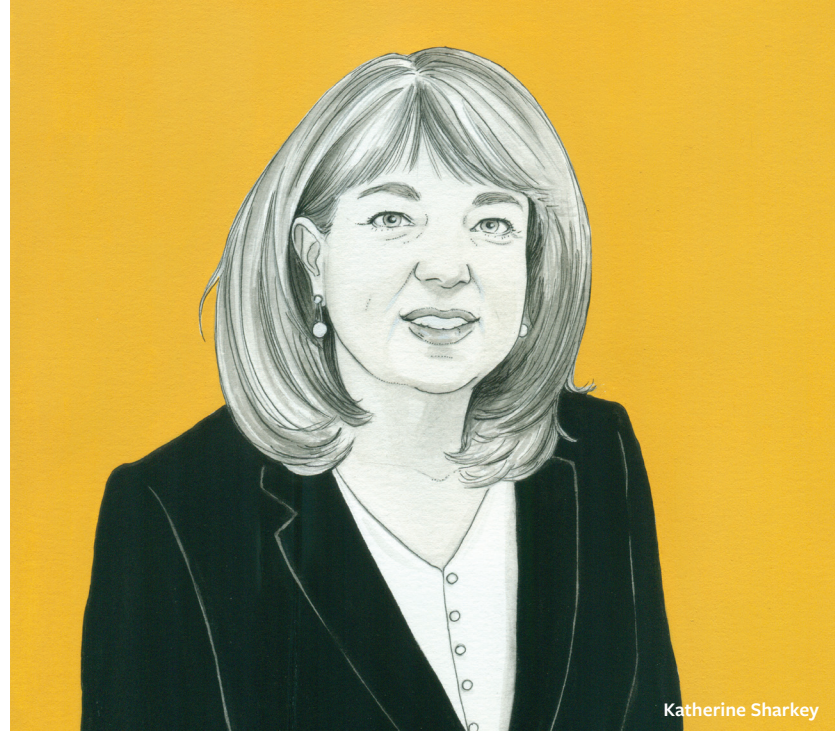
74,072 firearm-related injuries cost **$16.32 billion**



3.08 million car-related accidents cost **$207 billion**

12.08 million injuries caused by falls or being hit by an object accidentally cost **$808 billion**

Source: Mark Zonfrillo '99 MD'03, associate professor of emergency medicine, who led the analysis of US hospital data; the findings were published in *Injury Epidemiology* in October.



Katherine Sharkey

ASK THE EXPERT

Why is sleep apnea underdiagnosed in women?

Katherine Sharkey, MD, PhD, an associate professor of medicine and of psychiatry and human behavior who studies sleep and circadian rhythms, particularly as they relate to mood regulation and women's health, has the answer.

About 17 percent of women have obstructive sleep apnea (OSA), yet 90 percent of them don't know it. Though more men than women have it, women are less likely to be diagnosed because of differences in the prevailing symptoms and idiosyncrasies of sleep testing.

Women with OSA are more likely than men to report symptoms of irritability, depression, and headaches. As a result, their primary care provider may send them to therapy, prescribe an antidepressant, or begin a workup for migraine.

Furthermore, sleep testing can result in false negatives in female patients. Women are more likely to have arousals from sleep as opposed to oxygen desaturation. The most common diagnostic test for sleep apnea is the home sleep test (HST). Home testing is great—we can screen a lot more people than if they all had to come into the lab—but it only measures breathing, not EEG. Therefore HSTs can't detect the arousals that are more common in women. The common co-occurrence of insomnia and sleep apnea in women also increases the likelihood of a false negative.

If these nuances aren't appreciated, you might think your patient is in the clear. If the clinical suspicion is low and you're just trying to rule out OSA, then your workup can end with a negative HST. But if the clinical suspicion is high, for example, due to excessive daytime sleepiness, uncontrolled hypertension, or witnessed apneas, and that home study doesn't show something, then all patients—men and women—should have follow-up polysomnography in the laboratory.

ILLUSTRATION: LARA TOMLIN

Light the Spark

Local teens get a firsthand look at health careers.

Before last summer, Esther Duran, a high school student from Warren, RI, was uncertain about her career path.

But after participating in the HealthCORE program—which gathers Rhode Island high school students for two weeks over the summer to learn about the range of opportunities in health care fields—she learned about a profession that fit her perfectly.

"Growing up, all I knew was that to be in the medical field was to only be either a doctor or a nurse," Duran says. "When I found out about the physician assistant career, I was super thrilled." Becoming a PA won't require attending medical school, and will allow Duran to explore a range of medical specialties throughout her career.

The HealthCORE program, which largely accepts students from groups historically underrepresented in medicine, strives to spark interest in medical careers by exposing teens to the wide array of options. They met at the Warren Alpert Medical School to hear from panelists and explore a range of activities, trying out everything from administering patient exams to designing a new stethoscope. Students delved into lesser-known areas like narrative medicine and health policy, and even held a preserved human brain.

"We would hope with everything that we're throwing at them, that something strikes someone," says Andrew Del Re MD'21, one of the HealthCORE leaders. One student was especially inspired by a talk on global health, while another found a stronger interest in dentistry, he says.

"These are opportunities that many of us found after college. Some of us were lucky to find them during college," says Peter Mattson MD'20 ScM'20, who created the HealthCORE program in 2017 with support from the Albert Schweitzer Fellowship. For many, the motivation behind choosing a career in medicine involves a lot more than the science, he adds.

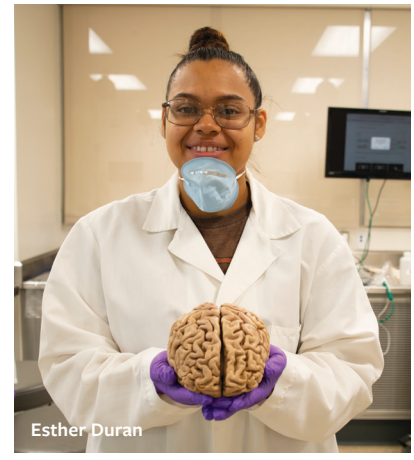
HealthCORE's leaders connect students with opportunities to explore the impact of careers in their areas of interest, like shadowing doctors or volunteering in clinics. They hope to partner with the Rhode Island Department of Health to offer students opportunities within their own communities, so they can feel empowered by directly affecting the health of those around them. "Our goal is to light the fire and keep the fire going," Del Re says.

As students' passions and plans evolve, the program leaders intend to remain connected as advisers to help navigate the academic and professional challenges of pursuing health care careers. Next summer, HealthCORE will offer teaching assistant positions for past students. And the team will continue to tailor the program to the interests of its participants.

"We're treating people without understanding communities," says Natasha Furtado Dalomba MD'21, another HealthCORE leader. "It's important that we have all sorts of people and backgrounds represented in medicine, which is not the case right now. And to do that, we really need to start from the very beginning in improving education." **—ER**

Learn more at thehealthcore.org.

Andrew Del Re shows HealthCORE students the anatomy lab.



Esther Duran

PHOTOGRAPHY: NATASHA FURTADO DALOMBA MD'21

Slow Burn

Electronic health records are stressing doctors out. In a survey of Rhode Island physicians, more than a third who practice primary care and dermatology said they have too little time for documentation, too much time charting at home, and frustrating user interfaces.

And that translates to burnout, says Associate Professor of Medicine Rebekah Gardner, MD: those specialties reported correspondingly high levels of burnout symptoms. She published her findings in the *Journal of the American Medical Informatics Association*.

Doctors who are burnt out may be more likely to struggle with their mental health, make mistakes that hurt patients, or leave the field. And EHRs are just one source of stress: hospitalists, for example, were among the least likely to report tech-related troubles, yet they had high levels of burnout.

"To me, it's a signal to health care organizations that if they're going to 'fix' burnout, one solution is not going to work for all physicians in their organization," Gardner says. **—MR**

It's Complicated

There may be no one cure for ALS, which affects patients in different ways.

ALS causes the death of motor neurons involved in walking, talking, chewing, even breathing. Now scientists know that two kinds of those neurons may die in different ways.

Researchers at Brown led by Anne Hart, PhD, a professor of neuroscience, say that for reasons that aren't yet clear, some patients with ALS experience degeneration of motor neurons in the spine, while in others, neurons in the brain that issue commands to these spinal motor neurons also die.

This suggests that any treatments developed for spinal cord neurons might not cure all people with ALS, Hart says, because they won't help affected neurons in the brain. Her team published their findings in *PLOS Genetics* in October.

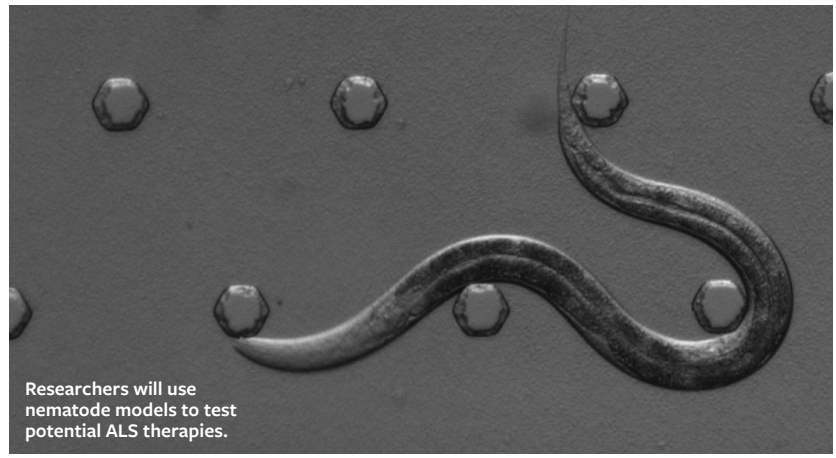
"ALS is complicated. You can see why it's taking everyone a while to figure out what's going on," she says.

Hart's lab genetically engineered a nematode model, *C. elegans*, to study how different ALS patient mutations affected neuron function, motor neuron death, and worm behavior. They found that, in response to induced stress, four mutations caused degeneration in neurons similar to those in human spines, likely due to increased toxic protein accumulation.

But two mutations also caused degeneration in neurons akin to those in the human brain, in part because the mutant protein no longer functioned properly.

The results could explain why only spinal neurons are affected in some people, yet neurons in both the spine and the brain die in others. But more research is needed to see if the nematode findings hold true in mammalian models and to better understand why neurons degenerate in people with ALS.

"We certainly can't prove this in worms," Hart says, "but it opens up a whole new way of looking at ALS." **—MR**



Researchers will use nematode models to test potential ALS therapies.

ICON: DINOSOFT LABS/THE NOUN PROJECT; WORM: COURTESY HART LAB

IN VIVO

HORSE SENSE

Several days a week, Maia Dinsmore MD'21 leaves behind the rigors of medical school to ride her horse or ride in an ambulance. An equestrian and an EMT, the Sudbury, MA, native chose Brown because she could follow her passions. "I never imagined that I would be able to keep working as an EMT in medical school," she says. Both pursuits will make her a better doctor, she adds. When helping people in crisis, Dinsmore draws on her experience with horses, which "has shown me how valuable a soothing tone, reassuring touch, and calm demeanor can be in patient care during emergency situations." She loves "everything" about emergency medicine, her chosen specialty. "My dream job would be as a medical director" of an EMS unit, she says. "We'll see. I just want to get into the emergency room first." —PHOEBE HALL

HEAD'S UP
Helmet technology keeps improving, but safety is no guarantee: "You're several feet off the ground, so there's always the risk of falling."

TRAINING GROUND
As co-leader of the EMS and disaster response preclinical elective, Dinsmore hopes to organize a mass casualty simulation event at the med school.

NO ONE-TRICK PONY
Dinsmore became an EMT as a Colgate undergrad, and last year joined Rhode Island's Medical Reserve Corps.

REIN IT IN
Concussions ended Dinsmore's show jumping ambitions. She rides dressage with Daisy a few times a week.

BRING YOUR HORSE TO WORK
Dinsmore brought Daisy to college and then med school. The Appaloosa boards at a stable in Smithfield, RI.

PHOTOGRAPHY: JORDAN EMONT MD'20

Alcohol hijacks a conserved memory pathway in the fruit fly brain, forming the cravings that fuel addiction.

This Is Your Brain on Booze

Alcohol triggers a wide range of ill effects—from poor sleep to crippling hangovers to blackouts—yet few people are thus moved to swear off drink. Are they choosing to forget that bad night or miserable next day? Or is their memory truly compromised?

Karla Kaun, PhD, thinks it might be the latter. And that could help explain the mechanisms of addiction and relapse.

"One of the things I want to understand is why drugs of abuse can produce really rewarding memories when they're actually neurotoxins," says Kaun, the Robert and Nancy Carney Assistant Professor of Neuroscience. "My team is trying to understand on a molecular level what drugs of abuse are doing to memories and why they're causing cravings."

This understanding, she adds, may someday help people recovering from addiction, perhaps by decreasing how lasting or intense those craving memories are.

Kaun's lab studies fruit flies, which share some key traits with humans: they have a hankering for hooch, and the molecular signals that form their reward and avoidance memories are much the same as people's.

Last fall, the team reported in *Neuron* that alcohol hijacks this memory formation pathway in flies, contributing to addiction. They identified a protein that, in the presence of alcohol, triggered a molecular domino effect, subtly altering a gene that encodes another protein in neurons that recognizes dopamine.

Critically, that gene is involved in encoding whether a memory is good or bad. With one tiny change, alcohol usurped the fly's conserved memory pathway.

"If this works the same way in humans, one glass of wine is enough to activate the pathway," Kaun says. Something to remember the next time you crack open a bottle. **—MR**

IMAGE: COURTESY OF KAUN LAB

Music as Medicine

After private mini-concerts, hospice patients report less pain and anxiety and request fewer opioids.

You'd expect to hear the high, melodic notes of a Mozart concerto in a grand orchestral hall, not in a small hospital room. But Cynthia Peng MD'20 thinks that shouldn't be the case.

"[Music] should be something that everyday people can participate in," says Peng, an accomplished flutist. "I hope more hospitals and health care settings can make music accessible as a source of comfort for patients and their families."

In 2017, Peng designed a study to integrate music into hospital settings. She worked with Kate Lally, MD, assistant professor of medicine and chief of palliative care and hospice medical director for Care New England; and Kelly Baxter, MS, APRN, ACHPN, Care New England's lead palliative care nurse practitioner.

They hypothesized that music might help hospice and palliative care patients contend with pain and stress and improve their moods. Previous research has shown that patients who engage with visual arts, creative writing, and other expressive activities report improved emotional and psychological well-being, they say.

"The field of palliative care is very mindful of the patient as a whole person, looking out for their spiritual and emotional well-being in addition to their physical health," says Peng, the lead author of the study, which was published in July in the *American Journal of Hospice and Palliative Medicine*.

Music was integrated into routine patient visits by the palliative care physician. Shortly after that interaction, Peng played for the patient and any family or friends present in the patient's room.

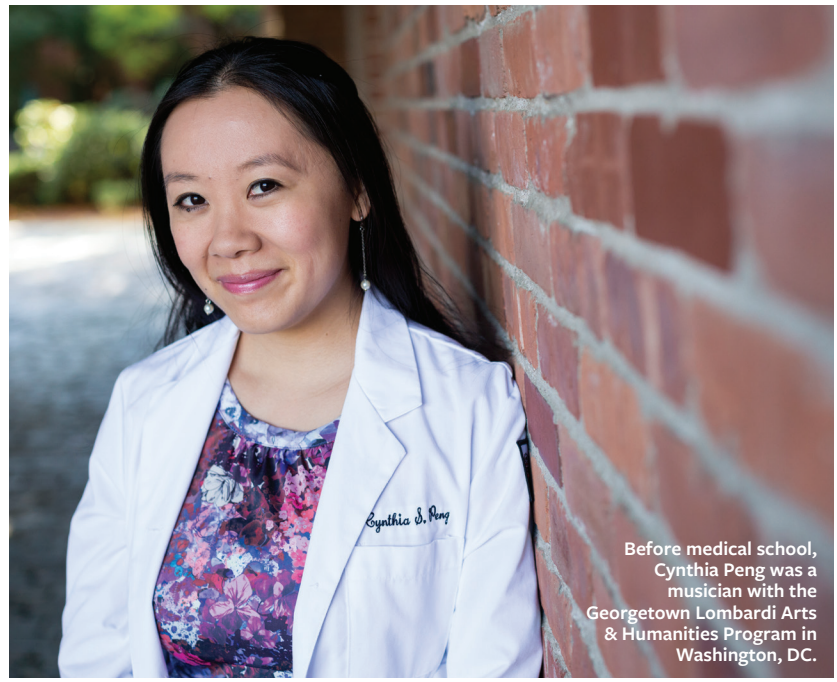
"A lot of these patients are inpatient for long periods of time," Peng says. "Having an intimate, enjoyable experience for the patients is really valuable, especially when they're facing a lot of difficult decisions, symptom-management issues, maybe facing the end of life."

The team tracked both patients' opioid use and their self-reported states before and after they were treated to their private mini-concerts. Patients who opted for the music intervention filled out a six-question version of the Edmonton Symptom Assessment Scale, which is designed to get a patient's perspective on their symptoms.

"The music made me think of God, granting me peace, strength and hope," one patient wrote. Another wrote, "I want to go home in a happy mood. I want to spend as much time as possible with my kids and grandkids as possible [sic]. I am now getting discharged in a good mood."

Of the 46 patients in the study, 33 used opioids, and the researchers tracked their levels of use before and after the music intervention. These patients often require high doses, and although one might expect opiate use to increase after a physician visit, the authors wrote, the study gathered evidence that suggested a trend toward a decrease in opioid use.

While the study was conducted in a limited timeframe and patient census, Peng says, "To demonstrate that in this high-symptom-burden population that something non-pharmacological could influence their own usage is pretty remarkable." **—GILLIAN KILEY**



Before medical school, Cynthia Peng was a musician with the Georgetown Lombardi Arts & Humanities Program in Washington, DC.

PHOTOGRAPHY: JORDAN EMONT MD'20

A one-time interim dean dedicated his career to improving how we care for older people.

For the Ages

BY SARAH C. BALDWIN
PHOTOGRAPHY BY KATHLEEN DOOHER

RICHARD W. BESDINE has spent his professional life not following in other people's footsteps. He established the first academic geriatrics fellowship in the country at Harvard, where he also cofounded the Division on Aging. He was the founding director of the UConn Center on Aging and the first Travelers Professor of Geriatrics and Gerontology. He was the first chief medical officer for the Health Care Financing Administration's Health Standards and Quality Bureau. And in 2000, he became the inaugural David S. Greer, MD, Professor of Geriatric Medicine at Brown.

You could say he's been the Johnny Appleseed of geriatrics, sowing the seeds of quality and innovation in the care of elderly people wherever he's worked. And it hasn't gone unnoticed. In addition to myriad academic and hospital appointments, grants, and publications, Besdine's 22-page CV includes such honors as Geriatrician of the Year (Gerontological Society of America), President's Award (American Society on Aging), the Milo D. Leavitt Award for Eminence in Geriatric Education (American Geriatrics Society), and the Milton Hamolsky Lifetime Achievement Award for outstanding contributions to the field of Internal Medicine (American College of Physicians, Rhode Island Chapter). At Brown, where he served as interim dean of biology and medicine from 2002 to 2005, he has received the Brown Medical Alumni Association's W. W. Keen Award and the Department of Medicine's Beckwith Family Award for Outstanding Teaching. He and his wife, Terrie "Fox" Wetle, PhD, herself a renowned gerontologist and founding dean of Brown's School of Public Health, are the ultimate power couple of the aging-research world.

In June 2018, Besdine announced he's stepping down. Here, with his characteristic combination of pride and self-deprecation, understatement and irreverence, he looks back on a career well lived.

How did an almost-English major from Haverford end up becoming a doctor?

I grew up crawling around my father's dental office. He worked with gold and made a lot of his own dentures. I was interested in the manual dexterity that required, and I really liked the way he interacted with people. But it wasn't until high school that science really excited me. Then, in college, I led two lives. I met the criteria to be an English major, but I majored in biology, because I had decided to go to med school. I did a lot of biology research, which I liked a lot.

What did you like about it?

The quantitative dimension: reading the literature, investigating a problem, getting an answer. When it came time to decide what I was going to do after college, I struggled among graduate school in English, graduate school in biology, or medicine. I chose medicine because I thought it combined all of my interests. And I was so right.

Did anyone help you make that decision?

I followed my mentors' advice. A good mentor helps people find their passion. And my mentors all said, "We are basic scientists and physicians and that is the noblest thing you can do."

After graduating from the University of Pennsylvania's medical school in 1965, you did your residency in internal medicine at Harvard and Beth Israel Hospital.

Yes, and I did my postdoctoral fellowships there, too. I was doing very basic immunology and immunochemistry, and doing it well enough that I got an NIH grant. I had my own 28 inches of laboratory bench space! Also around that time [1970], I co-authored an editorial in the *New England Journal of Medicine* about restricted heterogeneity of antibodies.

How did you make the leap from immunology to geriatrics?

I found I was not having as much fun at work as I saw people around me having. I liked getting grants funded, I liked getting papers published, but I wasn't passionate about what I was doing. At the time I was moonlighting in a nursing home, and realized I was spending more and more time there. The residents whose medical care I found most exciting and challenging were those with multiple serious chronic illnesses (at least three or four, often six or more), were taking multiple medications (sometimes double digits), and had some degree of cognitive impairment. Getting it right took all the smarts and patience I had, and made me acquire even more.

I went to my chair of medicine, Howard Hiatt [subsequently dean of Harvard's School of Public Health], and told him my dilemma. He said, "I met a man in Scotland I think you should go train with." That was Sir Ferguson Anderson [1914–2001], the first endowed professor of geriatric medicine in Europe. I became his first American trainee, at the University of Glasgow. He was a wonderful human being. He captured my mind and heart.

What do you find so compelling about geriatrics?

It sounds trite, but I take great satisfaction in improving the human condition. Because of my parents, I grew up honoring and respecting underdogs, people who are suffering. Given the neglect of older people at the time I was coming into medicine, they were the obvious underdogs.

And clinically, geriatrics is exciting and challenging. General internists may take care of a patient with one problem. Our patients have nine coexisting conditions and 14 medicines and

Besdine and his wife, Fox Wetle, are the ultimate power couple of the aging-research world.

a fixed income. They can't pay enough of the electric bill to be warm enough in the winter to avoid illness from cold exposure or cool enough in the summer to avoid illness from heat exposure. Some have difficult families, because the families see the distress of their beloved elder person, and they're angry. They're incredibly complex cases.

As a physician, you treat one patient at a time. But you're also able to see how to make changes to care at the macro level, using data to improve policy. How did you learn that?

In 1995, while I was at UConn, I took a sabbatical. I wanted to be near Fox, who was deputy director at the National Institute on Aging in DC. She introduced me to Bruce Vladeck, the author of *Unloving Care: The Nursing Home Tragedy*. He was administrator of the Health Care Financing Administration [now the Centers for Medicare and Medicaid Services] and an icon of health care policy, especially as it relates to older people. I knew nothing about financing or policy, but Bruce told Fox, "I'll give him a cubicle. We'll find something for him to do." So, for my introduction, I shadowed him for almost two months. We went to Capitol Hill, to briefings, to hearings, we went out in the field. As I like to say, I went everywhere with Bruce except home and the bathroom.

One day in the back of his chauffeured SUV, he said, "You know, this agency has never had a chief medical officer. I think you'd be good at that. How about it?" And I said, "Sure. What's that?"

So I became HCFA's first chief medical officer, as well as director of the Health Standards and Quality Bureau, a 1,200-person national entity with a billion-dollar-a-year budget responsible for improving and policing the quality of Medicare and Medicaid for 70 million people. I didn't know enough to be scared. I had 22 people working in the front office to help me. That's where I learned to manage people and programs.

Why did you take the job?

I was passionate about quality of care, and now I had a vehicle to put that passion into practice in the field. That year, 1995, was the 30th anniversary of the bill that led to Medicare and Medicaid. Bruce had been critical in getting Congress to implement 36 pages of legislation related to the quality of care in nursing homes. So I became responsible for quality of care the year that nursing home inspection and enforcement first went into practice.

> "Because of my parents, I grew up honoring and respecting underdogs. ... Given the neglect of older people at the time I was coming into medicine, they were the obvious underdogs."

How is it that you're able to come at the issue through so many different angles—teaching, treating, researching, and thinking about policy?
I'm a left-handed male with mixed dominance. I mean, that I can read is remarkable.

In 2000, Fox came to Brown to start a program in public health. You came, too, as the first Greer Professor of Geriatric Medicine, director of the division of geriatrics in the Department of Medicine, and director of the Center for Gerontology and Health Care Research (CGHCR) in the then-Public Health Program. What was appealing about coming to Brown?
In addition to the Greer professorship, what made it a done deal was that geriatrics at Brown was stagnant. There were two geriatricians doing mostly clinical work. Given the excitement and resources of the Greer professorship, the support of the Department of Medicine, and the chance to build excellence, how could anyone not jump? There are now 15 geriatricians, a dozen palliative docs, and six nurse practitioners in the division.

What also made it appealing was the CGHCR leadership. Some of the most exciting research in the United States related to improving quality of care for vulnerable older Americans was going on right here. I've mostly just done fine-tuning, but we have doubled the number of faculty and tripled the grant income since I came here. It was very gratifying when the American Health Care Association gave us $1 million in 2017 to establish the Center for Long-term Care Quality & Innovation. Vince Mor [PhD, professor of health services, policy, and practice] and Rosa Baier [MPH'04, associate professor of the practice of health services, policy, and practice] direct the Q&I Center, as I affectionately named it, whose goal is to identify, validate, and bring to scale promising innovations to improve care of vulnerable older people in long-term care—not just in nursing homes, but in the community as well.

In 2005 you received a $2 million grant from the Reynolds Foundation to integrate geriatrics into the med school curriculum from the very first year. In 2013 you received another $1 million to develop curricula to train doctors. Why is it important for all doctors to understand aging?
Every physician needs to understand the basics of geriatric medicine. The only specialties that do not deal with older adults are pediatrics and obstetrics. But pediatricians need to know about aging because a third of American children are raised principally or exclusively by grandparents. And the childbearing patients of obstetricians grow old, and many continue to get their care from their obstetricians. The care of older adults now is a major part of American medicine from both a clinical and financial perspective. In the future, older people will dominate the health care landscape by their sheer numbers and the complexity of their problems.

In 2012, you established a palliative care fellowship. How does palliative care connect with geriatrics?
Historically and to the present, geriatricians have had to be expert in palliative care to meet their elderly patients' needs. Many of the current leaders in academic palliative medicine have come to the specialty through geriatrics. Our own Joan Teno [MD, MMSc'90, adjunct professor of health services, policy, and practice] is a fine example of that, having trained in geriatrics at George Washington and then come to Brown to do research, where she gravitated more and more to palliative medicine and end-of-life care. About 10 years ago, she made the transition to palliative clinical practice. The relatively new specialty of hospice and palliative medicine has evolved over the past few decades, and these specialists treat patients of all ages.

You've spoken for years now about what you call the "aging avalanche"—the fact that the number of Americans over the age of 65 is climbing. How are we doing in terms of training enough people to care for us as we age in great numbers?
Lousy. The number of certified geriatricians is actually trending down. My cohort is retiring and we're not replacing ourselves one for one. Also, there are people who certified in 1988 who are giving up their certification. Because elderly patients take so much time, it becomes financially disadvantageous to be identified as expert in the care of older people. That's another reason it's important to teach all medical students about aging.

What qualities must the best geriatrician possess?
Be a really great clinician. Appropriately, but not excessively, like, respect, and honor old people.

In addition to the growth mentioned earlier, what are you most proud of from your nearly two decades at Brown?
Helping to make the Division financially viable, and also radically improving hospital care for elderly patients through co-management.

What do you mean by co-management?
Geriatrics co-management is a clinical program in which a geriatrician works alongside a surgical specialist.

What I already knew, but had never put into operation in a program, is that it's always the same problems that kill or disable old people in hospitals, no matter what brings them in. They fall, they get nosocomial infections from catheters or from lines or from being sedated from a drug, they get delirious, they get a drug, they're over-sedated, they aspirate, they get pneumonia, they get over-hydrated, they get heart failure, they get diuresis, they get kidney failure, and on the 13th hospital day, they die.

So [the late orthopedics chair] Michael Ehrlich and I agreed to try a model of care where an orthopedic surgeon and a geriatrician work side by side to care for a hip fracture patient. I told Mike, we can't fix this with a fee-for-service consultation program, where the geriatrician comes and evaluates the patient and leaves 14 recommendations on a page and a half, which nobody reads. The geriatrician needs to be able to write orders on your patients for everything but the care of the hip fracture. We have to manage the diabetes and the medications, manage the discharge plan, and so on. And someone else has to pay the salary and overhead costs of the geriatrician. Rhode Island Hospital was on board.

Not only did it improve results dramatically, it made us financially viable. Mortality decreased 70 percent. Discharges directly to home tripled, so now 15 percent of hip fracture patients avoid going into a nursing home, where they might get *Clostridium difficile* and die. Re-hospitalization rates were cut in half. Length of stay was reduced by 2.2 days. We're doing this now for elderly patients who undergo trauma, joint replacement, colorectal and general surgery, and complex urology surgery.

For your whole career, including at Brown, you seem to have been in perpetual motion—creating programs, designing curricula, seeing patients, playing squash four times a week. Are you really,* really *retiring?
When I announced I was stepping down I didn't have a plan. But [Provost] Rick Locke, [Chair of Medicine] Lou Rice, and [Dean of the School of Public Health] Bess Marcus all want me to stay around and be useful in the Division and the School. So I'll work half time, maybe.

What will you do for fun?
Spend a lot of time with Fox sitting in our gazebo in the good weather and reading great books and laughing together.

Tell me something most people don't know about you.
Well, everybody knows my wife is better than I am—a better manager, better strategic planner, better mentor, better driver, better everything. I speak of Fox as "my better three-quarters."

What many people don't know is that when I was a teenager I raced sports cars. I had a British racing green Austin Healey and a novice Sports Car Club of America competition license, and I raced at the Bridgehampton race track in the summer. I *loved* driving.

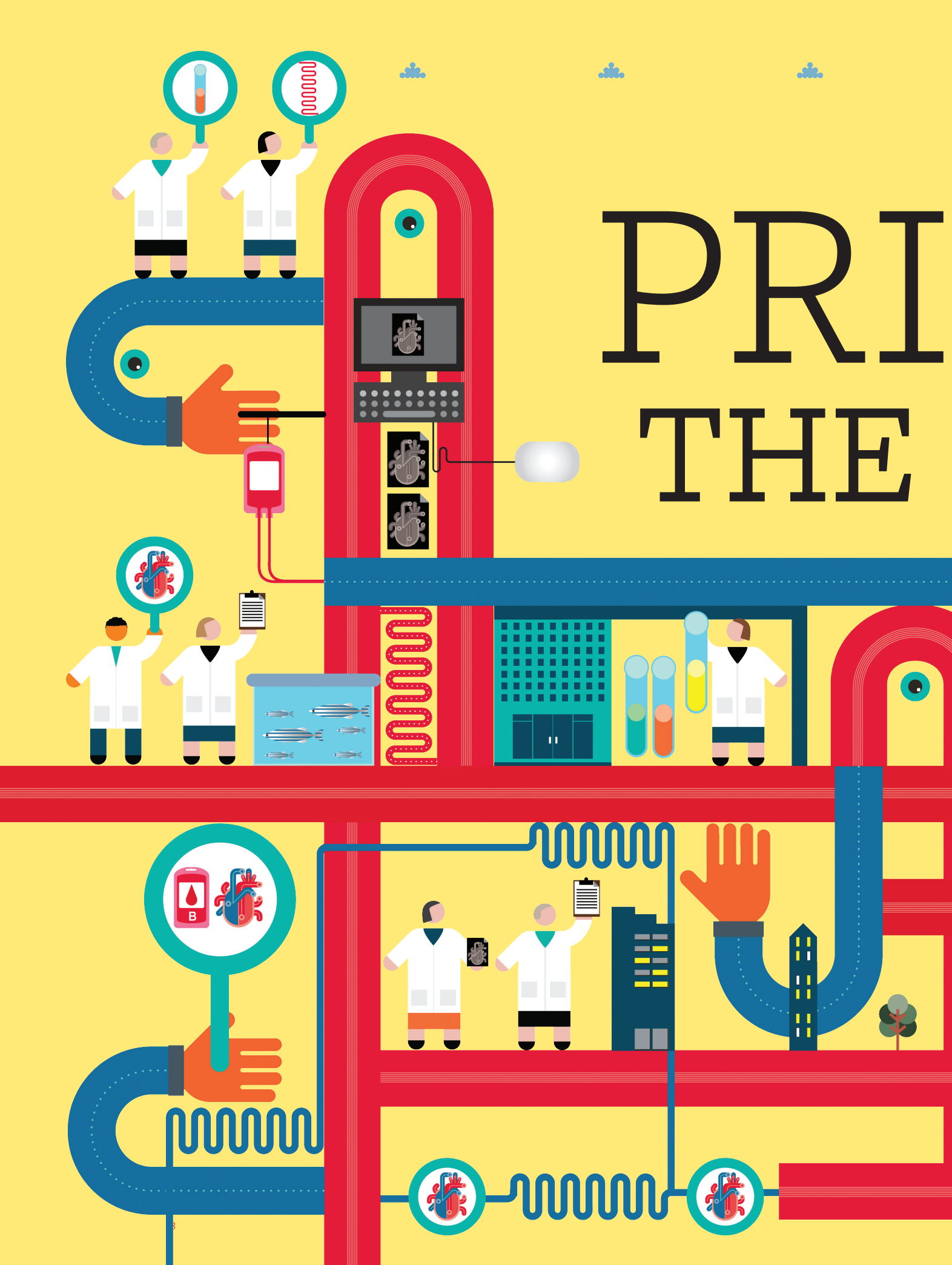
Looking back, how would you describe your leadership style?
I'm proud of only hiring outstanding physicians and teachers. I didn't hire any stinkers. They are all trusting, respectful people, and they're nice to each other. It's no accident that [the Center for Gerontology and Health Care Research] is a great place to work. If you model kindness as a director, disrespectful people get embarrassed.

I'm also a strong believer in never meeting someone for the first time when you need something. When I became dean, I was glad to have already met a lot of people. My approach there was to occupy the high ground and recruit people to it, rather than give them orders.

How has becoming an "older American" affected your approach to your own health care?
I think I don't do much differently, other than to follow my own excellent advice on living as healthily as possible, but I always have done that: eat Mediterranean, exercise often, manage my minor chronic diseases. And of course, avoid stress (good luck with that)!

What do you tell medical students to get them excited about geriatrics?
It's some of the most rewarding work that a physician can do. You're working at the top of your license every minute of the day. And people deserve to be well cared for until the end of their lives. **M@B**

SARAH C. BALDWIN is a freelance writer and host of the *Trending Globally* podcast. She is the former editor of *Brown Medicine*.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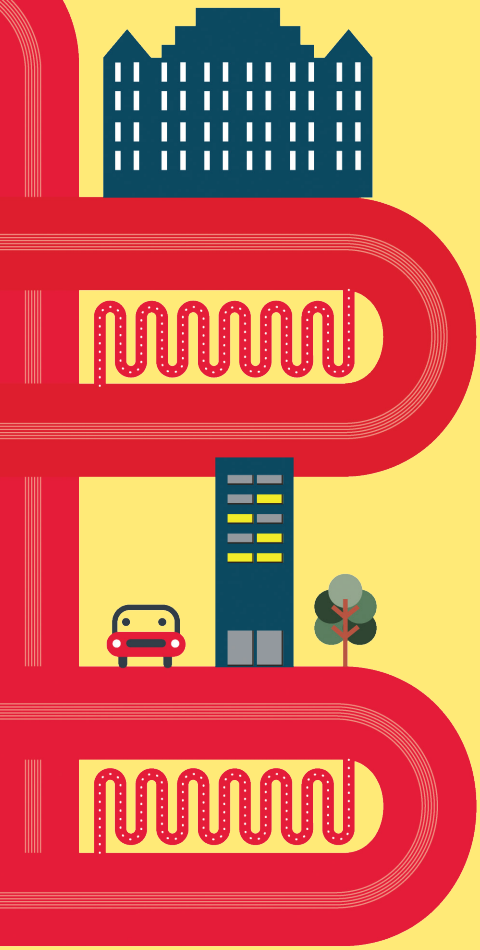


An NIH-funded collaboration is kick-starting research on the No. 1 killer of humans.

ACROSS THE CITY OF PROVIDENCE, an unlikely team of researchers is emerging. A developmental biologist with row upon row of tiny fish tanks in her lab. A geneticist who seeks to understand the building blocks of human life, and by extension, human disease. A cardiologist who spends hours poring over ultrasounds, looking for clues to cure his patients.

These doctors and scientists are just a few of the dozen researchers involved in Brown's CardioPulmonary Vascular Biology Center of Biomedical Research Excellence, or CPVB COBRE for short. It's a mouthful of a name, but one that's fitting for its ambitious mission: to both study the root cause of diseases that affect the heart and lungs, and to find new cures.

That's a tall order. Cardiopulmonary diseases ranging from asthma to arteriosclerosis remain the leading cause of death for American patients. They develop in a wide variety of ways, and have an equally broad range of treatments. But they often have a common connection: many cardiopulmonary diseases stem not just from problems in the heart or lungs, but in the blood vessels that support them. That's where this group of researchers is focusing.

"When you're younger, you're intimidated, don't have confidence in yourself; you're so busy trying to get funded and write the next paper that the time just sloughs away."

You won't find veteran academic superstars in this cohort—at least, not yet. Thanks to special funding from the National Institutes of Health, all the scientists and doctors involved are junior or early-career researchers who have not yet received major grants and are just starting to get their labs off the ground. Those academics, says Sharon Rounds, MD, associate dean for clinical affairs and codirector of the CPVB COBRE, often have exciting new insights into old diseases, but few resources to study them.

"In a way, our group operates like a startup accelerator," says Rounds, who is also a professor of medicine and of pathology and laboratory medicine. "Our strategy is to recruit strong young investigators with fresh ideas, provide them with mentors and advice, support their careers, and give them the right facilities. We also set up opportunities for these investigators to meet on a regular basis, form collaborations, and learn from one another."

In academia, that level of organized support is a novel concept, she says. Normally the work involved in lab administration, paper submissions, teaching, and basic research creates an uphill battle for young scientists, leaving little free time to seek grants, develop new lines of study, or form key partnerships with other academics. For that reason, the CPVB COBRE takes some of the administrative weight off of researchers' shoulders, letting them explore new ideas more freely. Most importantly it doesn't just encourage collaborative work with peers and mentors, it requires it, building an environment where members of the center sharpen each other's ideas.

That's an important detail, says Elizabeth Harrington, PhD, codirector of the CPVB COBRE.

"When you're younger, you're intimidated, don't have confidence in yourself; you're so busy trying to get funded and write the next paper that the time just sloughs away," says Harrington, who's also the associate dean for graduate and postdoctoral studies in the Division of Biology and Medicine and a professor of medicine. "Unless you have a mentor and peers that are pushing you along, looking out for you, it's easy to get lost in the day-to-day grind of having a successful lab."

ONLY IN RHODE ISLAND

In the late 1990s, Rounds and Harrington first discovered the value of these kinds of crossdisciplinary partnerships while working together at the Providence VA Medical Center. Rounds, who is a practicing pulmonologist, had an opening in her lab for a research scientist, and when Harrington applied for the job, the two immediately hit it off.

"The thing that was really wonderful about Beth was that she brought new experience and expertise. I was pretty good at what I was doing, but was kind of stuck in a rut. She got me excited in studying cell signaling—the way that cells communicate with each other—which totally changed the direction of what I was doing," Rounds says. "It was a real growth process for both of us. As an MD and a bench scientist, we each had different backgrounds and talents, which helped us expand our lab. We also soon realized we had a small community of like-minded people in the state that we wanted to nurture. That's when we first applied for a COBRE award."

"The more we talked about it, the more we realized that researchers in our small niche could be stronger as a group than as individuals," Harrington adds. "We saw other researchers successfully do that, and wanted to see if we could make it work as well. No one else that we knew was looking in our particular area of cardiovascular pulmonary biology."

The pair also had a geographical edge. Only 23 of the 50 states (and Puerto Rico) are eligible for COBRE funds, which the NIH provides to areas with fewer resources than, say, Massachusetts or California. States like Alaska, North Dakota, Delaware, and Rhode Island are on the list.

But Lil' Rhody had a distinct advantage, Rounds says. Because it's tiny, it hadn't gotten the sheer number of research dollars as its neighbors in New England, yet it still supported world-class research and potential collaborators at the VA, Brown, Lifespan health system, and other institutions. In short, she says, it was an ideal place to bring this sort of "research accelerator" to support the careers of young scientists.

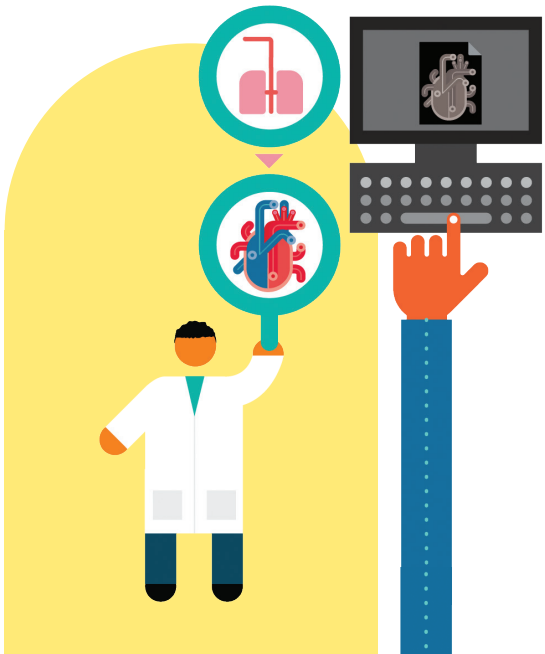
CATCH-22

Qing Lu, PhD, associate professor of medicine, was one of the first scientists to enjoy support from the CPVB COBRE after it was founded in 2013. At the time she was an emerging researcher at Brown, studying the effects of cigarette smoke on the vascular system around the lungs.

"Until the past decade or so, there has been a lot of research on the lungs themselves, but not the blood vessels that bring oxygen from the lungs to the rest of the body," she says. "Cigarette smoke can actually damage the walls of those vessels, creating tiny gaps between the cells." When that happens, bacteria, viruses, and toxins from cigarette smoke can pass directly into the bloodstream, causing system-wide damage. Fluid from blood can also leak into the airspaces of the lungs, making it increasingly difficult to breathe.

Lu thinks her work could one day lead to new treatments for chronic obstructive pulmonary disorder, or COPD—a serious airway disease that affects more than 11 million Americans. But until joining the COBRE, she struggled to find funding. "I got small grants here and there, but only had enough to support myself and a few unpaid Brown undergraduates doing their senior thesis," she says.

In order to establish her lab, she would have to obtain an R01, a major NIH grant that could provide enough funding to support her and several research associates for a number of years. But even being eligible to apply for the funds presented a catch-22: to get it would require presenting proof of extensive prior research, receiving other major grants in the past, and publishing research in prestigious journals—all of which is exceedingly hard to do without prior funding.



During her stint at the CPVB COBRE, however, Lu was able to mentor and support a graduate student, hire a postdoctoral fellow and lab technician, and collaborate with Harrington on new areas of work, all while getting additional training to write effective grant applications.

"It was fantastic. Being part of the center let me train more students and grow my research. It also made me a better communicator of my work," Lu says. "I would meet weekly with peers and mentors, people who might not directly be in my area of expertise. Working with them and having to explain what I was doing really helped sharpen my scientific approach."

After just three years with the COBRE, she had gained enough momentum to finally earn coveted R01 funding, kicking her research into overdrive. She's since mentored students, published papers in several journals, and become an editor for *PLOS ONE*.

"COBRE really makes you feel like you're stronger and more confident as a researcher. It's a great mechanism for growth," she says. "Without it, I probably wouldn't still be doing this work."

SOMETHING FISHY

The CPVB COBRE was renewed in 2018 with an additional $10 million grant, and is continuing its streak of research collaboration and mentorship—especially between academics who would be unlikely to work together, like toxicologist Jess Plavicki, PhD, and cardiologist Alan Morrison, MD, PhD.

Plavicki, an assistant professor of pathology and laboratory medicine, studies the genes of zebrafish, tiny animals that, when young, have almost completely transparent bodies. Their flesh and skin reveal a clear view of their internal organs, making them ideal for tracking how genetic changes affect their structure.

She's spent years examining the impact of a gene called sox9b, a key element in the growth of an animal's organs and bodily structures. Using complex genetic techniques, she's been able to knock out sox9b in zebrafish embryos, targeting only those cells that will become heart muscle tissue.

"We wanted to know if sox9b function was needed in heart muscle for normal cardiac development," Plavicki says, "and sure enough, when we knocked it out only in heart muscle cells, the fish had severe cardiac defects that ultimately resulted in heart failure."

Whether those deformities were similar to any human disorder, however, was unclear, so Plavicki presented her work to her fellow COBRE researchers. When she did, Alan Morrison's eyes widened.

"My first thought was, this is absolutely incredible!" says Morrison, an assistant professor of medicine who studies heart valve disease. "The images reminded me of a disorder called Ebstein's anomaly," a defect that connects two normally separate chambers of the heart. In severe cases, it can cause heart failure, arrhythmia, enlargement of the organ, and other major problems—and since it's congenital, most of the patients affected are children or young adults.

As someone who normally sees hearts only through the fuzzy lens of an ultrasound, Morrison couldn't stop watching the crystal-clear images. "I had never seen anything like it. I had been aware that zebrafish were used as a research model, but this was my first taste of how powerful it could be in this circumstance," he says. "It gave me some insight about how closely related Jess' and my work really could be, and how we could come up with creative ways to collaborate."

The research is in its early phases, Plavicki says. If she can confirm that sox9b is involved in Ebstein's, she'll conduct experiments to see if the same gene causes the defect in mammals. "Mice are more closely related to humans," Morrison says, "so if this particular gene has an effect, she would have described the first single gene to regulate the disease process, which would be really exciting."

He and Plavicki are working toward that goal. "It was a collaboration that sort of came out of the blue, but that's the whole point of the COBRE: to facilitate opportunities like this." Morrison says. "The things we study are more closely related than we appreciate."

"We've been able to help fund junior investigators that probably would have left the field, or at least left Brown, without our support."

CELL MATES

Collaborations that are focused on basic science—the sort of high-level exploratory research that Plavicki and Morrison are conducting—are an essential element of the CPVB COBRE. But the center's ultimate focus is to find applications for that research: new ways to treat or study disease.

Beth Harrington and Corey Ventetuolo RES'07, MD, a specialist in pulmonary and critical care medicine, already have begun to develop methods that could shed light on an understudied and rare disease: pulmonary arterial hypertension (PAH), high blood pressure in the lungs. It's caused in part by a fault in patients' endothelial cells, which form the lining of their pulmonary arteries. Somehow those cells start to grow erratically, forming cancer-like lesions that expand into the vessels themselves.

"PAH affects all aspects of quality of life for our patients. It can make patients short of breath while doing everyday things like caring for their children, grocery shopping, or showering. And currently, there's no cure," says Ventetuolo, an associate professor of medicine and of health services, policy, and practice. "Existing drugs can't reverse the lesions—they just work by dilating blood vessels so blood can flow more freely through the lungs. But these medications also impact quality of life for our patients and have side effects like flushing, jaw pain, headaches, muscle cramps, and diarrhea. Some patients have to live 24/7 on a pump to infuse medication."

Even with these treatments, the disease can be progressive and lead to right-sided heart failure and death. "Overall long-term survival rates for our patients are still poor," Ventetuolo says. "We have a growing list of approved drugs, but we need to do better for our patients."

The reason PAH is not well understood, she adds, is that it's incredibly hard to get access to pulmonary artery endothelial cells from PAH patients. At the moment the only way to obtain them is through an autopsy after a patient has died, or from lungs removed during transplantation. But those cases only represent cells that are in the end stages of the disease, not ones that are just starting to develop into lesions.

"If you're going to test drugs in the lab that reverse disease progression, we need to be able to study cells early in the disease process," she says. "Researchers have been trying for a long time to get any type of tissue from patients with this disease while they're still living or before a lung transplant."

Thanks to CPVB COBRE funding, Ventetuolo and

Harrington are exploring a different approach that uses an existing routine procedure. In order to get an accurate reading of pressures within the heart and lungs, doctors must snake a catheter down into them through a major vein in a patient's neck. On its end, a tiny balloon inflates and deflates, measuring the pressure in the right heart chambers and blood vessels. In the process, however, that catheter inevitably sloughs off endothelial cells as it slides through a patient's arteries.

Ventetuolo and Harrington are working to harvest the cells stuck to it when it emerges. They've already developed a way to test each cell to confirm if they're involved in the disease, and are creating new ways to expand those cells' numbers in the lab.

"There's a ton of excitement in our field about collecting cells via routine procedures like this, and harvesting them at various times during the course of a patient's disease. Ultimately we want to know, are there fundamental differences in cells of patients who do well versus patients who do poorly? And if they're exposed to different therapies, how might they change?" Ventetuolo says. "There's also a sort of paradox in the disease. As many as 80 percent of patients are women, yet women survive longer with PAH than men. Do cells from women and men behave differently and can treatment with sex hormones alter the disease course?"

By working with Harrington, she says, finding answers to those questions is suddenly a distinct possibility. "I am a clinician scientist and patient-oriented researcher. Beth is an endothelial cell biologist, so each of our expertise complements the other's," Ventetuolo says. "As a physician researcher, I can tell her what is vital for well-designed human experiments, and as a basic scientist, she can tell me, 'here's how to keep those cells alive, and maintain rigor in the experiments.' Medicine and science has become so complicated, the team approach is really the best way to do it, and stands to have the greatest benefits for our patients."

START-UP OPERATION

As the CPVB COBRE program progresses, Rounds and Harrington have taken time to reflect on their own collaboration. Unlike today's participants, they didn't have much in the way of mentorship; just a handful of loosely connected scientists and physicians they could trade notes with over lunch. Thanks to the COBRE, however, they're ensuring that some young cardiopulmonary researchers in Rhode Island don't face the same struggle. Instead, these scientists have an unparalleled launchpad—one that helps grow their individual research, while creating a family of other investigators that can grow alongside it.

"COBRE really helps grease wheels for researchers in a way we didn't have. Because of it, we've been able to help fund junior investigators that probably would have left the field, or at least left Brown, without our support," Rounds says. "Instead, they stayed, flourished, and are now doing great things. It sets up a really important research legacy."

That legacy goes far beyond Brown. In addition to supporting investigators' labs, the CPVB COBRE is funding small pilot projects—sort of "proof-of-concept" trials to test new research ideas. It's providing support to researchers at the Providence VA, Lifespan hospitals, and the University of Rhode Island, among other places—and offering a springboard for them to successfully apply for other funding.

That alone is a thrill, Harrington says. "I get excited when I see junior investigators grow both their scientific skills and their confidence in the work they're doing," she says. "People who were junior investigators in our first cohort are now transitioning to mid-level researchers, and acting as mentors and role models for the next generation to come up. That's something to be very much proud of."

"It's incredibly gratifying," Rounds adds. "It sounds trite, and people say it all the time, but it's true: the best part about being in academic medicine is seeing students and trainees mature, develop, and be successful in their own right. It's the biggest high there is." **M@B**

DAVID LEVIN is a freelance science writer based in Boston.

VO
AD

Just out of residency, Sarah Wakeman launched Mass General Hospital's Substance Use Disorder Initiative.

SARAH WAKEMAN IS TRANSFORMING HOW WE TREAT—AND TALK ABOUT—ADDICTION.

OCAL OVOCATE

BY SARAH C. BALDWIN | PHOTOGRAPHY BY JOHN SOARES

SARAH WAKEMAN ’05 MD’09, an addiction medicine specialist at Massachusetts General Hospital, is describing one of her patients. He was a young man who’d had an almost fatal overdose, probably incurring some brain injury as a result. After a long hospital stay, he was trying to get into treatment, a process that required him to call a program to make an appointment and then remember when the appointment was and then show up at the right time and sit through a therapy session—all before getting the medication he needed to treat his addiction.

“If I could do those things, I probably wouldn’t need treatment,” Wakeman recalls the man saying. “But I’m shooting heroin three times a day. How am I supposed to be able to go through all those steps to actually get the care I need?”

For people who suffer from addiction, the obstacles to care are nothing to sneeze at: it can be tough to find a program in the first place, let alone distinguish good ones from bad, and there’s often a waiting list. Some programs require daily calls or visits as proof of motivation and have other rules that can confound a person who’s using.

Prescription drugs and heroin, on the other hand, are available 24/7—no insurance hurdles, no wait time.

“We make it really, really hard for people to get well, while it’s easy to stay sick,” Wakeman says. “How do we make engaging in treatment and recovery the easy choice rather than the hard choice?”

A DISEASE BY ANY OTHER NAME

One of the most formidable barriers is stigma—the widespread belief that addiction is a behavior to punish rather than a disease to treat. “By the time people [with a substance use disorder, or SUD] end up in the medical system, they’ve received the message over many years that they have done something bad, that they’ve failed, that they’re not going to get better,” Wakeman says. “They’ve often been through cycles of ineffective interventions and take that as a sign that they’re a hopeless case.”

Such attitudes come from family, friends, clergy members, the media. But many health care providers have them too, however unconsciously, she says. “When someone with another illness like diabetes or cancer is not getting well, we talk about switching to a different type of medication or intervention, not about the patient trying harder. When it comes to SUDs, we in the medical system need to take responsibility for finding the right treatment rather than blaming the patient.”

Wakeman, whose gaze manages to convey both a laser-like focus and a preternatural calm and whose resting face is a smile waiting to happen, speaks often to fellow physicians about bias and stigma and how to be aware of them. She asks them to imagine telling a diabetic she has to “hit bottom” before she can have her insulin. Or telling a cancer patient he has to drive to a clinic 150 miles away to get his daily dose of chemotherapy. Or telling a patient with heart disease to use her will to heal her heart. Or handing someone who’s had a heart attack a list of cardiologists and wishing them good luck. “They often say, ‘I’ve never thought of that before—that would be malpractice!’” she says. “And yet that’s how we routinely treat people who come into the hospital with some sort of complication related to addiction.”

Then there’s the stigma surrounding the use of the prescription drugs buprenorphine and methadone to treat opioid use disorder—the gold standard, backed by decades of research demonstrating their effectiveness. But because individuals who engage in this therapy are using a daily medication, many people—especially those in the abstinence-only camp—don’t consider them in recovery. Former Secretary of Health and Human Services Tom Price, MD, echoed that belief in 2017 when he equated medication-assisted treatment, or MAT, with “substituting one opioid for another.”

"I'M SHOOTING HEROIN THREE TIMES A DAY. HOW AM I SUPPOSED TO BE ABLE TO GO THROUGH ALL THOSE STEPS TO ACTUALLY GET THE CARE I NEED?"

CULTURE SHIFT

Like many medical students in the early 2000s, Wakeman was interested in global health and infectious diseases, particularly HIV. But that changed during the summer between her first and second year, when she did an internship with Professor of Medicine Josiah Rich, MD, MPH, in the Rhode Island Department of Corrections, working with inmates who had HIV and hepatitis C—and substance use disorders. It was in prison, where the failures of public policy, public health, and social justice collide, that Wakeman began to think local. "Seeing the tremendous disparities here in our own backyard, I realized we have a lot of work to do at home," she says.

Still, it wasn't until 2010, during her internal medicine residency at MGH, that she zeroed in on the relatively new field of addiction medicine. (The American Board of Medical Specialties did not recognize addiction medicine as a subspecialty until 2016.) Mark Eisenberg, MD, a primary care doc at MGH specializing in both HIV and opioid use, recalls that at the time "there was a huge interest in international HIV work and following in Paul Farmer's footsteps, and very little interest in this other vulnerable population, people with substance use disorder. So when I read [Sarah's] application and the work she had done as a med student in the prison system, I spent the next three months trying to convince her to come to MGH. I recruited her like I've never, ever recruited an applicant before." In terms of patient population, Wakeman had found her people. "Whenever someone was admitted with a severe substance use disorder, the residents would say, 'Who wants to take this patient?' and Sarah's hand would go up immediately," Eisenberg says. "She took the most difficult, challenging patients, and she embraced them."

Located near the Charles River in Boston, MGH treats almost 50,000 inpatients and receives 1.5 million outpatient and more than 108,000 emergency room visits a year. The mission of this health care colossus, in addition to teaching, research, and care, is "to improve the health and well-being of the diverse communities we serve"—namely, Chelsea, Revere, and Charlestown. So in 2012, when the hospital performed health needs assessments in those towns, residents were at the table. Asked to name the number-one problem plaguing their communities, 75 percent pointed to substance use. Not housing, not unemployment, not crime. Substance use.

Two years later, with Wakeman barely two years out of residency, MGH launched its Substance Use Disorders Initiative and asked her to take the lead. According to Eisenberg, at first "there was some skepticism among senior people in psychiatry and addiction saying, 'She's too young to have this responsibility. Could this person just coming out of training take on this role?' It's Sarah's energy, personality, and passion that made this happen." Clearly, the hospital's leadership saw in Wakeman the same qualities that had impressed Rich when she was a medical student: "Sarah was the kind of person everyone wants to be with, to work with, listen to, to follow. She's a natural leader and an inspiration."

"WE TRY TO MEET PEOPLE WHERE THEY ARE, BUT NOT LEAVE THEM WHERE WE FOUND THEM."

Wakeman wasted no time revolutionizing the way the hospital would deal with the opioid epidemic, including making treatment more accessible and the medical workforce more informed about the disease of addiction. In addition to writing hospital guidelines for opioid therapy and contributing to MGH's strategic plan for SUDs, she helped create a multidisciplinary Inpatient Addiction Consult Team that can evaluate a patient with an SUD and provide both treatment recommendations and connections to community resources. She helped design a recovery coach program, hiring individuals with managed addiction to support and connect with patients. She helped create the Bridge Clinic, a low-threshold site offering walk-in treatment (as well as art classes, yoga, snacks, and hugs) that eases the transition from the hospital back to the community. She helped created the HOPE Clinic, which provides care for pregnant and parenting women and their families. She helped train emergency physicians to start patients who wished to on MAT, creating the first ED-initiated buprenorphine program in Massachusetts. And she created and directs a fellowship in addiction medicine, which welcomed its first three fellows this year.

A collaborative effort among medicine, psychiatry, social work, nursing, and people who provide care to the homeless, the Substance Use Disorders Initiative aims to integrate addiction medicine into and throughout the hospital. The dual goal is to improve patient outcomes and reduce health care costs—what Wakeman calls "doing the right thing and doing the smart thing." To measure the SUDI's effectiveness—and to create the evidence base she says is vital to changing attitudes, practices, and policies—she has evaluated each and every program she's initiated, and the results are in: they're working.

"We've found that patients who were seen by the consult team are able to stay sober for more days out of the month after they're discharged, they have lower addiction severity, and they're using the emergency room less," Wakeman says. "Patients who get their primary care in a practice that has integrated addiction services, including access to medication treatment, also use the emergency department less and engage more in primary care, as do patients who connect with our recovery coaches. And we found that if doctors have interacted with our services, they have less-stigmatizing attitudes about addiction, they feel more prepared to take care of patients, and they're more likely to offer a treatment themselves." Wakeman recently received the Nathaniel Bowditch Award from MGH's board of trustees for improving quality of care while reducing costs.

WATCH YOUR LANGUAGE

We still have a long way to go before science overcomes stereotypes, or simply habits of mind, Wakeman says. A published poet, she places enormous importance on words. That means replacing stigma-laden words like "addict," "substance abuser," and "alcoholism" with "person with addiction" and "alcohol use disorder." (After all, she points out, we don't refer to a person with diabetes as a "sugar abuser.") It means knowing the difference between dependence and addiction. (Contrary to some panicky headlines, babies can be born dependent on opioids, but not addicted to them: dependence is a physiological condition, whereas addiction entails repeated use of a substance despite the harm it causes.) In a 2016 paper in *Alcoholism Treatment Quarterly*,

WHAT WE KNOW VS. WHAT WE DO

Two million Americans suffer from opioid use disorder (OUD), but only 20 percent of them receive treatment. Decades of research has shown that use of FDA-approved methadone and buprenorphine considerably reduces the likelihood of both relapse and fatal overdose.

Ironically, while doctors don't need special permission to prescribe their patients a highly addictive opioid like oxycodone, prescribing meds to treat their addiction is more complicated. According to the Drug Addiction Treatment Act of 2000 (DATA 2000),

Wakeman and co-authors explain that attention to words is not about political correctness, it's about dismantling biases that negatively influence care. Being careful about how we talk about SUD-related matters can actually make for "precise and unambiguous clinical and scientific communication," opening the way for policies that are based on evidence, not belief or ideology.

In addition to publishing papers and book chapters and speaking to medical professionals across the country, Wakeman co-chairs the opioid task force of the MGH Physicians Organization and that of the Partners HealthCare network, and serves on Massachusetts Governor Charlie Baker's Opioid Addiction Working Group. But she communicates with the general public as well. She tweets about addiction, stigma, and treatment on Twitter (@DrSarahWakeman), where she has more than 6,500 followers. (Her Twitter background says "The good thing about science is that it's true whether or not you believe in it.") She is quoted often in mainstream media outlets, from *Self* and *TIME* magazines to Vice and Vox.com, and works with and publicly applauds the journalists whose reporting on SUDs she finds accurate and responsible.

YES, YOU CAN

In Wakeman's small, tidy office at MGH, there's a framed print that looks, at first glance, like the Barack Obama poster by Shepard Fairey. Only it's *her* upturned face, staring into some brighter future, and instead of "Hope" the text reads "Ask me about dope." The gift from residents to their chief was part of an end-of-year spoof, but the combined message of dope and hope, while clever, is no joke. Wakeman believes passionately that in addition to proper medical treatment, one of the most important things providers can give people struggling with addiction is hope. "[Our patients] have often been told by everyone in their life that there's something wrong with them and they're never going to get better, and they internalize that," she says. "The most helpful thing we can offer, in addition to the science, is a message of hope and self-efficacy: 'This is a treatable condition. We can help you.'"

According to Wakeman, changing the narrative also means surfacing the stories of people who are successfully managing their addiction—which can be challenging, since people don't often advertise they're in recovery. Although there are 24 million people in recovery in the US, doctors themselves seldom see the ones who go on to do well. "For folks who work in the ED, there's a sense that no one ever gets better. There's this revolving door, people coming back again and again. That, I think, worsens the sense of powerlessness and pessimism," she says. The more doctors see treatment working, the more likely they'll be to engage.

Those success stories, Eisenberg says, are "sustaining": they're what keep people in addiction medicine going. Wakeman describes a patient her age whom she met six years ago. She had a history of trauma, started using heroin early, and developed multiple medical complications. She had never been told that addiction was an illness, much less a treatable one. "When we first met, she was hopeless. I think she truly thought she was going to die as someone with active addiction," Wakeman says. "Being able to partner with her and share that message of hope and start her on effective treatment was transformative. She's now five years in recovery. She works full time, she just had her first baby, she's married, she owns a house."

It's a story that neatly embodies Wakeman's working credo: "We try to meet people where they are, but not leave them where we found them." **M@B**

SARAH C. BALDWIN is a freelance writer and host of the *Trending Globally* podcast. She is the former editor of *Brown Medicine*.

doctors must undergo eight hours of training before they can get a waiver to prescribe buprenorphine. That time commitment, coupled with misperceptions about addiction generally and buprenorphine treatment specifically, has limited the number of doctors seeking the training. Today only about 46,500 US physicians, or 6 percent, are waivered. People with OUDs vastly outnumber the doctors who can help them.

Partnering with the Rhode Island Department of Health, the Warren Alpert Medical School introduced a curricular innovation that in May 2018 produced 30 newly minted doctors who were eligible to apply for the waiver as soon as they were licensed in Rhode Island. The plan is to make the training—which consists of nearly three times the number of hours required by DATA 2000—available to all medical students. A number of Brown-affiliated residency programs are offering the training to residents as well.

Bringing effective treatments for substance use disorder out of specialized treatment programs and into emergency rooms and doctors' offices—what addiction specialist Sarah Wakeman has called "mobilizing the PCP workforce"—is one way to turn the tide on opioid deaths, which have arguably contributed to a two-year decline in life expectancy in the US.

Waiver training can be done completely online. Visit the Substance Abuse and Mental Health Services Administration at www.samhsa.gov and search "Buprenorphine Training for Physicians."


CASTOR
OIL

Pickles and Ice Cream and Other Fables

What's true and what's bunk about pregnancy.

BY PHOEBE HALL
ILLUSTRATION BY HELENA PEREZ GARCIA

PARENTS HAVE BEEN TRYING to choose the sex of their baby for millennia, and to this day they're willing to believe some pretty strange things will do the trick—like eating sugar to conceive a girl, or sleeping on the right side to get a boy.

"There's always going to be a 50 percent chance that someone is right, and so [these superstitions] keep getting repeated over and over," says Jonathan Schaffir '87 MD'90, the author of *What to Believe When You're Expecting*, a collection of pregnancy folklore passed down through the ages and what science has to say about it.

Schaffir has been collecting these "old wives' tales" over his more than 20 years in practice as an obstetrician/gynecologist. As patients kept coming to him with the same stories, he says, he started wondering if there might be any truth to them.

"Something I hear very, very frequently: 'oh, this baby must have a lot of hair because I have so much heartburn,'" he says. "There's one study that actually does show some evidence that there's an association. I don't know that I completely buy that explanation, but there you have it, someone actually looked at that."

"These must be researchers with a good amount of time on their hands," he adds.

An associate professor at The Ohio State University College of Medicine, Schaffir studies psychosocial topics in women's health in addition to seeing patients. But his first published paper was on sex selection beliefs, which he wrote as a fourth-year med student. "The idea stuck with me," he says.

He was surprised by the staying power of some myths, which have found new (and amplified) life online. "But I would say the majority of advice that is not scientific is also pretty innocuous," Schaffir says.

For most of history, he adds, medical texts were written by men who may not have seen fit to record the knowledge of midwives and other women who helped with childbirth. Now "anyone can be an author" on the internet, Schaffir says. "Women are taking these matters into their own hands."

Read on for some of the fascinating folklore Schaffir explores in his book. But take it with a grain of salt. "I'm not recommending that people actually use any of these methods, because I don't think safety has been well-established," he says.

GET GOING

The notion that laxatives could also work to move a baby was a common one by the early 20th century. Though it fell out of favor as oxytocin came on the scene, "there actually is quite a bit of medical evidence that laxatives, particularly castor oil, may stimulate labor," Schaffir says. Some providers still recommend it—though, as he writes in his book, it's not without some risk. Not to mention it entails "subjecting a woman to the discomforts of diarrhea on top of the discomforts of nine months of pregnancy."

A tastier internet remedy to induce labor is spicy food, and it, too, may have some basis in fact. "Of course," Schaffir writes, "a woman who is past her due date and hoping to deliver soon might go into labor regardless of how many jalapeños she adds to her plate."

CHEERS?

Nursing moms perusing medical texts from the late 1800s for guidance to boost their milk supply might learn that one or two beers a day would do the trick. It's a notion that dates back to at least ancient Egypt, and Schaffir still hears it from patients. But studies show alcohol is actually counterproductive for this purpose. "There may be something else in beer, in the barley or hops, that does improve milk supply, so maybe a nonalcoholic beer may be helpful," he adds.

HARD PASS

Hydrating to ease labor is a recurring theme through the ages. Red raspberry leaf tea is a centuries-old remedy that *The Lancet* once called "a proved aid" but didn't stand up to more recent scrutiny. At least it's harmless; the same can't be said for the ancient Roman counsel to drink water mixed with powdered dung, or, from India, water into which the pregnant woman's mother-in-law had dipped her big toe.

SPICE IT UP

Since ancient times physicians have cautioned nursing women to avoid strong flavors—like onion, mint, and pepper—lest they render their breast milk unpalatable. Above all, the experts said, no garlic. Studies have confirmed that some spices and other foods are indeed detectable in milk, though the taste of the longest lasting, menthol, was gone after eight hours. And garlic, it turns out, gets babies to nurse longer.

Science has validated the caveat that foods that can cause indigestion may also upset a nursing infant's delicate GI tract. Researchers found that the babies of women who'd eaten cruciferous vegetables like broccoli and brussels sprouts were more likely to be colicky. That said, Schaffir writes, "it may be unwise to restrict breastfeeding women from an entire class of otherwise healthy vegetables."

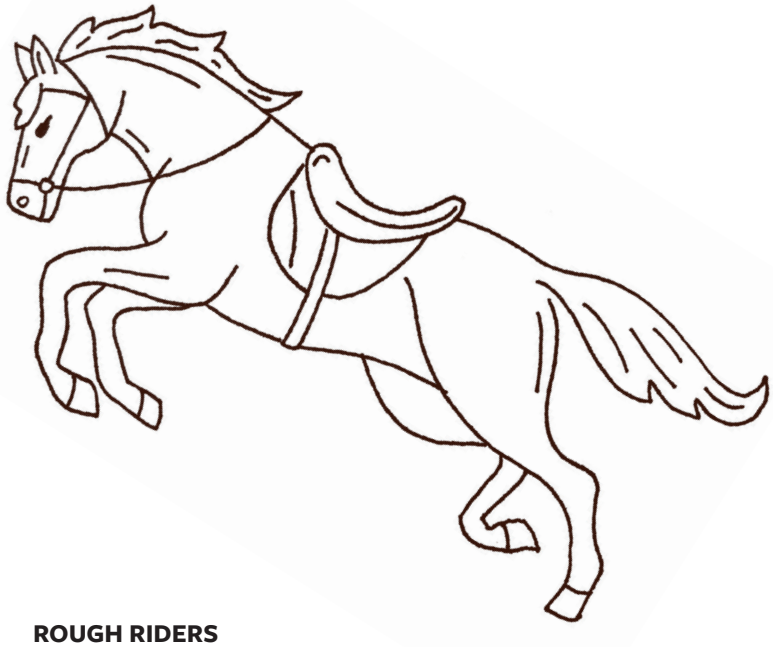
TELLTALE HEART

Clues to predict a baby's sex are right half the time, so even clearly unscientific beliefs persist. But unlike, say, holding a chain over the mom-to-be's belly to see which way it swings, measuring fetal heart rate sounds legit. Since sometime in the 19th century, when this became possible, the theory that female fetuses have faster heartbeats than males has been advanced and debunked. Yet the idea lives on—and, Schaffir says, "I think it has gotten more and more common as people repeat it."

IRON CHEF

From clay or dirt to ice cream with pickles, most women crave some peculiar fare when they're pregnant. Long considered a signal of what the baby (or the body) needs, providers and the public alike worried that denial would endanger the fetus and the mother. We know now that neither serious illness nor unsightly birthmarks are the likely result of thwarted cravings, but researchers still aren't sure what drives pregnant women's intense desires for certain foods, though it's almost certainly psychological.

While some cravings are so foul they're funny, others are potentially hazardous, like pica, an appetite for ashes, eggshells, and other inedibles. Scientists have investigated whether minerals or antimicrobial properties in some of these substances could explain this inexplicable hunger, but have come up empty. It could be worse, though, Schaffir notes, recounting a few tales of cannibalism. So, go ahead and put brownies on your pizza. Just don't eat too much.



ROUGH RIDERS

For centuries women have tried bouncing, jumping, and riding horses to jostle an overdue baby out of the womb. From tossing a pregnant woman in a blanket to hanging her upside down and shaking her, some old practices are downright barbaric, and certainly "far worse than the discomfort of being pregnant for a few more days," Schaffir writes. But the notion lives on in modern suggestions of strenuous exercise and bumpy car rides. Given the risk of internal bleeding and worse, he doesn't recommend it.

Walking to induce labor also has its long-time adherents, and though not harmful for most women late in pregnancy, the evidence that it will trigger childbirth is scant. Similarly, while regular exercise is healthy for most women, it's unlikely to help them deliver any sooner.

OUNCE OF PREVENTION?

Burying the placenta is a time-honored tradition in many cultures. Eating it, though, is a curiously recent phenomenon—"a function of the internet," Schaffir says, among women sharing their pregnancy stories. Placentophagy is relatively common among other mammalian moms; supposedly, in humans, doing so can speed recovery, prevent postpartum depression, and boost milk production. But no studies have borne these claims out.

And it's not without risk; while some women cook and eat their placenta after giving birth, others send it out to be encapsulated by processors that aren't licensed or supervised, Schaffir says—so the pills' safety is questionable.

Still, he's sympathetic with proponents of the practice. "That particular recommendation comes out of a frustration with the lack of understanding about some of the postpartum complications," he says. "I think someone will be willing to try anything to avoid those problems … because there aren't a lot of other preventive things out there that are known to be effective." **M@B**

+ FIND THE BOOK:
What to Believe When You're Expecting: A New Look at Old Wives' Tales in Pregnancy
By Jonathan Schaffir '87 MD'90
ROWMAN & LITTLEFIELD, $30

CHECK-UP

What's new with Brown Medical Alumni

PHOTOGRAPHY: MARISA GUZMAN-ALOIA

General Practice

The chief medical officer for the Office of Inspector General (OIG) for the US Department of Health and Human Services has a long title, and wears many hats. She oversees monitoring agreements with struggling health care facilities. She shuts down pill mills and dirty doctors who are hurting Medicare and Medicaid programs and patients. She lends her medical expertise during pandemics and other emergencies. She tours migrant children's shelters to make sure they're safe.

It's a job that requires clinical and scientific know-how, a keen legal eye, and a sprinkling of diplomacy. Good thing Julie Taitsman '92 MD'96, JD, has it all.

"We're oversight for 100 different programs," Taitsman says in a phone interview, rattling off a partial list of her responsibilities: Head Start, the Indian Health Service, the Office of Refugee Resettlement, even the 2014 Ebola outbreak.

"A lot of people would hate that. They come to work one day and have no idea what they're going to be working on, having to learn about a new disease or learning about a new program. But I like that," she says. "That's just my personality."

Taitsman, who lives in Bethesda, MD, with her husband, 9-year-old son, and poodle-Labrador mix, credits the Program in Liberal Medical Education (PLME) for her attraction to such a wide-ranging job description.

"That was the real appeal of Brown for me, that you could do a liberal arts major," says Taitsman, who studied diplomacy and foreign policy as an undergrad and, as a a fourth-year med student, began law school at Harvard. "The things that I use on a daily basis … come from unexpected places," she adds, like applying her math skills to create a guide to statistical sampling, or drawing on her clinical training in her oversight role.

People's lives hang in the balance in the OIG's decisions. When federal agents collared a Michigan physician who was prescribing unnecessary chemotherapy and defrauding Medicare, OIG helped his cancer patients find new, legitimate doctors. They try to work with troubled hospitals and nursing homes to improve, Taitsman says, to avoid "the drastic impact of shutting them down."

Taitsman contrasts her work with that of her sister, Lisa Taitsman '90 MD'94, MPH, an orthopedic trauma surgeon in Seattle. "She sees a patient who comes in from a bear mauling or a helicopter crash, and a bone sticking out. She puts it back together, and she directly sees that what she did fixed them," Julie Taitsman says. Whereas the OIG's impact is more indirect: if she sees something wrong when touring a facility, she says, "I tell someone who tells someone who tells someone to fix it. And we try to promote policies and procedures to make sure the problem doesn't happen again."

"Julie is so humble about her accomplishments and her responsibilities," Lisa Taitsman, who is also a professor of orthopedics at the University of Washington, writes in an email. "While I have the privilege of helping a few people on what often is the worst day of their lives, Julie impacts millions every day."

Much of Julie Taitsman's work relates to Medicare and Medicaid, by far the largest programs in her portfolio. She distinguishes between waste, fraud, and abuse: "Good people commit waste," she says, "but waste is something education can really help with." That's another one of her hats: speaking at national conferences to teach providers to prevent wasteful and fraudulent spending.

"I often tell people that my sister works 'for the enemy,'" Lisa Taitsman jokes. "The reality is that Julie has a very important job and plays a vital role in managing health care and the ethical/legal practice of physicians. Her office really goes after the true outliers. … I am actually very thankful that someone as smart and as thoughtful as my sister is the medical director of OIG/HHS."

—PHOEBE HALL

Close Call

A SURGEON BECOMES THE PATIENT


Robert Meguid with his family

The bedside manner of surgeons is stereotypically cut and dry, but a near-death experience—his own—gave one cardiothoracic surgeon an enlightened outlook on patient care.

In December 2017, Robert Meguid ’97 MD’02, MPH, an associate professor of surgery at the University of Colorado School of Medicine, was teetering between life and death when a common cold quickly devolved into septic shock. Sepsis can happen to anyone: Meguid, 42 and healthy, climbs mountains and has played ice hockey since his undergrad days at Brown.

He was on vacation with his family—wife Cheryl, daughter Natalie, 3, and 11-month-old son Cameron—on the coast of Kangaroo Island, off southern Australia, walking among endangered Australian sea lions. Two hours after the nature walk, Meguid was curled up in the car, unable to breathe; 15 hours later, he was intubated in the island’s only emergency room and helicoptered to a tertiary hospital on the mainland.

Meguid’s lungs and kidneys shut down, and he had to have a tracheostomy. He lost 35 pounds and was unconscious for 22 days, ultimately waking in the same ICU in Colorado where he cares for his own patients after surgery.

Now, Meguid says, he is “functionally almost entirely recovered”; he returned to surgery in April and hopes to get back on the ice this winter.

The ordeal reshaped how Meguid practices medicine, he says. “The emphasis in medical school is on learning about the patient, and Brown excelled in communicating the importance of empathy toward patients,” he says. Yet he knows now that he didn’t understand what patients’ families endure. “I have noticed a difference in my ability to talk to the families and to relate to what they’re going through,” he says.

Most importantly, Meguid says, “It makes me cherish each day with my family.” Still, he says, ″I could have lived without this firsthand experience.” **—MARY STUART**


Jonah Cohen


Karolina Starczak

GUT CHECK

Diet is an important component of patient care across a multitude of conditions, from diabetes to heart failure, and it runs through the fabric of gastroenterology, says Jonah Cohen ’04 MD’10, the director of Bariatric Endoscopy at Beth Israel Deaconess Medical Center and instructor of medicine at Harvard Medical School.

“So many patients in my field have conditions where management is closely connected to diet, such as irritable bowel syndrome and celiac disease,” he says. But they wait months to get an appointment with a registered dietitian (RD), and don’t know where else to turn for advice. That observation motivated Cohen to found a “telenutrition” business, Nutrimedy, in 2016.

“Much of telemedicine has focused on physician-based care,” Cohen says. “RDs are incredibly well-positioned to help us address the immense chronic disease burden in our country, much of which is caused by poor diet.”

For the first year, Cohen bootstrapped the company, building a web-based digital health prototype and assembling a nationwide network of RDs. In 2017, he hired as CEO Karolina Starczak EMHL’17, an RD who had just completed Brown’s Executive Master of Healthcare Leadership program.

“Clinical nutrition has been used in inpatient settings for decades,” she says. “You have these evidence-based methodologies ... that have been shown to improve outcomes and reduce cost. Why not improve the care delivery model to support patients closer to home?”

Nutrimedy connects patients to personalized nutrition counseling affordably and quickly, to address a broad spectrum of health concerns. “People are often struggling with multiple conditions and having solutions that are siloed can create conflicting or inadequate recommendations,” Starczak says.

The company considers not only the patient’s health history, but also lifestyle and social challenges. Starczak says, “Food is tied into so many aspects of our lives.” **—MS**

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

CLASS NOTES

ALUMNI

1970–1979

Claudia Gruss '74 MD'77 RES'80 F'82 became the 180th president of the Connecticut State Medical Society in September. A gastroenterologist at the Western Connecticut Medical Group in Wilton, she's a clinical educator with the Yale-affiliated gastroenterology fellowship program at Norwalk Hospital and has assisted with the medical society's Young Physician Leadership Program.

Morris Birnbaum '73 PhD'77 MD'78 will serve on the board of directors for the newly created Cerevel Therapeutics, a biopharmaceutical company focused on developing drug candidates to treat disorders of the central nervous system. He is the senior vice president and chief scientific officer of internal medicine at Pfizer, which is contributing a portfolio of pre-commercial neuroscience assets to Cerevel.

John Sheppard '75 MD'78, Jon Dehn '75 ScM'77, Solomon Picciotto '75, P'16, and Rich Radice '76 reunited for a benefit rock concert in Cape Charles, VA, in July to raise awareness for organ donation and target research funding for the Eye Bank Association of America. John is an ophthalmologist and the president of Virginia Eye Consultants specializing in cornea and cataract surgery, and a professor of ophthalmology at Eastern Virginia Medical School. Contact him at jsheppard@vec2020.com.

Griffin Rodgers '76 MMSc'79 MD'79 received the 2018 Herbert W. Nickens Award from the Association of American Medical Colleges. A physician investigator who discovered the first FDA-approved treatment for sickle cell disease, he continues to work toward eliminating racially based health disparities as director of the National Institute of Diabetes and Digestive and Kidney Diseases at the NIH. In September he returned to campus for Black Alumni Reunion and spoke on how to achieve black health equity.

1980–1989

Fred Rotenberg MD'81, P'09MD'13, an assistant professor of surgery (anesthesiology), clinician educator, at the Warren Alpert Medical School, received the 2018 Riesman Family Excellence in Teaching Award. He has been an attending anesthesiologist at The Miriam Hospital since 1986 and has taught Brown medical students for more than 30 years.

Peter Thompson '80 MD'84, P'15 is the cofounder and CEO of Silverback Therapeutics, a Seattle-based biotechnology startup. The company has raised $47.5 million in funding to develop cancer and fibrosis therapies that are delivered systemically to the affected parts of the body. A private equity partner at OrbiMed, a health care investment firm, Peter has worked in the biotechnology industry for more than 25 years, holds numerous patents, and is a board-certified internist and oncologist.

1990–1999

Jordan Orange '90 PhD'96 MD'97 was elected to the National Academy of Medicine. He is the chair of pediatrics at the Columbia University Vagelos College of Physicians & Surgeons and pediatrician-in-chief of NewYork-Presbyterian/Morgan Stanley Children's Hospital. A pioneer in discovering previously unknown immune diseases in children and uncovering their underlying biological mechanisms, he is credited with defining natural killer cell deficiencies. His lab is working to better understand this class of diseases in hopes of developing therapies that direct a patient's natural killer cells to eliminate infections or cancer.

Curt Beckwith MD'99 RES'02 F'05, P'22, an associate professor of medicine at the Warren Alpert Medical School, was elected a fellow of the Infectious Diseases Society of America. An attending in the Division of Infectious Diseases at The Miriam Hospital and Rhode Island Hospital, he is the director of Brown's infectious diseases fellowship program. His research interests include developing innovative HIV testing, linkage, and retention programs for vulnerable populations.

HOMECOMING

Jeremiah Schuur RES'05, MD, MHS, returned to the fold in December as chair of the Department of Emergency Medicine at the Warren Alpert Medical School and physician-in-chief for emergency medicine at Lifespan. Schuur completed his EM residency at Rhode Island Hospital, capped by a year as chief resident. He'd been at Brigham and Women's Hospital and Harvard since 2007, rising through the EM ranks to chief of the division of health policy translation and vice chair of clinical affairs.

2000–2009

Kavita Babu '96 MD'00 RES'04 was named the first chief opioid officer at UMass Memorial Health Care, with responsibilities including working with the Opioid Crisis Task Force to develop priorities and making sure information is shared across the system. Kavita is the director of the Division of Medical Toxicology and an emergency medicine physician at UMass Memorial.

Christopher Dodson '99 MD'03 enters his sixth season with the Philadelphia Eagles and his first as head orthopedic physician, having previously served as an assistant team physician. He is also the head team physician for the Philadelphia 76ers and

an orthopedic consultant for the Los Angeles Dodgers and Pittsburgh Pirates. Previously he was an assistant team physician for the Philadelphia Flyers. He's an associate professor of orthopedic surgery at Thomas Jefferson University and a sports medicine surgeon with the Rothman Institute.

Hassen Sayeed MD'03, JD, joined the firm O'Melveny in New York City as a partner in its Intellectual Property & Technology Practice Group. An experienced litigator who counsels life sciences companies in all aspects of complex patent litigation, he is one of the few intellectual property lawyers in the United States to hold a medical degree. He earned his law degree from Harvard in 2004.

Natasha Rybak MD'07 RES'11 F'16 is an assistant professor of medicine, clinician educator, at the Warren Alpert Medical School, an attending physician in Lifespan's Division of Infectious Diseases, and the medical director of the RISE Tuberculosis Clinic at The Miriam Hospital. She completed her pediatrics residency and infectious diseases fellowship at Brown. While a research fellow at Tufts, she cofounded the Brown University Ukraine Collaboration, a joint venture between the Providence/Boston Center for AIDS Research and HIV, TB, and health service providers in Ukraine.

Samantha Nazareth '04 MD'08 is a gastroenterologist with interests in emerging digital health/health care technology and the microbiome. She completed her residency in internal medicine at Cornell and fellowships in transplant hepatology and gastroenterology at Columbia. She has been featured in *Women's Health, Shape, Prevention*, and other publications and blogs at www.drsamnazareth.com.

2010–2019

Calvin Lambert MD'15 is a fourth-year obstetrics and gynecology resident at the Howard University College of Medicine.

Brittany Katz '12 MD'16 and Scott Phillips '11 announce the birth of their son, Jayce Eli Katz Phillips, on May 7, 2018.

Ry Garcia-Sampson '12 MPH'15 MD'19 was selected as a Pisacano Leadership Scholar, one of the most prestigious awards in family medicine. As the future leaders of family medicine, Pisacano Scholars receive career development opportunities and leadership training as well as scholarship funding. Last year Ry was the diversity fellow for the Office of Diversity and Multicultural Affairs at the Medical School.

RESIDENTS

1970–1979

F. Dennis McCool RES'79, MD, is the medical director of the Roger Williams Medical Center Sleep Disorders Center. Previously, he was the medical director of the Sleep Laboratory at both Memorial Hospital and Kent County Hospital. At Memorial, he also served as chief of Medicine, chief of the Pulmonary, Critical Care, and Sleep Divisions, and medical director of Respiratory Care.

1990–1999

Maureen Phipps RES'98, MD, MPH, was named president-elect of the American Gynecological and Obstetrical Society. Her term will begin in September 2019. She is the Chace-Joukowsky Professor and chair of Obstetrics and Gynecology at the Warren Alpert Medical School; executive chief of obstetrics and gynecology

The MD Class of 2022 received their white coats on October 20. Far left, back row, left to right: Collin Dickerson and Imshan Dhrolia; front row, Julianna Brown. Center, Matthew Navarro and Ben Mirman. Above, Associate Dean for Medical Education Allan R. Tunkel, MD, PhD.

for Care New England; and co-executive director of the Hassenfeld Child Health Innovation Institute.

2000-2009

Joseph Izzi Jr. RES'01 F'02, MD, joined the surgical team at University Orthopedics in Rhode Island. An orthopedic specialist with a special concentration in hand, wrist, elbow, and shoulder disorders, he completed his residency and a fellowship in adult and pediatric trauma at Brown, and an additional fellowship in hand and microvascular surgery at the Hospital for Special Surgery/ Weill Cornell Medical College.

Paul Christopher RES'09, MD, an assistant professor of psychiatry and human behavior at the Warren Alpert Medical School, was appointed to the National Academy of Medicine's Emerging Leaders Forum. The forum serves to increase the NAM's engagement with exceptional early- and mid-career professionals working in biomedical science, health care delivery, health policy, and related fields.

2010–2019

Philip Salko RES'11, MD, is the president of the Rhode Island Academy of Family Physicians. A clinical assistant professor of family medicine at the Warren Alpert Medical School, he practices primary care sports medicine at University Orthopedics. He cofounded the Brown Primary Care Sports Medicine Fellowship and serves as assistant site fellowship director. He earned his medical degree from Jefferson Medical College and completed his residency in family medicine at Brown and his fellowship in primary care sports medicine at the University of Utah. He lives in North Kingstown with his wife.

Giorgio Napoli RES'15, MD, is a cardiologist at Milford (MA) Regional Medical Center and Hopedale Cardiovascular Associates in Upton, MA. He earned his medical degree from the State University of New York and completed his internal medicine residency at Brown and cardiology fellowship at UMass Medical Center.

Ashley Weber RES'16, MD, joined the Women's Health Team at the Greater New Bedford Community Health Center in Wareham, MA. She earned her medical degree at Pennsylvania State University and completed her residency in internal medicine at Brown.

Brian Wong RES'17 F'18, MD, is co-leading the new Comprehensive Multiple Sclerosis Center at Hartford HealthCare's Ayer Neuroscience Institute. He completed his neurology residency and neuroimmunology fellowship at Brown. Specializing in traditional and disease-modifying therapies for MS, his arrival enabled Ayer to create a comprehensive Neuroimmunology Program.

Adam Luber RES'18, MD, joined the staff of Southwest Skin Specialists in Phoenix. His interests include cutaneous manifestations of internal diseases, the prevention and treatment of skin cancer, and teledermatology. He completed his MD at the University of Arizona College of Medicine and dermatology residency at Brown.

FELLOWS

2000–2009

Vivian Sung MPH'06 F'06, MD, received two American Urogynecologic Society awards for research that she is leading for the National Institute of Child Health and Human Development's Pelvic Floor Disorders Network. She is a professor of obstetrics and gynecology at the Warren Alpert Medical School and a urogynecologist at Women & Infants Hospital. She was the president of the Society of Gynecologic Surgeons from 2016 to 2017.

2010–2019

Elizabeth Lokich F'16, MD, joined Women & Infants Hospital's Program in Women's Oncology. She's also an assistant professor of obstetrics and gynecology at the Warren Alpert Medical School. She completed her MD and ob/gyn residency at Dartmouth/Geisel School of Medicine and a fellowship in gynecologic oncology at Women & Infants.

Gofran Tarabulsi F'18, MD, has joined Women & Infants Hospital, where she is practicing at the Center for Obstetric and Consultative Medicine and the Integrated Program for High-Risk Pregnancy. She received her medical degree from King Abdulaziz University in Saudi Arabia and completed her residency in internal medicine at West Virginia University, as well as a fellowship in obstetric and consultative medicine at Women & Infants.

IN MEMORIAM

Wilma Sylvia Friedman Rosen P'86, MD, of Providence, died July 7, 2018. She was 89. A clinical assistant professor emerita of psychiatry and human behavior, she was the first woman psychiatrist at Butler Hospital and served there more than 40 years. She also provided therapy to artist students at RISD's Office of Counseling.

Dr. Rosen's life story inspired many whom she counseled and mentored at Brown's medical school. She completed her medical degree at Temple University School of Medicine at a time when quotas restricted admission of Jewish women. Her mentorship of women physicians gave her great pride.

She is survived by two daughters, Allyson Rosen PhD'86 and Liz Grinspoon; a sister; four grandchildren; and her nieces and nephew.

MOMENTUM

It's All About the Students

Dear Brown Medical Community,


Madeline Johns

I am fortunate to connect with our amazing medical students and to have the opportunity to see the impact they make on Brown and the world. This year has been no exception. When I meet with them, I am truly aware of the importance of philanthropy in their lives and their medical education.

Scholarship support, which is awarded to 53 percent of our students, makes Brown an attainable option for many. When they visit campus for the first time, they fall in love with the people, the campus, and Providence. Financial aid makes their choice to join our community possible, and it allows them to base that decision on fit and desire, rather than on finances. This year, 21 students are receiving support through the Medical Annual Fund; more than 250 others are receiving endowed scholarships and other funds.

Once students arrive on campus, their medical education experience is enhanced by their ability to do research in a world-class environment with nurturing and talented mentors. Through gifts to the BrownTogether campaign, we are recruiting and retaining stellar faculty who spark medical students' interest in asking and answering tough questions. For example, Christiana Prucnal MD'21 received this year's Joukowsky Student Award for Scholarly Excellence, established through the generosity of Artemis A. W. Joukowsky '55, P'87 and Martha Sharp Joukowsky '58, P'87, PhD. She was honored during the student summer research showcase in the fall for her work on pulmonary embolisms.

I am so grateful to everyone who supports this community of students as they explore the world of medicine. Philanthropy makes a difference in their lives every day.

Thank you all,
Bethany Solomon
Associate Dean for Biomedical Advancement

Progress to Goal

$155M **Goal: $300M**

BROWN TOGETHER

Courtesy Henderson/Britto

INVESTING
IN STUDENTS

Staying Connected

For husband-and-wife physicians Galen V. Henderson MD'93 and Vanessa M. Britto MMSc'96 RES'89 F'91, MD, it's all about connections: to Brown. To their careers. And, of course, to each other.

The two met at a conference on Brown's campus in the fall of 1989. "At the time, we were both seeing other people," Henderson, a neurologist and director of neurocritical care and the neuroscience intensive care unit at Brigham and Women's Hospital, says. "But after a couple of years, we started seeing each other."

When they became engaged, Britto foresaw a dilemma: "Because we wanted the same people at our wedding and at Galen's medical school graduation, we thought, 'Why not do this crazy mashup?' So we were married on Sunday; graduation was, then, on Monday. It was pretty amazing."

Then this past May, for the dual 25th wedding and graduation anniversaries, they asked guests who wished to give gifts to donate to the medical scholarship they had established instead. "It was a natural decision," Britto says. "Brown is the common denominator. We feel strongly about education and about students. And we're grateful and appreciative of the opportunities we've had. So we combined those passions, interests, and concerns with a celebration."

"People helped and supported us along the way," Henderson adds. "We stood and are still standing on the shoulders of others. For example at Brown, Professor Ken Miller in research and Dr. Wayne Bowen in neurology shaped my career. Now we are trying to prepare our shoulders to support the next generation."

Britto agrees. "I owe what I am, in large part, and how I think about medicine to my training at Brown: it taught me to take care of the whole patient. Mentors Professor Vince Mor in community health and Dr. Michele Cyr in my training and residency are still here." Last year, Britto returned to Brown as assistant vice president and executive director of health and wellness.

In addition to an endowed scholarship, Henderson, who is on the faculty at Harvard Medical School, and Britto made a Brown Medical Annual Fund gift and provided for the University in their wills. "We appreciate how the Medical School instills lifelong learning and fluidity of thought," Henderson says. "Other graduates might also be willing to make a difference in students' lives."

"Galen, as president of the Brown Alumni Association, says that it is important for people not only to give," Britto says, "but to stay connected to the ways in which the University impacts people and helps make the world a better place. Experiencing that connection is important, because the institution changes. That's invigorating and exciting for us both."

Amy Unstadter

INVESTING IN STUDENTS

‘Where I Belong’

Anthony Cloyd MD’22 never left Nebraska until he came to Brown—his dream school. An athlete for much of his childhood, Cloyd had an early interest in sports medicine, but midway through his undergraduate years as a biology major at Hastings College, something more compelling drew him to the field.

“What got me passionate about medicine is health disparities,” says Cloyd. “If you look at disease onset or outcomes, it’s usually earlier or more severe in minorities … and that didn’t sit right with me.” A strong urge to be a role model was also a huge motivator. “As a minority student, I did not see very many doctors that looked like me, especially in Nebraska,” he says. “I think it helps having someone that looks like you, treating you.”

Brown was exactly where Cloyd wanted to train because, he says, it aligned perfectly with what he wanted to do in terms of promoting more racially diverse, culturally competent physicians. Cloyd was thrilled to receive an interview at Brown, and admits to being nervous—but it did not take long to adjust to the idea of being a student at the Warren Alpert Medical School. “I just fell in love with the people, the atmosphere,” he says. “This is definitely where I belong.”

The next hurdle for Cloyd was cost. As he spoke with the financial aid office, he maintained that his heart was in Rhode Island and he really wanted to come here, but that it depended on financial aid. “That was the ticket, if we’re being real,” he says. “Without a scholarship, I wouldn’t have come here.”

In October 2018, Cloyd had the opportunity to meet his scholarship donors at a dinner they hosted on campus. Cloyd thoroughly enjoyed the experience. “I just wanted to hear all of their stories,” he says. “A lot came up in common just around the table between all of us. I feel very fortunate to be on the receiving end of their award.”

Cloyd has adjusted to life in Providence well, and says that he is blown away by all the support he has received from the Brown community. “I’m still realizing the significance of how big and supportive the Brown alumni network really is. They’re offering emails and phone numbers and saying, ‘if you need anything, please call,’” says Cloyd. “That’s extremely humbling to be a part of moving forward in my career … and it makes me excited to be one of those alumni someday.”

Supporting Medical Education, with Distinction

Brown is nationally recognized for offering innovative medical education. And it strives to make that experience affordable for all students. Students participate in opportunities like summer research as a way to gain exposure to their future careers, as well as contribute to efforts that better patient care. The Brown community's generous support of the Medical Annual Fund (BMAF) makes this, and a myriad of other experiences, possible.

Partners in Distinction—a leadership giving society of the BMAF—is a meaningful way to participate in the BrownTogether campaign and to ensure our students' continued success. So far in the campaign, 20 alumni, parents, and friends have pledged $75,000 (payable over five years) to the BMAF to help to sustain world-class opportunities for all medical students through increased scholarship, innovative curriculum, and research support.

"Everyone who ever attended medical school at Brown has been a beneficiary of philanthropy, and each of us is now obliged to pave the way for the next generation of Brown medical students. That is why I support Partners in Distinction."

–Peter J. Panton '79 MD'82, PMD'15, PMD'21

We are incredibly grateful for the willingness of our Partners in Distinction members to make the BMAF a priority. We look forward to recognizing their generosity with a permanent display in the Warren Alpert Medical School building, so that future generations will know who paved the way.

INVESTING IN INNOVATION

Leading the Way on Opioid Education

Students at the Warren Alpert Medical School have screened about 5,000 patients for opioid misuse in the past three years through a new program that integrates training across all four years. They also learn motivational interviewing techniques, work through case studies, and participate in interprofessional workshops with nursing, pharmacy, and social work students. This innovative approach to addressing the opioid crisis has won plaudits from national leaders in health care, and now the Office of Medical Education has a 2018 AAMC Curricular Innovation Award to hang on its wall. Just four medical schools earned the honor. They'll share their work with their peers at a national conference in May and in *MedEdPORTAL*, a peer-reviewed, open-access journal.

Connie Grosch

Everything Old Is New

You may have noticed something's different.

Last fall, I was staffing a table at the new faculty welcome event, a smile on my face, ready to dole out business cards and magazines to professors joining our community. I looked into the face of a man approaching the exhibit area and was struck dumb. It was Will Perez '08 MD'13, and he's a newly appointed assistant professor of family medicine.

I gasped, and then pulled him in for a hug. I first met and wrote about Will in 2006, while he was a sophomore in the Program in Liberal Medical Education. We've stayed in touch as he spent a year running a clinic in Haiti, finished med school and then residency on the West Coast. Now he's back in Rhode Island, establishing an LGBTQ health clinic in Johnston and teaching medical students.

After Will left my table, I struggled with the reality that through my work at the Medical School, I had witnessed someone go from undergraduate to fully trained academic physician. And honestly, I'm not that old—I've just stayed in one place long enough to watch, like an observer in a forest, new things grow and things die and people and animals wander in and out of the scene. It's more satisfying than scary that time is marching on.

One of the things I've nurtured and grown is this new magazine. It's the result of months of work, getting feedback from readers, submitting to an intensive editorial critique, and partnering with a new creative team. 2communiqué immersed themselves in the mission and culture of the Warren Alpert Medical School, and worked with us to translate an ephemeral feeling into the magazine you are holding. Lastly, my Editorial Board provided insightful advice and ideas and, as always, tremendous support. I am lucky to have the guidance of smart people who love Brown.

Our goal is to share the stories of people, of research discoveries, of the heart-break and joy of this field that remind you why you went into medicine in the first place. And make you proud that you did it at Brown.

I hope you enjoy your first issue of *Medicine@Brown*. Tell us what you think: med@brown.edu.

—KRIS CAMBRA, Editor

During residency, I watched a cardiologist @BrownMedicine who would always flip the pillow to the cool side after having a patient sit up to listen to their lungs. I do it now myself after watching him all those years ago. Small moments of compassion make all the difference.

@NTCONNELL
Nathan Connell RES'09, MD

WHAT SAY YOU? Please send letters, which may be edited for length and clarity, to: Medicine@Brown, Box G-P, Providence, RI 02912; med@brown.edu, or via social networks, which can be found at medicine.at.brown.edu.

TODAY'S STUDENTS/ TOMORROW'S PHYSICIANS

"I have had the huge dream of becoming a doctor since I was 7 years old. I am a proud first-generation student, a daughter of Dominican immigrant parents. I would not be here if it were not for my village — the ones who bound together to support and encourage me. As a recipient of a BMAF scholarship, I am honored to be supported by alumni who have joined my village. Because of your generosity, I am able to focus on my medical education so that I can one day make a difference and pay it forward."

Gisel Bello MD'21

Your support to the Brown Medical Annual Fund (BMAF) makes dreams come true for students like Gisel.

Make your gift today at gifts.brown.edu.
Questions? Email bmaf@brown.edu

BROWN
Alpert Medical School

INSPIR/NG THE PHYSICIANS OF TOMORROW

BROWN TOGETHER

BROWN
Alpert Medical School

Brown University
Box G-P
Providence, RI 02912

PRACTICE HUMILITY

"It first and foremost is not about you," Denise Marte MD'19 said of the white coat each new med student donned at the Ceremony of Commitment to Medicine in October. "This coat is about … the villages of people that have helped you along the way," as well as "the people you will treat, the people whose lives you will touch."

Turn to p42 for more photos.

PHOTOGRAPHY: MADELINE JOHNS