BROWN MEDICINE

Volume 21 | Number 1 | Winter 2015

PLUS:

PRESCRIPTION MEDITATION

A researcher takes on the risks and benefits of practicing mindfulness.

LETTER FROM THE DEAN

Milestones

The past year has been all about marking milestones as part of Brown's 250th anniversary. There have been parties and fireworks, and the revelry continues this spring as we mark some significant events in the Division of Biology and Medicine.

This issue of *Brown Medicine* recounts the history of the Medical School's Early Identification Program partnership with Tougaloo College, a historically black college in Mississippi. While American medicine and our own medical school have become more diverse in the last 40 years, we still have a way to go before our medical community reflects the diversity of our country. I support the EIP and the work of our Office of Diversity and Multicultural Affairs in their efforts to increase diversity in our student body and in our faculty ranks.

I hope that many alumni will join us March 7 for the Day of Biology. This is our own 250+ celebration for the Division of Biology and Medicine. We'll welcome back to campus notable alumni who will offer lectures on their work, and we'll showcase some of the exciting research being done at Brown. I'm told this is an unprecedented event for the life sciences, so I hope you won't miss it.

Lastly, in this issue we pay tribute to the Medical School's second dean, David S. Greer, MD. Dr. Greer passed away last fall, just seven weeks after his wife, Marion, passed. I was privileged to get to know Dr. Greer. He was an amazing man who saw health problems and had a vision for how to fix them. He was way ahead of his time. He and Marion will be sorely missed.

Sincerely,

Jack A Elias MD

Jack A. Elias, MD
Dean of Medicine and Biological Sciences

SCOTT KINGSLEY

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4

20

"Some people still don't trust white physicians." ***—Wendy White, PhD, MPH*** *Page 38*

INSIDE

Cover: Karen Philippi, Coast series 2013

ERIK GOULD; DAVID DELPOIO; JESSICA DEANE ROSNER

LETTER FROM THE EDITOR

Everybody's Doing It

Oprah's doing it; so is Paul McCartney. *Parade* magazine—read by 54.1 million people in America—hailed it as the "No. 1 Health-Booster in 2015." What is it? Mindfulness meditation.

I'm immediately skeptical of anything that promises every person a host of benefits—weight loss, stress reduction, better parenting skills, better relationships. The last straw was when my own physician, in the course of my annual physical in January, recommended mindfulness as a coping mechanism. "I've heard of it," I said, while commanding my eyes not to roll.

It's not that I don't believe it works. As our cover story points out, there are legitimate, scientific studies, even ones done here at Brown, that show meditation can improve a number of physical and mental ailments. What bothers me is the way it is offered as a panacea by people who are sometimes either very new to the practice or not at all engaged but just "heard it works."

More disconcerting is that mindfulness can have adverse effects, just like anything else that can literally change your mind. I wasn't aware of that fact until I read about Willoughby Britton's work. But many drugs and therapies have side effects; that doesn't mean we don't use them. Britton's research approaches mindfulness meditation just as any other intervention, working to create an evidence base for when and how it is used, and guidelines for determining for which patients it should not be recommended. Those parameters are needed as meditation becomes more mainstream.

As for my doctor's recommendation that I take up a meditation practice, I haven't decided yet. I'm thinking on it.

BROWN MEDICINE

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INBOX

Kudos

Sarah Baldwin-Beneich's story "Body of Evidence," from the Winter 2014 issue of *Brown Medicine*, won the Gold for Best Article of the Year in the Council for the Advancement and Support of Education District 1 Awards and will move forward to the national competition. *Brown Medicine* also won Gold for Best Writing for magazines under 25,000 circulation in District 1.

THANKS FOR NOTICING

This weekend I picked up the current issue of *Brown Medicine* while at a friend's house and have now read just about everything in it. I am neither an alumna nor working in the medical field, but I found article after article intriguing, informative, well written, well edited, and worthwhile—in contrast with many of the alumnae publications I receive myself. So I just wanted to acknowledge an excellent product and extend my thanks for it.

Vicki Veh
Providence

UPCOMING EVENTS

- **Day of Biology** | March 7, 2015
  brown.edu/go/dayofbiology
- **Commencement-Reunion Weekend** | May 22-24, 2015
  brown.edu/go/md-reunion

JUST SAYIN'

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

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CURIOUS KITTY
This friendly feline decided to hang around our photo shoot on the Tougaloo College campus, in Jackson, MS. We indulged its quest for fame.

TOM ROSTER

The BEAT

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

WATCH THIS
Mark Drew, an industrial designer, left, leads a prototype workshop at which students designed models and practiced investor pitches.

DAVID DELPOIO

STUDENTS

Healthier by Design

Brown and RISD students take a fresh look at health care problems.

User friendly, affordable, efficient: they're adjectives few people associate with health care—physicians included.

From electronic medical records to isolation gowns to procedure tables, providers want more functionality and improved outcomes. In most cases, that means better design. Yet designers, who possess the imagination and the prototyping skills, have little access to or knowledge of the world of medicine.

Ravi Sarpatwari MD'16, who studied architecture before coming to Alpert Medical School, wanted to bridge this divide. With guidance from his scholarly concentration adviser, Jay Baruch, MD, associate professor of emergency medicine, Sarpatwari teamed up with three Rhode Island School of Design students in 2013 to create an elective for students of both schools where their combined talents could, potentially, change the world of health care.

"A lot of companies are thinking about how design can support health care," Sarpatwari says. "But educationally there aren't a lot of opportunities to teach that."

The preclinical elective, Design+Health, proved popular with students, faculty, and even some local industry and com-

munity leaders, who presented problems at workshops and mentored students as they brainstormed solutions, built prototypes, and presented their concepts to a panel of critics in the final class.

Pranav Reddy MD'17, whose group that year envisioned a more transparent, easy-to-use EMR, says it was "by far" his favorite elective. "After taking it, I was able to see familiar objects in the health care setting in unfamiliar ways," he says. Inspired, Reddy took a lead role in the course last fall, working with Sarpatwari; Baruch, the faculty adviser; and other medical and RISD students and faculty to build on the pilot's success. They got a grant from Brown's Creative Arts Council, as well as the participation of more departments and nonprofits.

"All the projects question why things are the way they are," Reddy says. The University Emergency Medicine Foundation, for example, hosted a workshop in October to demonstrate how the standing metal procedure table used in the Rhode Island Hospital emergency department can frustrate routine work, such as suturing, because it's not adjustable nor, for that matter, readily available, with only three tables in the 60-bed department. In such a hectic environment, any surface could become a table—including the patient's body.

"If the doctor is balancing things on the patient, it doesn't instill confidence," Baruch says.

Leo Kobayashi '94 MD'98, associate professor of emergency medicine, and Tony Zhang, MD RES'17 had begun designing a prototype table that could clamp to the side of a gurney, but wanted to make it adjustable and easier to use. Their workshop inspired RISD student Aimee Kim to choose the project. "I was able to see how it could be so much better, from an outsider's and a designer's perspective," she says.

Ana Bermudez '12 MD'18 found broader lessons as she worked with her RISD teammates on the procedure table. "In design, every failure is important because it tells you how to do better," she says. "Medicine only improves and grows from looking at non-successful instances."

One aspect of the course frustrated nearly everyone involved: lack of time. At the final class, none of the four groups had a fully functioning prototype to present, and their lists of "next steps" were extensive, including more research, product trials, and gathering user feedback. Bermudez and Kim's group showed only photos of their model; another group, which designed a simpler isolation gown, displayed tiny, doll-size gowns and played a video to demonstrate donning and doffing technique.

The critics, including a RISD industrial design professor and local health industry representatives, questioned each group closely about cost, materials, and existing alternatives to help them hone their products, and presentations, in anticipation of a real-world launch. Reddy and Sarpatwari say they hope to find funding so at least one group can try to bring their project to fruition.

One critic, Sandra Potter, PhD, a start-up adviser at MedMates, a local health care technology networking group, told the students the semester-long course represents only the first step of the design process. "We need a phase two of this class, to take this thing further," she says. ***—Phoebe Hall***

> **"Every failure is important** because it tells you how to **do better."**

PRANAV REDDY (2)

THE DRAWING BOARD: Left, students discuss ideas for medical devices at a workshop. Above, Jessica Smith, MD, associate professor of emergency medicine (clinical), demonstrates ED procedures in the Lifespan Medical Simulation Center.

The BEAT

DOCTOR TO DOCTOR

Standard of Care

Compassion is the baseline treatment for the transgender community.

The Association of American Medical Colleges recently released its first guidelines for improving health care for people who are LGBT, gender nonconforming, or born with differences of sex development, recognizing the special health care needs of these populations. The report identifies 30 competencies that physicians must master. Michelle M. Forcier, MD, MPH, associate professor of pediatrics and assistant dean for admissions at Alpert Medical School, runs the Child and Young Adult Gender and Sexual Health Services Clinic at Hasbro Children's Hospital and says that ideally, specialty practices like hers will be unneeded—all primary care doctors will be prepared and comfortable with discussing the most sensitive aspects of their patients' lives. *Brown Medicine* spoke with Forcier about her work.

What drew you to focus on gender identity and sexual health?

I am a pediatrician with a background in epidemiology, public health, and advocacy. "Taboo" issues such as child abuse, teen sexuality, contraception and abortion, gender identity, and sexual health interest me since these are things people don't like to talk about and affect the most disadvantaged in our community. We listen to their stories and let them know someone from the health care community is interested.

Who are your patients and what are their common issues?

My patients are your colleagues, your neighbors, your uncle or niece. They range in age from 5 to 73. They come from all walks of life, all colors, all ethnicities and economic backgrounds. Their common issue is that our culture is so incredibly uncomfortable with "other" folks who do not look or seem like "us."

What exactly does transgender mean?

Gender is who we are. Sex is who we love. They are different but related. Gender is our maleness or femaleness, in our biology, in our expression, and most of all in our hearts and minds. For some, brain and body are on the same page; for others, their brain gender identity may not be the same as the hormones and parts they were assigned at birth. Gender is a web or fabric that we continuously construct over time with input from threads of nature, nurture, and culture.

At what age does gender identity begin and when is it an established part of a person's identity?

Everybody creates a self and a life. It is a journey and a process. For some, it is as early as age 3 or 4, when many cisgender [when a person's sense of his or her own gender matches the sex assigned at birth] kids realize that they are a boy or girl and that this is a stable part of their identity. For some, they realize that their body gender does not fit their brain gender around the time of puberty, and all the hormones and shaping of an adult body that goes with puberty. For others, they begin their gender journey in adulthood, sometimes after career, marriage, and raising a family. It is very individual and our job as medical providers is to listen to what our patients tell us.

What do you recommend to all primary care doctors regarding talking to their patients about gender identity and sexuality?

Medical providers can ask each parent and patient about their gender identity. It is as simple as asking parents, "What does your child enjoy doing? Who are their friends? Who do they model after in play?" For children, I just ask, "Do you feel more like a girl, boy, somewhere in between, or neither?" We can get incredible answers if we just wait and listen. No assumptions, just ask open-ended questions—ask, stop, and listen. Let your patient tell their story. Base your care on the patient's paradigm.

"We don't believe in pressuring the children. When the time is right, they'll choose the appropriate gender."

Why is this work so important to you?

My patients are often bullied, hit, kicked, punched, called names, ostracized, and isolated. My patients have had death threats, threats to beat or rape them. My patients have been denied jobs, housing, and even compassionate medical care. I wanted to give people a voice who do not have a voice now. I wanted to listen to their stories and give them power by being heard and having their needs recognized and met.

Will the next generation of doctors be better at discussing gender and sexuality with their patients?

It is a very exciting time to be a part of learning and working with the next generations of medical providers. All the new young docs are completely excited about learning about this. This is a new and different generation who wants to hear these stories of identity. If we do our job well, the upcoming generations of pediatricians and primary care providers will be much more savvy and comfortable regarding gender and sexual diversity. If we work hard to create understanding and acceptance of gender and sexual diversity in the medical and public health arenas, then this will not be a unique specialty practice, but well integrated into everyone's primary and general health care. It would be great to have many trans sensitive and caring docs—it would be great for my gender practice to become obsolete.

> "It would be great for my **gender practice to become obsolete.**"

—Teresa L. Schraeder, MD, Director, Physician as Communicator Scholarly Concentration

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FINDINGS

The Coming Plague?

Disease outbreaks are on the rise, but so are prevention and treatment.

Enterovirus. Tuberculosis. Cholera. Measles. Flu. Hepatitis. The number of infectious disease outbreaks and the number of unique illnesses causing them appear to be increasing around the globe, according to a Brown University analysis of more than 12,000 outbreaks affecting 44 million people worldwide over the last 33 years.

"We live in a world where human populations are increasingly interconnected with one another and with animals—both wildlife and livestock—that host novel pathogens," says Katherine Smith, PhD, a colead author of the study, which was published in the *Journal of the Royal Society Interface* in October 2014. "These connections create opportunities for pathogens to switch hosts, cross borders, and evolve new strains that are stronger than what we have seen in the past."

> Even though there are more outbreaks, **fewer people are getting sick.**

Sure enough, animals are the major source of what ails us, with zoonoses (infectious diseases that come from animals) causing 56 percent of outbreaks since 1980. Using outbreak data stored in the Global Infectious Disease and Epidemiology Online Network, the researchers were able to track trends by country and worldwide. For example, from 2000 to 2010, the most common zoonoses included salmonella, E. coli, influenza A, hepatitis A, and anthrax; among human-specific infections during that decade, gastroenteritis, cholera, measles, enterovirus, and bacterial meningitis were the most widespread.

On a more encouraging note, even though the globe is facing more outbreaks from more pathogens, they tend to affect a shrinking proportion of the world population. "Our data suggest that, despite an increase in overall outbreaks, global improvements in prevention, early detection, control, and treatment are becoming more effective at reducing the number of people infected," the authors wrote.

The analysis continues. Smith, an assistant professor of ecology and evolutionary biology, is particularly interested in how global infectious disease patterns will shift with climate and land use change (see *Brown Medicine*, Spring 2014). "A warmer world, a world with altered landscapes, and a more urban world will undoubtedly have a new disease-scape to consider," she says.

—David Orenstein

ANATOMY OF A RESIDENT COUPLE

Dynamic Duo

Faster than a cruising toddler! More powerful than a month of night shifts! Able to juggle the schedules of two residents! It's the Kole family! A successful couples match brought Martha Kole, MD RES'17 and Jon Kole, MD RES'18 to Providence in May 2013, she for ob/gyn, he for the triple board program (pediatrics, psychiatry, and child and adolescent psychiatry); little James arrived six months later, making life, Martha admits with characteristic understatement, "a little more challenging."

As spinach is to Popeye, so caffeine and meticulous planning are to the couple, who juggle child care among themselves, a nanny, and family members to accommodate long hospital shifts, including the occasional overlapping night rotations. "We have a pretty intense calendar," Martha says. "Having a kid really helps you prioritize your life outside of the hospital." They met during their first year at the Perelman School of Medicine at the University of Pennsylvania, and married during their third; a few months later, they climbed Mt. Kilimanjaro on their honeymoon and then commenced the Match process. Now the zoo and walks in the woods trump safaris and marathons, and that's OK by them. "We dressed as superheroes because we used to do all this wild stuff, and now we work and hang out with this guy and watch football," Jon says. Sounds like their adventure has just begun. ***—P.H.***

ADAM MASTOON

LITTLE CHEESEHEAD

Like many Wisconsinites, Jon's dad owns a share of the Packers, which will eventually be passed down to his grandson and namesake.

NONCONFORMERS

For their second wedding anniversary—when couples traditionally exchange cotton gifts—Jon got Martha this camera. "He doesn't follow the rules," she says.

HONEYMOON IN TANZANIA

Martha snapped this photo as she and Jon were hiking down Mt. Kilimanjaro, a seven-day trek that they followed with a four-day safari.

THE BEST MEDICINE

At Hasbro Children's Hospital, Jon dons bright colors, hands out stickers, plays games, and sings. "I embrace the clown role of the pediatrician," he says.

HE KNEW HIM WHEN

Jon worked for his state senator, Barack Obama, the summer after his freshman year ... and all he got was this autographed photo.

IF THE SHOE FITS

"We rode different saddles before we met each other," Jon says. Now Martha, a polo player and cross country runner, has taken up road biking, too.

MANY HATS

Martha's sister made her several scrub caps when she started residency. A native of Pennsylvania horse country, she says the cow pattern highlights her farm roots.

SUPER BOWL

Martha won their family fantasy football league last year—and, most importantly, she beat Jon in the finals. "I keep it in our living room on prominent display," she says.

COWABUNGA
Andrew Nathanson surfs off Nobadeer Beach on Nantucket.

CHERYL NATHANSON

The BEAT

OUTSIDE

Hang Safely

A surfing doc helps prevent injuries in his favorite sport.

Gory tales of shark attacks may captivate the public, but surfers needn't be too concerned. According to Andrew Nathanson, MD, clinical professor of emergency medicine and attending physician at The Miriam and Rhode Island hospitals, surfers should worry less about sharks and more about their own boards. "A third of all injuries come from being cut by the fins on your surfboard—they're the most dangerous teeth in the water," he says.

Nathanson, a surfer himself, began studying surfing injuries during his EM residency at Los Angeles County, University of Southern California Medical Center. In June 2014, he presented his research on the frequency of injury types in surfing at the International Extreme Sports Medicine Congress, in Boulder, CO. Nathanson and others collected data at amateur and professional surfing competitions over six years, tallying injuries that caused surfers to miss work or school, or a day of competition. Lacerations, sprains, and fractures were all common. Just three of the 1,237 acute injuries documented were due to sharks, and only 3 percent of all injuries were due to marine animals.

But more than 60 percent of all injuries were caused by surfboards, and of those, 82 percent were caused by the rider's own board. A typical surfboard is made of wood or fiberglass, with a sharp nose and sharp fins on its underside. A tether, or leash, secured with a Velcro ankle strap, prevents the rider from losing the board in a wipeout, when it could strike other surfers or strand them in choppy water. But the leash can pull taut and occasionally recoil, causing many of the lacerations common to surfing. In Nathanson's data, cuts accounted for 42 percent of all acute injuries. Surfers can reduce that risk by smoothing the edges of the fins, replacing them with rubberized fins, and purchasing boards with rounded noses, all modifications that Nathanson has made. "Many of these injuries are totally preventable," he says.

Hitting the bottom is the second most common cause of injury, account-

OVER HEARD

"TV is an insane medium. I'm trying to quell hysteria and then the guy on after me is wearing a hazmat suit."

—**MARC SIEGEL, MD '78**, *a medical correspondent for* Fox News *and clinical professor of medicine at NYU Langone Medical Center, during his lecture, "Medical reporting and Ebola: accuracy versus hype and hysteria," at Alpert Medical School in November.*

ing for 17 percent of injuries in the study. "In places like Hawaii, there's a lot of sharp coral, so if you hit the bottom you're likely to get sliced up," he says. Sandy bottoms are generally safer, but surfers who land headfirst could still break their necks, he adds.

Nathanson is editor of the journal *Surfing Medicine* and surfs in Rhode Island year-round. "The surfing risks in Rhode Island are similar to other places," he says. "People who surf in the wintertime here risk hypothermia, something you're almost never in danger of in Hawaii. But on the other hand, in Rhode Island you don't have those bone-crushing waves like on Hawaii's North Shore."

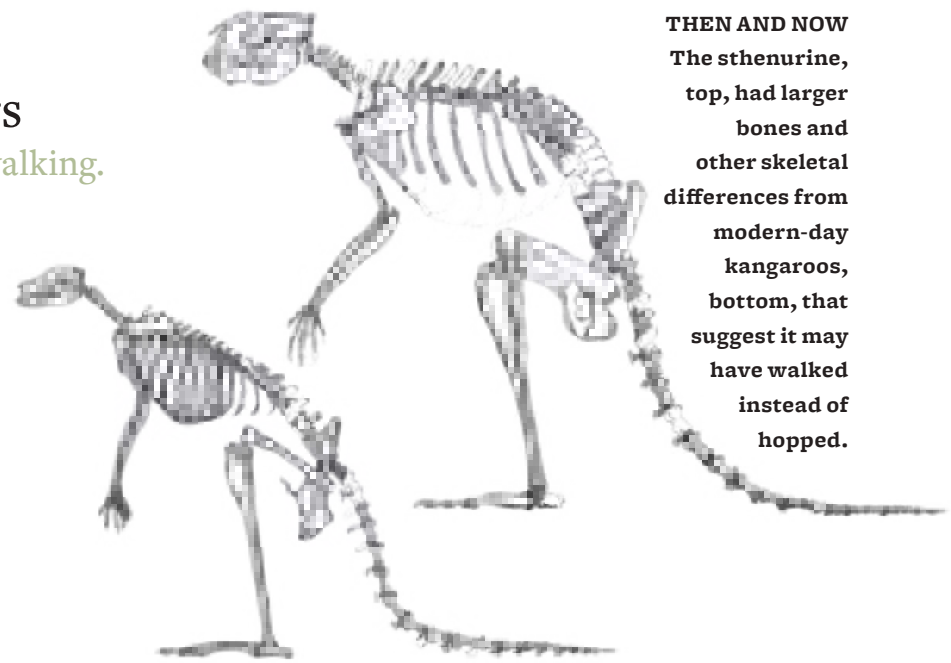
Despite his awareness of the risks, Nathanson's suffered a few injuries: he's stepped on a sea urchin, and twice his board hit him above the eyebrow during hurricane swells. "I just glued the wound together with Dermabond, a medical superglue," the EM doctor says. He wants to help his fellow surfers be more self-sufficient, too: he co-authored a book, *Surf Survival* (Skyhorse Publishing, 2011), which translates his research into a how-to guide. "Surfers tend to travel to exotic and remote places because they want to be where other surfers aren't," he says. When it comes to medical care, "surfing is one of those sports where you're often on your own," he adds.

Nathanson hopes his findings don't scare people away from his favorite sport. "Surfing is actually safer than soccer," he says. But everyone should take common-sense precautions, he adds. "Don't go out if the conditions are beyond your skill level. And take a first aid kit." ***—Josephine Benson '17***

EXTINCTION

Hop-less Wanderers

These roos were made for walking.



THEN AND NOW The sthenurine, top, had larger bones and other skeletal differences from modern-day kangaroos, bottom, that suggest it may have walked instead of hopped.

LORRAINE MEEKER/AMERICAN MUSEUM OF NATURAL HISTORY

Long before humans set foot on Australia, another bipedal mammal may have been ambling around the outback. According to a study of 100,000-year-old bones, a now-extinct family of kangaroos likely walked on two feet.

The sthenurine roos didn't look a whole lot like the marsupials we know today. They had round, rabbit-like faces, and they were huge—up to 550 pounds; the modern red kangaroo tops out at 200 pounds. But it's their skeletal structure that really set the ancient animals apart.

Using measurements of thousands of bones from dozens of kangaroo and wallaby species, Christine Janis, PhD, professor of ecology and evolutionary biology, and her research team hypothesize in a paper in the journal *PLOS ONE* that the anatomy of the Pleistocene-era sthenurines was better suited to walking, with an ankle structure that favored putting down one foot at a time, a relatively inflexible spine, and bigger hip and knee joints.

Their large size and big bones, furthermore, would have hindered hopping. "I don't think they could have gotten that large unless they were walking," Janis says.

> "I don't think they could have **gotten that large** unless **they were walking.**"

For reasons yet unknown—perhaps because they were too slow to elude human hunters when they arrived on the scene, or unable to migrate long distances in search of resources as Australia's climate became more arid—the lumbering sthenurines died out around 30,000 years ago. Until scientists find more evidence, such as a preserved set of tracks, they won't know for certain whether sthenurines walked or hopped into the evolutionary sunset. ***—D.O.***

JARGON

Ferguson Decoded

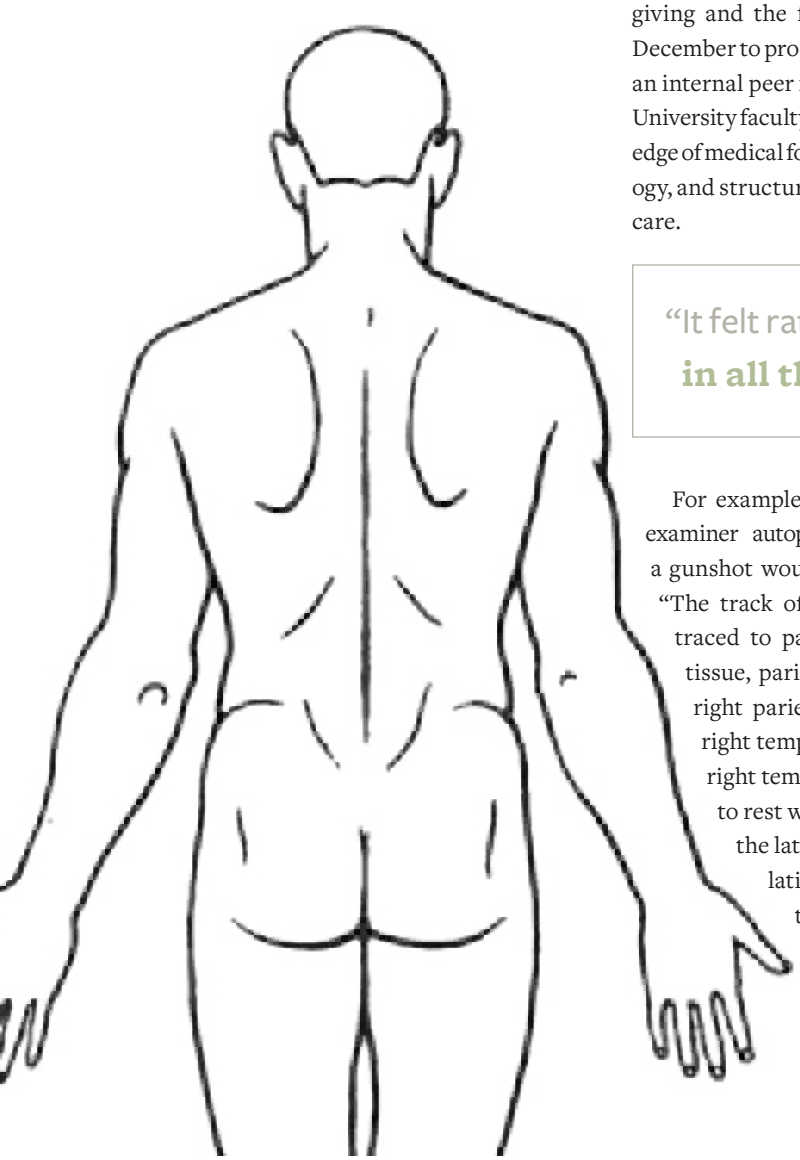
Medical students translate the medicalese in the Michael Brown case documents.

To advance public understanding, fergusondecoded.org, produced by nine Alpert Medical School students, translates into everyday language the medical jargon in more than 60 pages of evidence considered by the grand jury that declined to indict former Ferguson, MO, police officer Darren Wilson in the August 2014 shooting death of Michael Brown.

Rian Yalamanchili MD'17, a leader of the Ferguson Decoded Project, says the team became inspired to demystify the terminology in Brown's autopsy and Wilson's medical examination after seeing the raw evidence laid out in an NPR blog post.

"We felt like this was a place where we could use what we've learned so far to assist society in this very important debate across the nation," Yalamanchili says. "A lot of the terminology used in the documents is very complex. It felt rather unjust that even though this was made publicly accessible, it was still clouded in all this jargon and terminology."

The team worked through Thanksgiving and the first two weekends of December to produce the site, including an internal peer review and advising by University faculty members with knowledge of medical forensics, human pathology, and structural disparities in health care.



For example, the original medical examiner autopsy report (describing a gunshot wound to the head) read: "The track of this bullet has been traced to pass via the scalp, soft tissue, parietal bone of the skull, right parietal lobe of the brain, right temporal lobe of the brain, right temporal bone of the skull to rest within the soft tissue of the lateral right face." Translation: "The bullet passed through the scalp, the upper back side of the skull (parietal bone), the right side of the brain (from the parietal lobe to the temporal lobe), the right side of the skull (right temporal bone), and stopped in the right side of the face."

In addition to Yalamanchili, the students behind fergusondecoded.org are Gina Chen '11 MD'15, Hyunwoo June Choo '13 MD'17, Damilola Idowu '14 MD'18, Kira Neel '05 MD'18, Laura Ucik '13 MD'17, Rebecca Slotkin MD'16, Tiffany Chambers MD'17, and John R. Williams MD'15. Their faculty advisers include Lundy Braun, PhD, professor of medical sciences and Africana studies, and Elizabeth Laposata, MD, clinical associate professor of pathology and laboratory medicine and a forensic pathology expert.

Yalamanchili says the team strived to provide neutral translations without any analysis or commentary. He does acknowledge that like many people, he and many classmates have been "baffled" about the lack of indictments in the Ferguson case and that of Eric Garner, who choked to death when New York City police took him into custody in July.

> "It felt rather unjust that it was **still clouded in all this jargon and terminology.**"

But Yalamanchili says he hopes that whatever opinion people may hold, the straightforward medical translations he and his fellow students provide will make the Ferguson evidence easier to interpret.

There is more to any case than just the medical reports, Laposata says.

"Certain scenarios can be supported or refuted by the scientific evidence," she says. "It is important to remember, however, that regardless of how detailed and exhaustive the investigation, the evidence may remain silent and not be able to provide an answer for every question." ***—D.O.***

STREETWISE

P Is for Prison

Scott A. Allen MD'91, professor of medicine at the University of California, Riverside, left, and Josiah Rich, MD, MPH, professor of medicine at Alpert Medical School, with Alex, a Sesame Street character whose father is in jail. Rich and Allen wrote in the *Annals of Internal Medicine* in October 2014 that "if incarceration has become such a common life experience that it has a home on Sesame Street," then physicians and policymakers can no longer ignore its impact on economic and health inequality.

Ask THE EXPERT

Shot in the Dark

Flu vaccines are a hit-or-miss science.

If the flu shot is less effective this year, why should someone get vaccinated?

As the influenza season ramped up this winter, the CDC reported that the vaccine was significantly less effective due to a mutated strain. **Penelope Dennehy,** *MD, professor of pediatrics, whose research includes flu vaccine effectiveness, explains why we should still get the shot.*

Even in a year where the vaccine matches all the circulating flu viruses, its effectiveness isn't 100 percent—it's more like 60 percent on average. Influenza viruses are RNA viruses, which can make small errors in their genome when replicating, producing a drifted strain that is not recognized by the host and can escape vaccine-induced immunity.

The available vaccines this year protect against two influenza A viruses, H3N2 and H1N1, and two influenza B viruses. During a flu season we may start off with one particular A strain, and later we may see a B strain or a different A strain. Vaccine manufacturers determine which strains to put in the vaccine months ahead of time, by looking at what happened in the Southern Hemisphere flu season, what's happening in China, and what happened here last year. This year they did a pretty good job: three out of the four strains are right on. But unfortunately the H3N2 strain, which tends to be more severe than H1N1, drifted. Even though the vaccine is less effective, you may have milder illness, as well as protection against the pandemic H1N1 strain, which is unchanged, and the B strains.

It's never too late to get the vaccine as long as we're still seeing influenza. For several years we've been seeing it early in Rhode Island, and the flu season can drag on with a B strain appearing in March and into April. So if you're not vaccinated, it's not like the horse is out of the barn and galloping down the road. It's just partially out of the barn—so you may still benefit from the flu vaccine this year.

OPINION

BY JASON BOWMAN MD'16

hos•pice (hŏs'pĭs)

Comfort, Always

Hospice care improves patients' quality of life, if they can get it.

"I used to ride horses for the pope."

While I have heard lots of interesting things from patients, this was a first. Antonio, a slightly built, older gentleman with a twinkle in his eye, had worked in the Vatican many years before, caring for the papal horses and riding them in official processions and celebrations. In broken English, he regaled me with stories of his adventures back in Italy. If you had walked by his sun-filled, cheerful room as we talked, it is unlikely you would have realized that he was dying.

Antonio was a hospice patient, one of the many whom I encountered during an immersive experience that included shadowing local hospice physicians and conducting research in the field. Hospice is a holistic approach to medical care that is patient focused and family centered. A subset of palliative medicine, it serves patients with terminal illnesses and places emphasis on maintaining their dignity and quality of life—even in the midst of advanced and complex diseases. Some of the patients I met received care at home, others in the comfortable local hospice center. None were in the high-tech, chaotic hospital environment in which many of us expect to find dying patients. Yet hospice patients like Antonio had their symptoms carefully managed, while enjoying the relationships and things important to them.

Too many Americans are referred to hospice only in the final days of their lives, if ever, despite growing evidence that hospice improves quality of care for both patients and their families. According to Brown School of Public Health research, more than half of terminal patients in the US do not receive hospice care, and nearly a third of those who do received such care for only three days.

Trends in the use of hospice by minorities are even more concerning. Professor of Health Services, Policy and Practice and Medicine Joan Teno, MD, MS, and I have found that a smaller percentage of Hispanics on Medicare used hospice than Caucasians on Medicare over the past decade. Nearly 70 percent of Hispanics on Medicare die without hospice services—even though such care is in line with many such patients' cultural and personal values. Elderly Hispanic patients not on Medicare are likely to fare even worse in their end-of-life care. Yet Hispanics are the fastest-growing ethnic group in the US, expected to constitute 20 percent of citizens over the age of 65 by 2050.

When the provider and patient speak different languages, more challenges arise. The term "hospice" is itself an obstacle: it translates to "hospicio" in Spanish, which means "orphanage" or "poorhouse"—both places a patient would understandably want to avoid. More than 60 percent of elderly Hispanics in the US do not speak English well, furthering the chance for miscommunication. Differences in culture can lead to misperception. Older Hispanic patients, particularly those with strong traditional cultural influences, are likely to defer to a physician's plan of care without question. Finally, negative history with American health care, whether personal or cultural, may be a barrier to a patient's use of hospice—particularly if they mistakenly believe that hospice providers are hastening death.

Ensuring that all patients have access to quality hospice and palliative care will be one of the many challenges for future physicians like me. My research focuses on improving use of hospice by Hispanics, but there's much more fodder for study: patients' end-of-life preferences, cultural and geographic influences, barriers to care. Furthermore, medical practitioners need to receive and share accurate information about palliative and hospice care, and more frequently refer patients who would benefit from such services. Doing so can improve patients' quality of life; avoid interventions that are unwanted, futile, or physically and fiscally costly; and, sometimes, even extend patients' lives.

The work of hospice and palliative care reminds me of a quote by Ambroise Paré, a 16th-century French surgeon: "The task of medicine is to cure sometimes, to relieve often, and to comfort always." For the dying patient, listening to stories in a sunlit room may be the best comfort we can provide.

Jason Bowman, *whose study, with Teno, on use of hospice care among white and Hispanic Medicare patients was published last year in the* Journal of Pain and Symptom Management, *is interested in working in the fields of hospice and palliative care.*

RESIDENT EXPERT

BY ALEXIS DRUTCHAS, MD RES'15

BLAIR THORNLEY

To Tell the Truth

A patient's honesty has to be earned.

It was nearing the end of our visit, the rhythm of which had gone through its normal tones: concerns, goals, how her family was doing, and so on. Nothing out of the ordinary, yet the unexpected always seems to arrive when you least anticipate it. I sent my patient's prescription to the pharmacy and asked if she had any other questions. Small tears formed in her eyes. "Did I say something to upset you?" I said, worried I had made a critical error. "Not at all," she replied as she wiped the tears away with the back of her hand. "It's just that there is something that I have kept from my doctors all these years."

I looked at her now-reddened face. "Whatever it is, it is OK," I said. "I promise you are safe to share it here."

The notion of honesty in history taking is essential, yet we don't always consider the inherent vulnerability in this. When our patients seek our service, we ask abundant questions, many of them extremely personal. As a provider, I hope or even expect that the answers are truthful in order to make the right assessment and provide the best plan for their care. Regardless of advances in diagnostic testing, we often hear wise attendings say "history, history, history," and they are right. Yet we rarely discuss what we are truly asking of our patients.

In daily practice we bear witness to patients' more apparent "barriers to care": access, insurance, socioeconomics, health disparities based on race, gender, sexual orientation, etc. Many of these are inherent, and hurdles such as financial limitations are often beyond our patients' immediate ability to change. However, just as important to consider are internal barriers within us all—and I say "us" because we are all patients at some point—that keep us from telling our true narrative. Maybe this is for fear that a concern will come true, maybe it is from shame or embarrassment, maybe we hesitate due to past judgments from health care providers ... the list could go on. These experiences, like cobwebs hanging over an attic window, make it hard to see the correct view in both directions. To truly empower patients, there has to be space for an honest narrative, and we have to be able to hold this information gently and purposefully.

That morning in my clinic, I did not have the slightest clue as to what was causing my patient's distress. "When we were talking about my medication list earlier, there was something missing that I have never told my doctors. ... I was worried it would change how they treated me and I have been embarrassed," she said. "But I think now that it is important for you to know. I have been on treatment for addiction for years. I never told doctors because I worry they will not think I am a fit mother, and they will think of me differently as a person." The tears streamed down her face.

I gave the moment a few seconds of silence. "Thank you for telling me," I said. "I can understand your fears, but if anything, I think you are a strong woman for recognizing what you need, for making a change, and for staying clean not only for yourself but for your family. If anything, I think that you are a stronger mother and woman because of this."

"You think so?" she said. "I meant every word," I said.

To help our patients, we need and hope for honesty, and yet often, for various reasons, that honesty is not always there. Sometimes the real story comes out later; sometimes it is years later or never at all. It might be that the information held was inconsequential after all. But sometimes the information withheld would change an entire management plan, sometimes it would change everything, or sometimes in sharing, our own reactions might change the way our patients are able to perceive themselves. And that, in and of itself, can be just as powerful.

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

ZOOM

BY SUMMER E. ALLEN PHD'12

Under the Skin

Abrar Qureshi digs deep to solve dermatology's mysteries.

From animal tracks on fresh snow to birds in flight to sand whipped by the wind, Abrar Qureshi, MD, MPH, sees patterns where others don't. "Did you know that you can tell more about an animal by looking at its tracks than if you saw it walk across a field? You could tell its weight. You could tell its age. Its gender. Whether it's hungry or not. Whether it's nervous or not. If it's foraging or hunting or relaxing. Can you imagine that? Just looking at tracks," says Qureshi, a look of amazement in his eyes.

Qureshi, chair of the Department of Dermatology at Alpert Medical School, gets the same excited look when describing his clinical work. "Walking into a patient's room, looking at the pattern of their skin gives you a huge amount of information about who they are, what their personality is, what kind of work they do, whether they are indoors or outdoors a lot. You're kind of like a detective," he says. "Being in clinic is just so exciting that sometimes I lose track of time, so I'm always running behind. It's a lot of fun."

LIKE FATHER, LIKE SON

Qureshi, who came to Brown in March 2014, didn't always feel this passion for dermatology. His father was one of the leading dermatologists in Pakistan, where Qureshi earned his medical degree, and at first he wasn't keen on following in his father's footsteps. "I wanted to be a surgeon," he says. "I wanted to do things fast and cure people." But he soon came to realize that skin offered some real advantages to a person with his deep interest in diagnosing and studying diseases.

The ease of collecting skin samples, which can be used not only for diagnosis but also for basic research, was a big draw, and to this day Qureshi continues to take advantage of skin's accessibility. Besides his busy clinical practice and chair duties, he's undertaking a study of melanoma biopsies to try to identify

BILL MURPHY/LIFESPAN

CAPTIVE AUDIENCE
Due to its small size and racial diversity, Rhode Island is an ideal lab for population studies, Abrar Qureshi says.

ZOOM

gene expression patterns that correlate with cancer progression.

He also has found that he is particularly fond of the clinical acumen required for making diagnoses in dermatology, and he likes that patients are so involved in their care. "With psoriasis, patients are very aware of their skin. It affects quality of life, so patients are very engaged," Qureshi says. "Most times patients ... are very adherent to therapy. It is a pleasure to see positive results."

BITTEN BY THE RESEARCH BUG

After medical school, Qureshi headed to Boston, where he completed an internship in internal medicine at the Beth Israel Deaconess Medical Center. He did his dermatology residency at Harvard, where he was one of the first international medical graduates to receive a spot in the program. Though he enjoyed clinical work, Qureshi also had a strong desire for basic research experience. Someone suggested that he talk with Ethan Lerner, MD, PhD, a professor of dermatology at Harvard, about doing a research fellowship in his lab at Massachusetts General Hospital.

It was the start of a long friendship. Qureshi—whose father died at 59 of a heart attack—says Lerner is "like a father figure." And like a father, Lerner gushes over Qureshi and his success. "He is always friendly. He is always level headed. He's just nice. And he's always honest," Lerner says. "It was always delightful interacting with him, and we've been extremely close friends. ... He's done fabulously well."

When Qureshi joined the lab in 1993, Lerner was studying parasitic diseases in biting arthropods, like flies and ticks. One project required going into the swamps of Massachusetts to collect greenhead flies. Qureshi volunteered for these expeditions even though it wasn't required for his research project.

He remembers this fieldwork experience fondly. Back at the lab, Qureshi would painstakingly dissect out the fly salivary glands. "He has tremendous patience despite the world swirling around him," Lerner says. "He's always a sea of calm."

For his own project, Qureshi studied the possible role of nitric oxide in toxic epidermal necrolysis—a terrible and often fatal condition that causes a person's skin to fall off. "He wondered: what if nitric oxide is what kills off the epidermis? Maybe it's a gas attack," Lerner says. Qureshi was able to show that nitric oxide can indeed kill off the top layer of skin—the epidermis. But he found that the next layer down, the dermis, was protected. This is because hemoglobin, present in blood vessels in the dermis but absent in the epidermis, is a nitric oxide scavenger.

In a related project, Qureshi found evidence that nitric oxide is likely involved in conditions where people lose skin pigmentation, including vitiligo and age spots. This finding may someday lead to a treatment for these conditions. "Is it the case that if you block nitrous oxide you might be able to block this loss of pigmentation in these nasty skin conditions?" Lerner says. "I think the answer to that question is a qualified yes."

POPULATION PATTERNS

When Qureshi returned to his clinical training, he knew he wanted to continue to do research—but this time in humans. In order to gather the tools he needed to study people, he completed a Master of Public Health at the Harvard School of Public Health. There he developed an interest in population science.

Population science involves gathering data by observing the health outcomes of large numbers of people. At Brown, Qureshi's goal is to develop ongoing observational studies of various skin diseases and to share data with researchers doing population science studies in other fields. He hopes that these studies will lead to improvements in health care.

Rhode Island is an ideal place to do these kinds of studies because people are relatively easy to track. They rarely move out of state (hence all the "I never leave Rhode Island" bumper stickers) and often go to the same clinics and pharmacies for many years. "It's a naturally closed cohort," Qureshi says. Furthermore, about one-fifth of Rhode Islanders are not Caucasian, and skin problems vary across races. "Rhode Island happens to be a state with a diverse population, so it's the perfect setup," he says. "You couldn't do that in New Hampshire."

Qureshi directs one population study that could have national significance. He wants to use data from Rhode Islanders to develop a screening protocol for skin cancer. Such protocols exist for other cancers: they are why doctors recommend colonoscopies for people over 50 and mammograms for women over 40, for example. "Currently there are no national guidelines for skin cancer screening; they don't exist," Qureshi says. "We need to determine what age we should start screening and how often."

Right now he is analyzing existing information to see what patterns of care

have been the most successful (and cost effective) for identifying skin cancers. He will continue to track patient outcomes and wants to eventually develop a screening regimen that could be tested in real time.

It turns out that the Affordable Care Act may be increasing the data available for this study. As more people become insured, there has been an increased demand for dermatologists. When people have health insurance, they are more likely to visit a primary care physician, who may express concern over an odd-looking mole or other potential skin problem. While this is good for patients and good for Qureshi's population studies, he is concerned that increased demand might strain the system.

Qureshi is trying to meet this need by hiring 10 new faculty since arriving at Brown. But he says he is committed to making smart hiring decisions. "We have a great group of people here and they work very well together," he says. "Good people are a good investment long term."

TAKING ON TANNING

Now that he's looking at Rhode Islanders as a population, Qureshi has found that skin cancer is quite prevalent in the state. "The early data suggest that there's plenty of skin cancer in Rhode Island, and it's probably because of the lifestyle," he says—a lifestyle that often includes trips to tanning salons. "Indoor tanning is a huge problem in the state," he says. "I've actually been working on trying to change the policy on tanning. I would like to have tanning prohibited for people under the age of 18.

"Frequent use of tanning beds certainly increases your risk of melanoma. There's no question about that," he adds. In fact, Qureshi has found that indoor tanning increases a person's chances of developing two other forms of skin cancer: squamous cell carcinoma and basal cell carcinoma. And tanning raises the likelihood of having more aggressive tumors.

Repeated tanning salon visits are especially problematic for young people. Qureshi and his colleagues have found a strong correlation between the age at which people start tanning and their risk of one day being diagnosed with skin cancer. This is troublesome because teens are a target population for tanning salons. "My favorite ad that I show when I give talks is from the Indoor Tanning Association," Qureshi says. "It comes out right around prom season and includes the 'benefits of tanning.'"

> "He has tremendous patience **despite the world swirling around him.** He's always a sea of calm."

It's not enough to warn people about the dangers of tanning beds. Recent research by Qureshi and others has shown that some people become physically or psychologically dependent on tanning. Exposure to the sun or a tanning bed can release feel-good endorphins like those that cause "runner's high" in long-distance runners, and people who suffer from seasonal affective disorder may find that their symptoms lessen following a tanning session.

Qureshi wants to further explore why people tan so he can learn which interventions are most likely to help them stop. "Who uses more tanning beds? Is there a genetic basis for that? Is there a behavioral basis for that? Is there a skin color specificity? Is there an age, gender bias?" he asks. He is especially interested in the psychosocial basis of tanning as well as the relationship between tanning and mental health issues such as anxiety, depression, and body dysmorphic disorder. To answer these questions, he's collaborating with behavioral mental health specialists.

If that doesn't work, Qureshi may consider the political route and push for a ban on underage indoor tanning. Since 2010, Rhode Islanders under the age of 18 require a note from a doctor or parent at every other indoor tanning session. The use of UV tanning devices by minors is banned outright in 11 states.

One common thread links Qureshi's anti-tanning push, his population studies, and his approach to clinical practice: he truly wants to help people. "The magic of the work that we're doing is that we want to make an impact on health care within five years," he says. The way things are going so far, it looks like Qureshi is right on target.

Summer E. Allen *is a freelance writer based in Rhode Island. Originally from Portland, OR, she studied biology at Carleton College and completed her doctorate in neuroscience at Brown. Read more of her work at sciencebysummer.com.*

FIELDNOTES

BY MEGHA GARG, MD RES'14

JESSICA DEANE ROSNER

The Blanket Sign

In Uganda, poverty is sometimes a patient's chief complaint.

"She has a positive blanket sign," the intern said as we arrived at the patient's bedside.

It was another morning during my internal medicine global health rotation at Mulago Hospital, the largest hospital in Kampala, Uganda. The patients lined the walls in beds about 2 feet apart from each other in the hospital ward, divided by gender and sectioned off loosely based on presenting complaint. After the beds along the perimeter filled, another row of beds appeared down the center, splitting the ward in two; still more patients arranged their own pillows and sheets on the floor when the beds ran out.

Each patient had an attendant, usually a family member, who was responsible for his or her day-to-day care. This included obtaining medications to be administered by the nurse, feeding the patient, and transporting the patient for any care to be performed in another part of the hospital. Among their other responsibilities was providing bedding. Including blankets.

A poor patient often had no attendant. Therefore, no blanket. So when the Ugandan medical intern told me that Sophie had a "positive blanket sign,"

she was telling me that the patient was poor.

Sophie was a quiet, 18-year-old woman whose downward gaze and soft-spoken words conveyed serenity and poise on first meeting, belying the reality of her hopeless expression. Her coarse hair was cropped close to her head and her clavicles protruded from her neckline against her yellowed T-shirt. She told us that she had no family to speak of. She had come to the hospital complaining of a worsening cough. Like many patients at the hospital, she had AIDS. She was not taking antiretroviral therapy and her CD4 count was almost zero.

I examined her lungs and contemplated empiric treatment for tuberculosis, another epidemic in this region. Suddenly my eye caught hers.

"Why is her eye deviated like that? Is that new?" I said.

The intern translated Sophie's Luganda response for me: "That happened three days ago."

I did a full neurologic exam and quickly discovered that her left arm and leg were completely paralyzed. Did she have a mass in the brain—lymphoma or toxoplasmosis were definitely possibilities in this immunocompromised patient—or had she had a stroke this early in her life? She needed a CT scan of her brain as soon as possible.

However, Sophie couldn't afford a CT scan. It was one of the studies that the hospital did not provide for free. The hospital could provide certain things like antibiotics and chest x-rays through government and charity funds, but beyond basic services the patient had to pay out of pocket.

Hearing this was no longer a surprise to me. The realities of practicing medicine in a resource-poor setting had become evident early in my time at Mulago. If the hospital ran out of blood collection tubes and the patient could not buy more, then he could not have a blood test. My US world of abundant CT scans, MRIs, and lab testing every four hours seemed absurd in contrast. The bedside physical exam was of paramount importance and a humbling task when I realized my own limitations and dependence on diagnostic tests.

My **US world of abundant CT scans,** MRIs, and lab testing every four hours **seemed absurd.**

QUESTIONABLE SPENDING

I inquired about the cost of a scan. About $40 US.

I could pay for this, but should I? Sophie needed a brain CT scan. The elderly man next to her needed a lung biopsy. Another woman needed a medication that wasn't available in the pharmacy. I decided I wouldn't treat Sophie any differently than my other patients. I would advocate for her to obtain the CT scan through the hospital system.

It was futile. I chased down rumors of a hospital fund that might exist for indigent patients. I tried to get the hospital to waive the fee; they couldn't. I even rationalized that for the educational value, each member of the care team could divide the cost of the CT scan, which might be different from me paying for the scan because of an emotional attachment to Sophie.

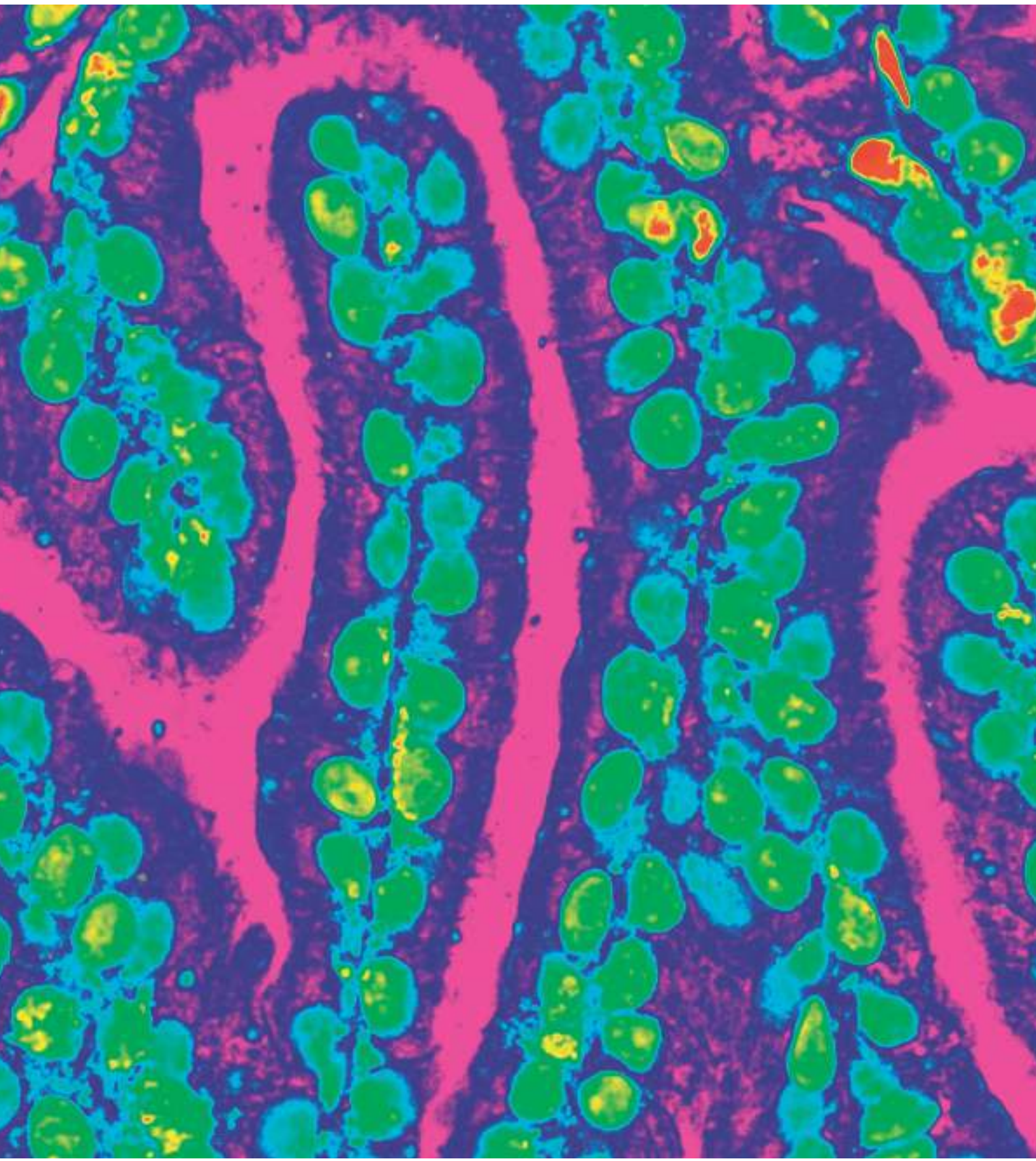
Meanwhile, Sophie remained quiet. She usually lay in her bed and stared at the ceiling. Other patients' attendants and the nurses helped her eat food and get to and from the bathroom. She never had any questions or offered more personal information. The hospital's overworked social workers tried in vain to find any family in the area.

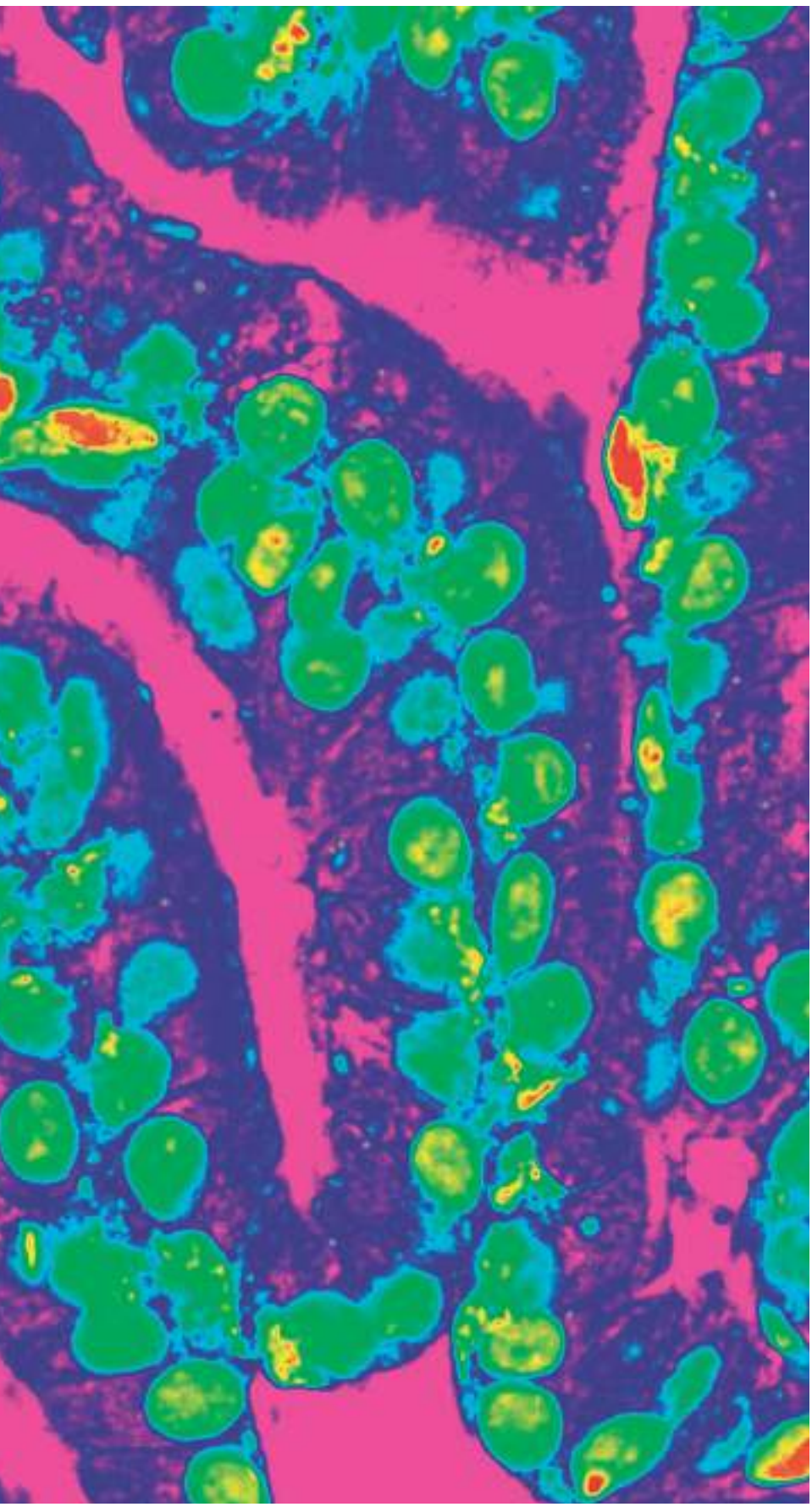
One week later, I paid for her CT scan. Her symptoms were no better, yet somehow I hoped I could save her by crossing this barrier for her.

What did the scan show? It showed a large right-sided stroke and no mass. That explained her paralysis, but it didn't tell us why this happened, why this young woman would likely be unable to use the left side of her body for the rest of her life. Much like in the US, there wasn't much to offer her medically that could reverse what had happened. When I left Uganda, Sophie remained paralyzed in a hospital bed, now on antiretroviral medications for her AIDS and antibiotics for a possible pneumonia. Still with no attendant.

Sophie had a positive blanket sign. And I couldn't fix that by paying for her CT scan.

Megha Garg *completed her undergraduate and medical studies at the University of Miami. She is a chief resident in the Brown Internal Medicine Residency Program, and plans to pursue a career in academic general internal medicine.*





BIG SHOT

IMAGE BY HARVEY J. KLIMAN, MD, PHD

Pink Rivers

Under the microscope, science meets art.

For Harvey J. Kliman, MD, PhD, the microscope is a tool of the scientist and the artist. "Only in a Woman," the first art exhibit mounted in the Alpert Medical School building, which ran through January, was composed of 16 immunohistograms of the endometrium and uterine structures that Kliman magnified and edited.

The piece shown here, "Pink Rivers," is a false-color image of closely packed endometrial glands. With filters and further digital processing, Kliman transforms raw microscopic images into brilliant expressions of color and form.

Kliman is a research scientist in the Department of Obstetrics and Gynecology at the Yale University School of Medicine and the director of the Reproductive and Placental Research Unit, where his research interests include infertility and pregnancy complications. He studies the clinical utility of abnormalities in placental villous growth patterns to diagnose genetic abnormalities in pregnancy, including autism.

Lucy Partman, the exhibit's curator, writes that "Kliman's artwork provides an opportunity to explore the connections between art and science in an effort to see what they can reveal. How do you see and experience these images? How does scientific knowledge affect your perception?" ***—Kris Cambra***

FULL MIND

Willoughby Britton believes in the power of mindfulness meditation to change your brain—and your life—for the better.

She just wants you to be careful.

DEEP THOUGHTS
Psychologist Willoughby Britton says informing people about the risks of mindful meditation is a public health issue.

BY SARAH BALDWIN-BENEICH

PHOTOGRAPH BY KAREN PHILIPPI

Mindfulness meditation is a $4 billion industry in America. Seven years ago, the number of meditators in the US was estimated to be 20 million, with an additional 1 million each year. And these are not just college students or new-age types. Meditation's gone mainstream, and it's showing up everywhere—from high-tech companies in Silicon Valley to the Marines to the cover of *TIME*. Even politicians, such as US Representatives Tim Ryan, D-OH, and Mark Sanford, R-SC, are becoming meditation evangelists. Ryan recently published the book *A Mindful Nation: How a Simple Practice Can Help Us Reduce Stress, Improve Performance, and Recapture the American Spirit*.

The founding father of the mindfulness movement is Jon Kabat-Zinn, PhD, a molecular biologist who became an avid meditator in the 1970s. In 1979, while working at the University of Massachusetts Medical School, it occurred to him that meditation might help patients deal with chronic pain. To explore this idea, he established the Stress Reduction Clinic and developed the now-famous Mindfulness-Based Stress Reduction program, an eight-week intervention derived from Buddhist meditation teachings and practices. According to the center's website, more than 20,000 people have completed the course. And Kabat-Zinn was right: meditation has since been proved effective in helping people cope with pain.

In recent years numerous studies have shown that mindfulness—a secularized form of Buddhist-inspired meditation that stresses a nonjudgmental awareness of the present—may help reduce blood pressure, enhance immune function, and improve symptoms of anxiety and depression. There are signs that it might even slow the effects of aging and increase one's capacity for compassion. A recent study by Assistant Professor of Epidemiology Eric Loucks, PhD, which Psych Central named one of the "four greatest psychological discoveries of 2014," suggests a possible link between self-reported mindfulness and improved cardiovascular health. Other studies have begun to examine the effect of mindfulness on the brain's very morphology, including one that reported an increase in gray matter in the left hippocampus, an area of the brain involved in learning and memory.

What's not to like?

As it turns out, meditation, like other medical interventions, has possible side effects. According to the website of the National Center for Complementary and Alternative Medicine, "There have been rare reports that meditation could cause or worsen symptoms in people with certain psychiatric problems like anxiety and depression." That's a fairly tepid warning for "symptoms" that can range from distressing to catastrophic, and include reports of meditation-induced seizures, panic, fear, involuntary movements, de-repression of traumatic memories, mania, hallucinations, pain, and loss of sense of self.

Clinical psychologist Willoughby Britton, PhD, has met enough meditators who have become impaired by meditation (in her definition, this means being unable to work or care for children for at least one month) that she believes that

informing people about the risk is a public health issue.

But it's also a personal one.

For Britton, who as a teenager was equally fascinated by the human mind and the human brain, coming of age in the '90s was a boon. George H.W. Bush had declared those years the "Decade of the Brain," and support for brain research was strong. She decided to major in neuroscience, but she wanted to explore not just brain function but also questions of consciousness: What are we? What's looking out of our eyes? What happens when you die? When she realized neuroscientists didn't really want to talk about consciousness, she began taking classes in religious studies and philosophy. She wrote a dual thesis, on addiction, in both neuroscience and philosophy.

Then, in the summer between her junior and senior years, Britton's close friend from childhood committed suicide. Filled with sudden terror at the notion that people can disappear, Britton developed an anxiety disorder. "I'd always been interested in consciousness, but now it was really pressing," she recalls. "What could have happened to her? Where did she go? The whole reality that we're mortal and life isn't actually that safe [made me] fearful and anxious." Britton's father gave her *A Path with Heart*, by Jack Kornfield, a prominent American Buddhist and meditation teacher. She devoured the book, and began to use mindfulness meditation to work through not only anxiety and grief but existential issues as well.

The book was immensely helpful, Britton says, "but I was still really fascinated by death. Does [consciousness] go away when we die? Is it brain based?" In a required course in which students had to choose a country to study, she chose Tibet, "because I knew the Tibetans ... spent a lot of time thinking about death."

Meanwhile, Britton was meditating. A lot.

Kindness Is a Muscle

ADVERSE EFFECTS ASIDE, a large part of what excites Britton about meditation is the science of it—in particular, the notion that it can change your brain.

"Neuroplasticity is a general neuroscientific principle: you get good at what you practice," she explains. "This is a revolutionary discovery. We're not fixed. ... We have some leeway in self-cultivation." That doesn't mean, however, that we're always practicing the right thing; most often, we're not. "We have a lot of unhealthy mental habits. Self-denigration is a big one," she says, adding that mindfulness is helpful in delineating your values, priorities, and goals. "Once you decide, for example, 'I don't want to be self-denigrating because instead of motivating me, it just makes me feel bad,' you can employ mindfulness to notice what you are practicing, what kinds of mental habits—and by extension, what neural networks—you're strengthening." (Or not strengthening: if you're practicing negative self-evaluation all the time, you're not practicing empowerment and confidence.)

"It's similar to a body workout—you have to have stronger muscle groups to do certain kinds of actions. [Building] patience and kindness and compassion is no different from building any other kind of muscle," she says.

Meditation and neuroplasticity have other benefits as well. In a 2012 study, Britton and colleagues compared students who meditated with students who practiced music. Those who meditated not only showed increased well-being, but the increased well-being was associated with a greater increase in recall of positive words as well. "Meditation is changing the way students process emotional information," says Britton.

Catherine Kerr, PhD, an assistant professor (research) of both medicine and family medicine, explains. "If you're in a distressed state—for example, when you are burdened by excessive stress and negative rumination—you don't process information very well, especially emotion-laden information," she says. "One of the ways mindfulness may help relieve distress is by helping you process information better, because [it] seems to

"Meditation is changing the way students process emotional information."

enhance working memory and changes early attentional processing, and both of these capacities are crucial for regulating emotion and behavior. Studies by our group and others suggest mindfulness may achieve these effects in part by changing the neural substrates underlying working memory and attention in the brain."

Kerr, who helped design one of the first large clinical trials studying the placebo effect, also conducts extensive research in the cognitive neuroscience of meditation. In 2011, she was recruited to Brown from Harvard by Harold Roth, PhD, the founding director of Brown's Contemplative Studies Initiative (an interdisciplinary group of faculty studying contemplative practices and experiences), and then-Associate Dean for Medical Education Phil Gruppuso, MD. Along with Ellen Flynn, MD, clinical assistant professor of psychiatry and human behavior and of medicine, Kerr co-directs the scholarly concentration in Contemplative Studies at Alpert Medical School.

"Med students are ... used to success, and they hold themselves to a very, very high standard. We want them not to beat themselves up inside," Kerr says. "This isn't about some esoteric contemplative traditions, it's about helping people be better doctors."

Contemplative Studies has been a scholarly concentration since 2007, and the Medical School is proving fertile ground for the mindfulness enterprise. Medical students can pursue a preclinical elective in mindfulness training. They can also participate in the Mindfulness Meditation Wellness Program, which gives them an opportunity to develop a meditation practice and obtain a mindfulness mentor. Britton, an assistant professor (research) of psychiatry and human behavior and of behavioral and social sciences, has provided mindfulness training to physicians, nurses, and schedulers at the Comprehensive Cancer Center at The Miriam Hospital.

While not a regular meditator, Fred Schiffman, MD, the Sigal Family Professor of Humanistic Medicine and associate physician-in-chief at The Miriam, sees the benefits of mindfulness. "Even the doubters realized it was important," he says. "Willoughby taught us that when we go into a patient's room and cleanse our hands, we need to cleanse our minds as well. That way we can concentrate and listen. We learned to be in the moment, have perspective, stay grounded. It made us better caregivers."

Mason Hedberg '08 MD'13 discovered meditation as an undergraduate, taking three Contemplative Studies classes before graduating. In medical school, he pursued the Contemplative Studies scholarly concentration, which includes completing the Mindfulness-Based Stress Reduction (MBSR) intervention. For his scholarly project, Hedberg developed a curriculum, Mindfulness Education in Medical School, covering both didactics and practice.

"My blood pressure is measurably lower than before I started meditating," says Hedberg, now in his second year of a surgery residency at the University of Chicago. While he continues to practice mindfulness on the hospital wards, his mental state changes in the operating room. "That mindful awareness is involuntarily directed to my hands, the instruments they are holding, and the patient on the operating table in front of me," Hedberg says. He adds that mindfulness helped him calm down during moments of high stress in his early med school years, and it has made him a better listener when interviewing patients.

"This isn't about some esoteric contemplative traditions, it's about helping people be better doctors."

Brain Training

FOR BRITTON, it's not enough to know that MBSR and Mindfulness-

Britton envisions an empirically based set of guidelines for meditation, as there would be for any medication.

Based Cognitive Therapy (or MBCT, which is used to prevent relapse of depression) work. She wants to know *how* they work. That's the question driving Dismantling Mindfulness, her five-year, three-arm, NIH-funded study to determine how, exactly, mindfulness helps ease depression (her specialty) and anxiety.

"MBSR and MBCT are like drug cocktails. They have many different kinds of practices and components in them, they have very different goals and very different neurological correlates," Britton says. "It's really hard to know what the active ingredient is. So basically what we're doing is taking out one [practice] at a time and doing eight weeks of that and comparing that to the cocktail."

After filling out a two-hour online questionnaire, study participants undergo a five-hour neuropsychological assessment in Britton's lab to measure the strength or weakness of their prefrontal cortex, or PFC, the part of the brain largely responsible for short-term memory, focus, and will power. A weak PFC makes us emotionally reactive, while a strong one enables us to control our impulses and regulate our emotions.

"I call mindfulness meditation 'cognitive remediation.' I think of it as physical therapy," Britton says. "The PFC tends to be weak in a wide range of psychiatric conditions—addictions, ADD, eating disorders, schizophrenia, pretty much anything that's characterized by high levels of negative emotions, which is most of them, and poor emotion regulation, which would even include mania. Those are all characterized by poor prefrontal control over the limbic system. You can rehabilitate the PFC through attention training—of which one kind is mindfulness."

The participants then embark on an eight-week treatment program of one weekly three-hour class in one of three meditation practices—what Britton calls "systematic strength training" for the PFC; this approach will enable the investigators to compare the clinical efficacy of each practice, as well as each practice's separate neuropsychological mechanisms. The goal is to determine which practices are best or worst suited for which types of individuals, and why. Ultimately Britton envisions an empirically based set of guidelines for meditation, as there would be for any medication.

Lost in Translation

IN 2006-2007, when Britton was doing her clinical psychology internship at Brown, two meditators from a retreat center in western Massachusetts were hospitalized at Butler Hospital for meditation-induced psychosis. "Two in one year seemed like more than a coincidence, so I started asking around if these kinds of things happen at other retreat centers," recalls Britton, who also completed her postdoctoral fellowship, in mood disorders treatment research, at Brown. "I found that every place I asked has a file drawer full of these kinds of hospitalizations and other stories."

Around this time, Britton bought a rambling Victorian house near Brown's campus, and the place became a locus for Brown students who were committed meditators and who found dorm life less than conducive to a contemplative practice. She named her home Cheetah House, which plays on *citta*, Sanskrit for consciousness.

Word about Cheetah House spread, and soon Britton was getting phone calls and emails from people whose meditative practice had left them in varying states of distress. Some were so impaired they couldn't work; some were emotionally volatile or dissociated.

She wasn't at all surprised.

According to Britton, many of the adverse effects these people described are found in the Buddhist texts; some are an integral part of the experience of meditating—and, in the traditional Buddhist

context, signs of progress. The problem, she says, is that in most cases mindfulness meditation is being taught and practiced by people who lack a deep knowledge of its Buddhist foundation.

"In Buddhism one of the key insights into the nature of reality … is to see that there is no inherent self. Seeing into the emptiness of self is supposed to have a beneficial effect," she says. "But not having ownership over your body, or thinking, 'Where am I? I don't seem to be located anywhere'—that isn't liberating to everybody. Some people find it to be really disturbing."

One well-known meditation teacher calls this insight "Enlightenment's Evil Twin." In clinical psychiatry, it's called depersonalization, for which the DSM-IV's diagnostic criteria include "persistent or recurrent experiences of feeling detached from, and as if one is an outside observer of, one's mental processes or body" causing "clinically significant distress or impairment."

"It's considered a very difficult psychological disorder, and it's really hard to treat, and it has a high suicide rate," Britton says.

Britton, who is certified in both MBSR and MBCT, is critical of the "romanticized orientalist projections" modern Western practitioners bring to mindfulness, but she is more concerned about teachers who are not equipped to treat adverse effects when they come up. Clifford Saron, PhD, a neuroscientist at the Center for Mind and Brain at the University of California, Davis, and lead researcher of the Shamatha Project, a large-scale study of the effects of meditation, concurs. At many retreat centers, he says, the intake process is not nearly as stringent as it should be, and people who are at risk of adverse effects are accepted when they shouldn't be. "Training of teachers doesn't include the sophistication required to identify terrain that needs professional support," he says, noting that at Spirit Rock, the renowned meditation center north of San Francisco founded by Jack Kornfield and others in 1987, "almost all the teachers went out and got PhDs in clinical psychology."

It is not clear who may develop challenging meditation-related experiences.

In response to the calls—she continues to receive several each week—Britton started a project called the Varieties of Contemplative Experience (VCE), with the idea first of cataloging and coding these reactions and then of publishing papers about them informed by both a humanistic and a scientific point of view. While she has a rich trove of qualitative data, the sample is relatively small. She hopes to develop a questionnaire that can be administered in a large epidemiological sample and use the statistical power to detect relationships between variables. These data could then be used to identify individuals for whom meditation might be contraindicated—or require modifications. People with trauma, for example, who aren't currently in therapy might benefit from meditations of shorter durations, with eyes open rather than closed, administered on a one-on-one basis rather than in large groups of strangers, or with trauma-specific non-meditation components added.

"We need to create a taxonomy of the full range of experiences, both positive and negative, that can be produced by meditation, figure out what factors influence what types of experiences a given person might have, and then determine the best methods of managing or supporting these different experiences," Britton says. "In the future, these data will be available as part of the process of informed consent, when a person who wants to learn to meditate is informed of all the possible effects so they can make the best decision about whether to start."

Britton's team has recorded interviews with 60 practitioners and 40 teachers; they have delineated six main categories of experience—cognition, perception, body, sense of self, affect, and social changes—and 41 subcategories. They are still in the process of coding the entire set of experiences but have already published a paper, in *Frontiers in Psychology*, on one aspect, meditation-induced light experiences. These visual hallucinations—points or patterns of light, or

changes in the visual field—are documented both by current practitioners and in Buddhist literature. The paper's first author, Jared Lindahl, PhD, is a visiting scholar at Brown's Cogut Center for the Humanities who specializes in Buddhist studies and the cognitive science of religion, and who codirects the VCE project with Britton.

Surprisingly, it is not clear who may develop challenging meditation-related experiences. "We're seeing people that have been meditating 20 years, never had any issues," Britton says, "and then in year 21 something happens. And we have people who have no psychological issues, no trauma issues, grew up in loving homes, they go on a three-day retreat ... and by Sunday afternoon they're in the hospital."

Less surprisingly, Britton ruffles feathers in the meditation delivery community, and she has had to work hard to convince the NIH to pay attention to the phenomenon. "What I'm doing is extremely unpopular," she says. "No one is helping these people. They're completely on their own. That's why I'm doing it.

"I'm a clinical scientist," she adds, "so my science is always going to be geared toward helping people not suffer. Most of my published papers have been on the beneficial effects of meditation. But if I have data that are speaking to [possible negative effects] then I'm going to disseminate it."

Cathy Kerr, who has written about the "overhyping" of mindfulness in the mainstream media, applauds Britton. "I think this is something you would see in any newly emerging medical or behavioral therapy," Kerr says. "I think the dimensions are small compared to [those of] a lot of the medications that people take. But it has to be part of the science. ... It is clear that this is not beneficial for 100 percent of people 100 percent of the time. Once you admit that, you have to figure out who it might not be beneficial for. Willoughby's the first one to take a crack at that."

"It is clear that this is not beneficial for 100 percent of people 100 percent of the time."

On Death and Dying

BRITTON IS STILL thinking about death. But not in the way you might think.

With Lindahl, she teaches a course called Cross-Cultural Approaches to Death and Dying, which explores not only a wide variety of human responses to this most mysterious phenomenon, but also how one's cultural context influences one's views on it. Mitchell Levy, MD, professor of medicine and director of Critical Care Services at Rhode Island Hospital, and Fred Schiffman are lecturers. Britton says the students, who include medical students and pre-meds, are "very interested in death-related ethical dilemmas. All I can do is hold the door open for discussion."

Thinking about death also constitutes part of her current meditation practice. She spends part of each day "reflecting on the fact that we're going to die," she says. "Everyone is. That changes a lot. Just remembering that, you're nicer to people. You're not as stressed out about stupid things. You just keep a much larger perspective. It's made me more patient, and I have a general sense of warmth and compassion.

"We're these strange creatures that have these short lives and we run around and don't know what we're doing and we don't know for how long. Each interaction is pretty precious. To have that kind of frame ... that's a practice. There's no cushion."

Sarah Baldwin-Beneich *'87 is a writer and former director of communications at the Watson Institute for International Studies at Brown. She was previously the editor of* Brown Medicine.

The Past Is Present

BY KRIS CAMBRA AND
JOSEPHINE BENSON '17

Images reveal the history of the life sciences at Brown.

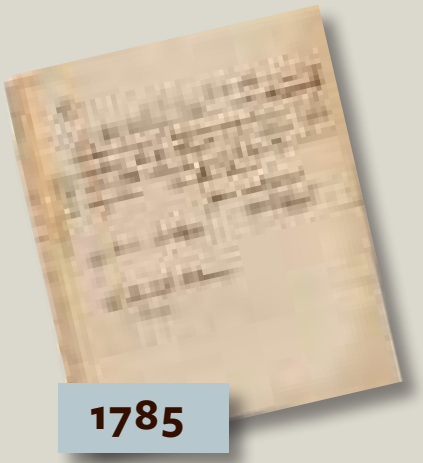
SPELUNKING. That's what *Brown Medicine* intern Josephine Benson '17 called our trip down into the basement of the Bio-Medical Center (BMC). Overshadowed by the Sidney E. Frank Hall for Life Sciences, its younger, glitzier neighbor, and housing a hodgepodge of tenants now that the Medical School has its own home, the BMC still has an important place both in the history and the present of the life sciences at Brown. And much of that history lives in its dark and crowded basement.

Our visit was prompted by planning for the Day of Biology, on March 7, 2015. This is bio's birthday bash, part of Brown's 250th anniversary. There's much to celebrate; even in Brown's first 100 years, natural history and physiology played major roles, shaping both the sciences at the University and this fledgling country.

What's amazing is how the past and the present collide in the BMC, as our tour guide, Kathy Patenaude, director of the Multidisciplinary Labs, revealed to us. "Want to see our museum?" she said, walking through the fluorescent-lit lab where her team preps reagents and samples for the day's bio classes. This "museum" is a shelf within this room, which houses about 20 antique microscopes. They are gorgeous—and entirely out of place.

We scoured Martha Mitchell's *Encyclopedia Brunoniana*, the Brown Library's Digital Repository, and the web-based history of biology and medicine that was created a few years ago (med.brown.edu/timeline). We consulted previous historical essays that have appeared in this magazine, and the online version of this story has links to them if you'd like to learn more.

This is a highlight reel, not a comprehensive history. It's enough to give you a taste of the Division of Biology and Medicine's storied past, with some delights and surprises along the way.



1785

• Benjamin Waterhouse is named the College of Rhode Island's first professor of natural history. At Brown he will present the nation's first comprehensive series of public lectures on natural history. He is known as the "Jenner of North America" after he receives a supply of Jenner's smallpox vaccine and administers it to his family. He will go on to introduce vaccination throughout New England.

1900

• Charles V. Chapin is first an instructor in physiology at Brown and then professor from 1886 to 1895. He serves as superintendent of health in Providence, during which time the death rate in the city drops 30 percent and infant mortality is reduced by 50 percent. He makes important contributions in the areas of child health, immunization, water purification, prevention of contagious diseases, and treatment of tuberculosis.

• A spacious new biological laboratory opens in Rhode Island Hall, right. By the end of the century, the edifice is stuffed to capacity, with Jenks Museum of Natural History specimens covering the windows and the osteological collection in the attic. In 1904, an addition is built to replace "the lean-to where live animals were kept."

1885

1890

• Professor of Anatomy Hermon Carey Bumpus, Class of 1884, involves undergraduates in his research, a novel practice for the time. He is a pioneer in the science of biometry, the application of statistics to biology, which he uses to illustrate Darwin's theory of natural selection in College Hill sparrows (see *Brown Medicine*, Winter 2011). He later becomes president of Tufts College.

1903

• Ada G. Wing, front row in the mortarboard, is appointed in 1896 as instructor of biology and hygiene in the Women's College and is Brown's first female faculty member. Biology is customarily taught to women by women at this time.

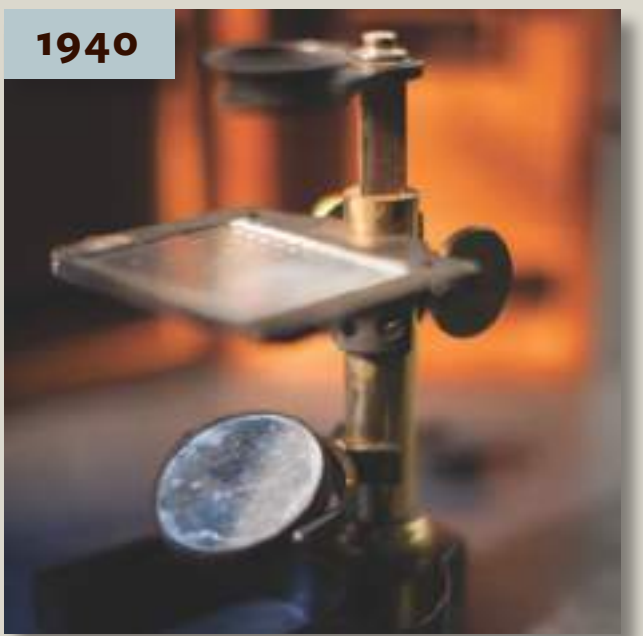
1915

• Arnold Laboratory is built on Waterman Street for $80,000, funded by a bequest of Oliver H. Arnold, MD, Class of 1865. At a time when faculty live on campus, it provides quarters for four professors and one woman instructor.

1937

• At left is Miss Edna G. Myers, superintendent of nurses. A nursing program begins in 1931, offered jointly by Pembroke College and the Rhode Island Hospital Training School for Nurses. The last degree in nursing is awarded in June 1964.

1940



• Among the treasures in the Multidisciplinary Laboratories are microscopes (above), each housed in its own velvet-lined wooden box. The microtome blade (above right) was used to slice tissue to place on slides, and its accompanying strop (right) kept it razor sharp.

BROWN LIBRARY DIGITAL REPOSITORY (2); ERIK GOULD (3)

1965

• As part of a post-war expansion, Elizabeth H. Leduc PhD'48, below, joins Brown in 1953, and becomes the first female full professor in biology and the third female full professor at the University. She pioneers new methodologies in cytochemistry and the use of water-soluble embedding media and ultrathin frozen sections for electron microscopy. In 1973 she is named dean of the Division of Biological and Medical Sciences and Frank L. Day Professor of Biology.

ALPERT MEDICAL SCHOOL ARCHIVES (1); ERIK GOULD (4)

1953

• Patenaude believes that the bone collection that packs two full rooms in the BMC originally belonged to George E. Erikson, professor of medical science from 1965 to 1990, cochairman of the section of population biology, morphology, and genetics, and the first anatomy instructor for the Program in Medicine. Clockwise from top: The lifelike monkeys look poised to leap; a chimpanzee reveals its eerie similarity to humans; all sizes of animals are represented, from the hedgehog to the elephant.

A nursing program begins in 1931, offered jointly by Pembroke College and Rhode Island Hospital.

1968

• Pierre Galletti is appointed chair of the new Division of Biological and Medical Sciences. He is author of the first comprehensive book on the principles and techniques of heart-lung bypass, the standard work in the field. In 1972, he becomes University vice president (biology and medicine).

Axolotls like Oscar are ideal for studying vertebrate development.

1970

• Glass cabinets in the BMC boast an impressive array of '70s-era plastic teaching models. They are still used in courses like Vertebrate Embryology and Analysis of Development.

ALPERT MEDICAL SCHOOL ARCHIVES (1); ERIK GOULD (3)

2015

• Axolotls like the Multidisciplinary Lab's pet, Oscar, are nearly extinct in their native Mexico, but they thrive in captivity as a valuable model organism. Their large embryos are ideal for studying vertebrate development.

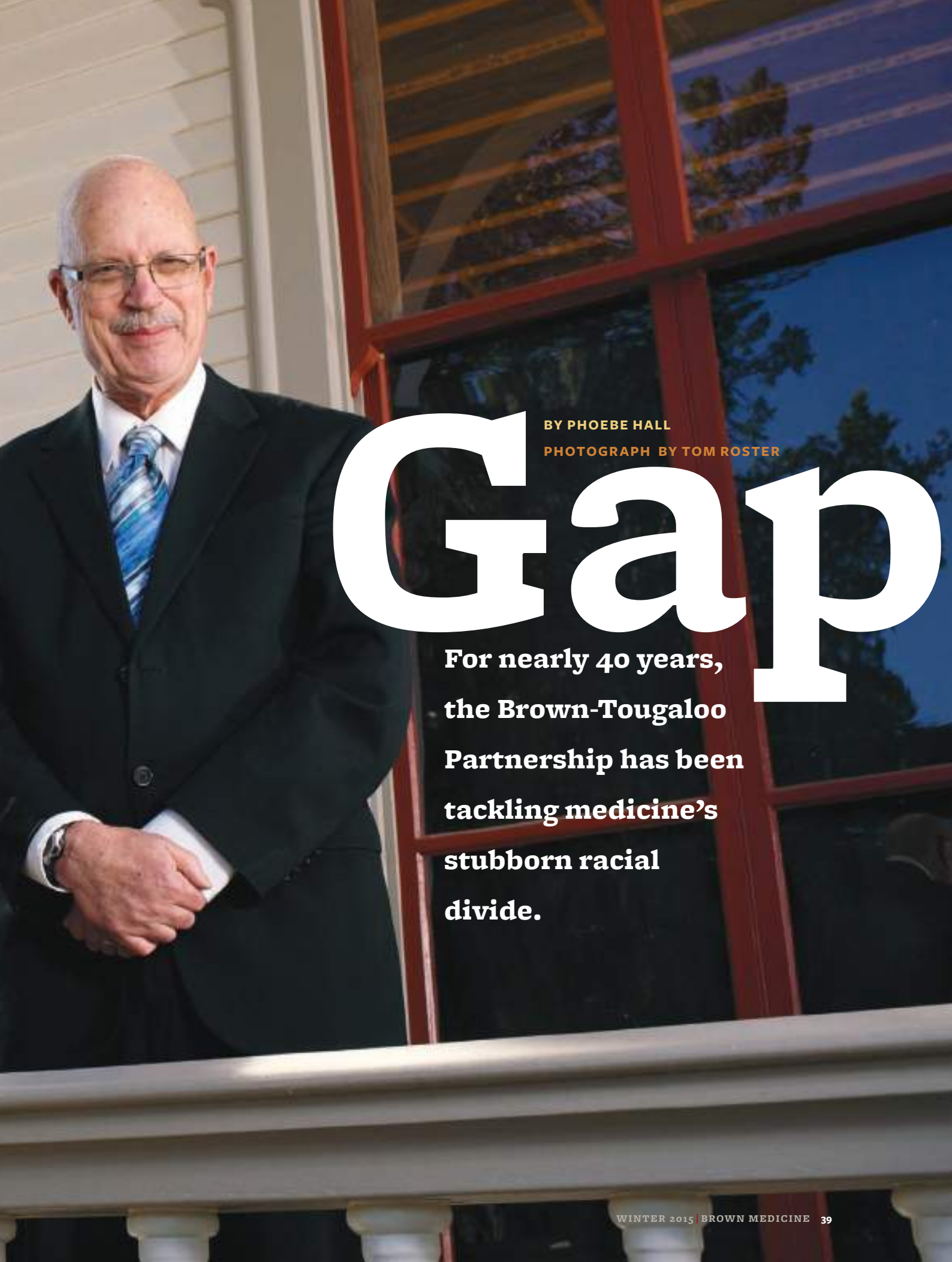
• Every day, Patenaude and her staff make sure all of the teaching labs are set up for the correct section of each course. Armed with rolling metal carts, they lay out the experiments, tools, and materials at the right time, for the right instructor. Bet they look forward to summer, right? Nope. That's when thousands of Summer@Brown middle- and high-school students descend, and the whole balletic operation takes on an even faster pace. Patenaude, who has been at Brown for more than 35 years, does it all wearing this smile.

• Used by students and instructors in several classes, this fluorescent stereo microscope, below, has an attached camera system that allows the user to dissect animals and plants under the microscope observing a 3-D image and then to photograph those images. This squid is ready for its close-up.

ERIK GOULD (3)

Closing the

MENTORS: Tougaloo professors Wendy White and Richard McGinnis advise pre-med students who apply to Alpert Medical School.



BY PHOEBE HALL

PHOTOGRAPH BY TOM ROSTER

Gap

For nearly 40 years, the Brown-Tougaloo Partnership has been tackling medicine's stubborn racial divide.

In any telling of the civil rights history of Mississippi, Tougaloo College looms large. Once a slave plantation, the campus became a haven for activists and an important stop for the movement's leaders, from Booker T. Washington to Malcolm X and Martin Luther King Jr. Students, faculty, and staff led demonstrations and sit-ins, most famously at a Woolworth's lunch counter in downtown Jackson, and hosted the Freedom Riders in their successful bid to integrate the city's bus station.

One of the smallest of the nation's historically black colleges and universities, Tougaloo has long played a disproportionately large role in the undergraduate education of the state's black professionals. Founded in 1869 by missionaries to educate freed slaves, the private liberal arts school produces more than 35 percent of Mississippi's African American attorneys and educators and more than 40 percent of its physicians and dentists. Two-thirds of its graduates go on to earn higher degrees; it's one of the top schools in the US for number of alumni with doctorates in engineering and science.

To stroll across the Tougaloo campus—on a muggy July day in Mississippi, one can only stroll—is to trace a path through this history: among majestic oaks, draped with Spanish moss; past Woodworth Chapel, the college's geographic and spiritual center; the Italianate mansion where the plantation owner once lived; and Coleman Library, which houses the Mississippi Civil Rights Collection. And just beyond stands Sarah A. Dickey Hall, an unassuming, one-story brick structure, in front of which dozens of high school students now swarm, on break from the summer programs that annually draw African American kids from across the state to enhance their science and math skills and learn about health-related careers. Among them, as there are every year, are future graduates of Tougaloo, and of Alpert Medical School.

"That summer was a mind-altering experience," says Galen Henderson MD'93, a native of tiny Tunica, MS, who attended the program in 1984. His teachers included graduate and medical students from elite schools across the country, he says. "I had never been around such academically successful people in my life." After learning about Tougaloo's legacy of producing African American MDs and PhDs, he adds, "I wanted to be part of that history."

With that wish, Henderson was poised to become part of another history. A partnership between Tougaloo and Brown to facilitate academic and cultural exchanges—which celebrat-

LOOK SHARP: Levi Adams at a University event in 1989. The Medical School's partnership with Tougaloo helped prove that students from small, Southern schools could thrive at Brown, he says.

ALPERT MEDICAL SCHOOL ARCHIVES

ed its 50th anniversary last year—had been expanded to include early admission to the Medical School; one or two Tougaloo sophomores were accepted each year since the program began, in 1976. The pathway made possible the fledgling med school's commitment to grow the number of underrepresented minorities with medical degrees; its students at that time were mostly Brown undergraduate alumni, mostly Northerners, and mostly white.

"We were not exactly overwhelming people with our representation of black students," says Levi Adams, MS, who retired in 1995 as the University's vice president of government affairs. In the 1970s, when Adams was associate vice president of biology and medicine, he worked with Stanley Aronson, MD, the med school's founding dean, to develop the Early Identification Program (EIP). Recalling that only one African American graduated from the Medical School in 1976, Adams says, "With one or two Tougaloo students per class, we tripled the number of black students."

The partnership with Tougaloo had a ripple effect, Adams says, as "word got around to black students at other schools that Brown is an accepting place." That acceptance benefited everyone at Brown. "On committees, I could listen to what white students said to know they were impacted by black students," he says. "They didn't let their biases get in the way." (Many Tougaloo alums continue to shape the University long after earning their MDs, including Henderson, a trustee emeritus of the Corporation and past president of the Brown Medical Alumni Association, and Emma Simmons MD'91 MPH'04, who served as assistant dean of minority medical affairs.)

Today, underrepresented minorities in medicine—black, Hispanic, or Native American—make up 24 percent of the Alpert medical student body, compared to 17.6 percent of med students nationwide, and 13.5 percent of practicing physicians. Yet only 63 percent of the US population identifies as white—meaning a significant number of Americans may not find a doctor who looks like them. "Some people still don't trust white physicians," says Tougaloo Professor Wendy White, PhD, MPH. Referring to the infamous federal syphilis experiment, she adds, "They all remember Tuskegee."

In the summer of 1975, three Tougaloo pre-meds arrived in Providence to complete research fellowships; building on that success, Brown committed to the EIP.

CULTURAL DIVIDE

In the mid-20th-century South, "the saddle you have to wear of continuing discrimination, you think, I don't want to raise my kids here," says Adams, an Arkansas native who earned his bachelor's degree at Boston University and his master's at Harvard. Aspiring physicians at Tougaloo had few opportunities close to home: the University of Mississippi Medical Center is just a few miles south of the Tougaloo campus, yet its affiliation with Ole Miss, where segregationists rioted to block an African American student's enrollment in 1962, deterred black applicants.

Civil rights activists were streaming into the South, including one Harvard doctoral student who wanted to see more African Americans in the sciences. Richard McGinnis began tutoring black students in the summer of 1965 and, upon earning his PhD, joined the chemistry department at Tougaloo and worked with pre-med students. When Brown established the Program in Medicine a few years later, the University chaplain, the Rev. Charles A. Baldwin II, who had championed the Tougaloo partnership, encouraged Aronson to meet with McGinnis to discuss a medical exchange program. (All three men were honored—Baldwin posthumously—at the Brown-Tougaloo Partnership anniversary celebration last November.) In the summer of 1975, three Tougaloo pre-meds arrived in Providence to complete research fellowships; building on that success, Brown committed to the EIP.

Initially, the exchange program was just that: as Tougaloo students traveled North to study, some medical students went South to complete clinical rotations in Jackson, often with Robert Smith, MD, a Tougaloo alum who mentored students at his alma mater and was a visiting professor at the Medical School. Over the years, however, the elective clerkship has fallen by the wayside; few opt to do it anymore. Adams suspects students fear the "cultural adjustment to Mississippi." Indeed, Tougaloo alums are still challenging misconceptions about the South. "I would hear from classmates, oh my good-

ness, Galen, you scored higher than me, and you went to Tougaloo, not Brown undergrad!" Henderson recalls. Courtney Johnson PhD'15 MD'17 adds, "There's a perception of the South that we're walking around barefoot." But Johnson likes being able to offer a different perspective; and, she says, "when I would see something that's not culturally sensitive, I could speak up to the administration" and work to correct it.

That's not to say Tougaloo students never struggle. "You get used to being a big fish in a small pond," says White. She is the assistant director of the college's Jackson Heart Study Program, which collaborates with the National Institutes of Health to train pre-meds in cardiovascular research. Tougaloo students apply through a rigorous process as freshmen; for many, it's the first step toward admission to the EIP. "A lot of students are so successful in high school and college they don't know how to fail," White says. "I'll give them a pep talk: medical school is not like anything you've ever done."

McGinnis, who still teaches chemistry and is dean of Tougaloo's Division of Natural Sciences, admits that majors from his department can have trouble with the biology-heavy curriculum of medical school. Each year he does his best to ensure that the five or six applicants to the EIP are up to the challenge, seeing that they shadow health professionals in the Jackson area, take advantage of research and other educational opportunities, meet prerequisites, and keep their grades up. "Though he's not African American," Adams says of McGinnis, "he's as dedicated to the education and nurturing of African American students as anyone I've ever met."

Jabbar R. Bennett, PhD, associate dean for diversity and director of the Office of Diversity and Multicultural Affairs at Alpert Medical School, and Zoila Quezada, MEd, the office's assistant director, travel to Jackson each year to interview Tougaloo sophomores for the EIP and to visit older students already in the pipeline. (Quezada and Bennett recommend students to Medical School admissions officers, who make the ultimate decision; Bennett also serves on the admissions committee.) As a condition of their admission to the Medical School, Tougaloo students spend one undergrad semester at Brown, to get a taste of Ivy League, and New England, life. "The exchange gives them a sense of what it's like up there," McGinnis says. "Some decide not to go after the semester at Brown."

But Quezada says that happens rarely; the competitive program is the reason many students apply to Tougaloo in the first place. Indeed, Henderson says adjusting to life at a school with such a storied civil rights history was the greater struggle. "Even though it's a tiny, tiny little campus, [Tougaloo] was a big place in my mind," he says.

When Tougaloo graduates arrive in Providence, it's hardly sink or swim; they have a built-in alumni network to help them adjust to everyday life as well as the rigors of medical school. "It was tough being away from my family, but they were replaced by my [Tougaloo] big brothers and big sisters," says Montoya Taylor MD'08, a cardiology fellow at The Ohio State University. He quickly felt at home at the Medical School, he adds. "They really nurture you," Taylor says. "Brown is like Tougaloo—the small classes, the close-knit community."

White, who stays in close contact with her former students, calls Brown "one of the most Southern places up there. People are so friendly." She adds: "We've had students go to several different medical schools, but the support system pales in comparison to what they get at Brown. Brown goes above and beyond."

"We have eyes too—we need ophthalmologists. We need ENT surgeons and neurologists. People did try to put us in a box based on our presumed background."

CHANGING THE FACE OF MEDICINE

"The medical EIP was recognized officially at the gala this past November as

EXCHANGE PROGRAM: University President Christina Paxson gives the Commencement address at Tougaloo in May 2014. Tougaloo President Beverly Wade Hogan (left) delivered the Brown Baccalaureate address in 2013.

COURTESY TOUGALOO COLLEGE

a strong component of the [Brown-Tougaloo] Partnership because we can measure its success by how many students have come through the program and have graduated and are practicing," Quezada says. She adds that the program has been reevaluated over the years to ensure that success, with changes made in both the Tougaloo curriculum and the support offered at the Medical School. That willingness to go above and beyond is critical to the mission of the Brown-Tougaloo Partnership, she says, referring to the discrepancy in the number of minority physicians versus the demographics of the general population: "We need them to be doctors."

At the Jackson Heart Study, "we tell them about health disparities from day one," says White, who teaches courses in epidemiology and public health research methods. "The African American population is considered a vulnerable population," due to the higher prevalence of cardiovascular disease compared to the general population. In addition to conducting research, Jackson Heart Study students help to educate the community; along the way, many develop a passion for the mission.

That's not to say that Tougaloo graduates can be pigeonholed. "When people knew I was a Southerner, they would talk about, 'your people really need you.' There was no mean intent, but they would always focus on primary care," says Henderson, a neurologist and director of the Neurocritical Care and Neuroscience Intensive Care Unit at Brigham and Women's Hospital and associate professor of neurology at Harvard. "We have eyes too—we need ophthalmologists. We need ENT surgeons and neurologists. People did try to put us in a box based on our presumed background."

Since arriving at Ohio State, Taylor has worked to increase the number of physicians from underrepresented groups as a member of the school's diversity and mentorship councils. But, he says, as a cardiologist he wants to "help everyone." "Most individuals in America will die of cardiovascular disease," he says. "I think that while there are disparities that happen, if I'm not in Cleveland, Columbus, or Cincinnati I may not have a large percentage of minority patients. ... I want to help people realize they need to take control of their health."

Just as their academic interests have taken them all over the map in terms of medical specialty, Brown-Tougaloo alums have landed all over the US map as well—though, until recently, they rarely returned home. Johnson, who grew up in Jackson, says lingering racism and a dearth of opportunities in the South deterred many graduates. But "the face of medicine has completely changed," she says. Now in her seventh year in Providence, the aspiring hematologist-oncologist says she hopes to complete her residency, as well as fellowships and postdoctoral research, in the South, preferably Mississippi. "I want to go back home because my family is there," she says. "They were my biggest cheerleaders."

McGinnis is pleased to see more of his former students returning to their home state with MDs. "Tougaloo's impact is needed," he says. "Mississippi is last in so many rankings," including infant mortality, cardiovascular death, and overall health, according to the United Health Foundation's annual report on health in the 50 states. Mississippi is also last, or close to it, in numerous rankings of public education and educational attainment. Many students come to Tougaloo from poor or rural backgrounds, McGinnis says. But thanks to the partnership with Alpert Medical School, "It's possible to come from anywhere and, if you work hard, you have more than a good chance of becoming a physician."

ALUMNI ALBUM

CHECKING IN WITH BROWN MEDICAL ALUMNI

THE FIRST 40
The MD Class of 1975 will celebrate its 40th Reunion in May—the first class ever to do so.

ALPERT MEDICAL SCHOOL ARCHIVES

WHAT'S HAPPENING?

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

CLASSNOTES

1975

Valerie Parisi, MPH, MBA '72 will step down as dean of Wayne State University School of Medicine at the end of June to become the senior associate vice president for academic affairs and vice dean for faculty affairs at the University of South Florida Morsani College of Medicine in Tampa.

1977

Phyllis Hollenbeck '73 received the Public Servant of the Year Award from

the US Office of Special Counsel at a Washington, DC, ceremony in December. Phyllis received federal whistleblower status from the OSC after reporting violations in the primary care division of the G.V. (Sonny) Montgomery VA Medical Center in Jackson, MS. (See cover story, *Brown Medicine*, Fall 2014.) At the awards ceremony, Special Counsel Carolyn Lerner said of Phyllis and the two other awardees, also VA whistleblowers, "Because of their efforts, veterans are now far more likely to receive the treatment they deserve."

Nora Burgess '74, a former Brown trustee, retired after 30 years as an adult cardiovascular surgeon at the Kaiser Permanente San Francisco Medical Center, including eight years as chief financial officer and assistant physician-in-chief. She continues to volunteer and teach cardiac surgery with medical missions and was president of Women in Thoracic Surgery. Nora writes: "After more than 10 years of scuba diving with my husband, Robert Liburdy PhD'75, among remote archipelagos of the South Pacific, the Banda Sea, and West Papua, we are now turning to land-based travel in Africa and the Amazon and a transit of the Northwest Passage. We invite friends to visit us in Tiburon, CA."

Phyllis Hollenbeck received the Public Servant of the Year Award from the US Office of Special Counsel.

1979

Griffin Platt Rodgers, MBA'76 MMS'79 was named the *Washington Post* Federal Player of Week on August 5, 2014. Griffin is the director of the National Institute of Diabetes and Digestive and Kidney Diseases and is working on a cure for sickle cell disease. He and other NIH researchers recently developed a modified blood stem cell transplant regimen that has reversed the disease in adults.

1980

Peter Yu, MBA '77 delivered the keynote address at the *American Journal of Managed Care*'s third annual Patient-Centered Oncology Care Meeting in Baltimore in November. Peter is the president of the American Society of Clinical Oncology and the director of cancer research at the Palo Alto Medical Foundation.

1981

Andrew Wilner was appointed to the inaugural editorial board of *Neurology Times*, an online resource for neurologists. Andrew is a medical journalist and a medical adviser for the Accordant Health Services Epilepsy Disease Management Program in Greensboro, NC, as well as a practicing neurologist. He is a former clinical associate professor of neurology at Brown.

1986

Richard Fogel '83 is the president of the Heart Rhythm Society. A cardiologist and electrophysiologist at St. Vincent Heart Center and CEO of St. Vincent Medical Group in Indianapolis, he manages a clinical practice in cardiac electrophysiology.

Ana Maria Verissimo RES'89 F'94 is co-author of *A Guide to Integrative Pediatrics for the Healthcare Professional*, published by Springer in July 2014. She is a pediatric physician in the Division of Pain and Palliative Medicine and director of Pediatric Integrative Medicine at the Connecticut Children's Medical Center, and assistant professor of pediatrics at the University of Connecticut School of Medicine.

1988

Jonathan Wald, MPH, director of patient-centered technologies at RTI International's Center for the Advancement of Health Information Technology, will become president of the Society for Participatory Medicine, a not-for-profit organization that encourages patients to become active participants in their own health. At RTI, he serves as lead investigator for research grants and contracts studying the quality and efficacy of IT in clinical practice, and examining policies for patient-generated health data and personalized health care.

1989

Harry Duran, MPH, PhD, joined Northeastern Nevada Family Medicine in Elko, NV, where he practices general, preventive, and occupational medicine. He also serves as the Elko County health officer and the medical director for Elko County Ambulance. He and his wife, Barbara, live in Spring Creek, NV, and enjoy gourmet cooking, outdoor photography, walking their border collies, and bird watching.

1992

Joel D. Selanikio spoke at Health Workers Count, a global health conference focusing on the use of technology and big data, in New York City in September 2014. Joel is the cofounder and CEO of Magpi, which provides cloud-based

ALUMNI ALBUM

mobile data collection and communication applications.

1993

Galen V. Henderson received the Brown Bear Award from the Brown Alumni Association in September 2014. The award commemorates long-term personal service and commitment to the University. Galen, an assistant professor of neurology at Harvard Medical School and director of the Division of Neurocritical Care and Neuroscience ICU at Brigham and Women's Hospital in Boston, is a member of the Brown Medical Alumni Association Board of Directors and a trustee emeritus of the Brown Corporation.

Humberto Rossi '89 joined the medical staff of the Dana-Farber/Brigham and Women's Cancer Center at Milford Regional Medical Center in Milford, MA. Bert and his wife, fellow PLME **Laura Garelick** '89, the chief of family medicine at Beth Israel Deaconess Hospital-Needham, live in Holliston, MA, with their teenage son.

1995

Atul Butte, PhD '91 MMS'95, chief of the Division of Systems Medicine and associate professor of pediatrics and genetics at Stanford University and the Lucile Packard Children's Hospital, was named to the scientific advisory board of GNS Healthcare, a health care data analytics company. In his lab, Atul, who concentrated in computer science as a Brown undergrad, builds and applies tools that convert molecular, clinical, and epidemiological data into diagnostics, therapeutics, and new insights into disease.

2002

Amar A. Desai, MPH '97 was appointed CEO of University of Southern California Care and Ambulatory Services. He previously worked at DaVita Health Partners Inc. and McKinsey & Company, as well as the UCSF Medical Center and San Francisco General Hospital, and has held faculty positions at the Stanford University School of Medicine and the David Geffen School of Medicine at UCLA.

Vivek Masson '97 was featured by the business journal *NJBIZ* as one of their "Forty under 40." Vivek, the medical director of radiology at CarePoint Health in Jersey City, NJ, was recognized for improving the medical group's radiology services and developing a women's imaging center.

2004

Eugene Chang '99 is associate professor of otolaryngology and director of the rhinology fellowship at the University of Arizona College of Medicine. Previously an assistant professor in the Department of Otolaryngology-Head and Neck Surgery at the University of Iowa, his clinical and research work focuses on endoscopic sinus and skull base surgery. Eugene is also associate editor for the rhinology and skull base section of the *Annals of Otolaryngology* and author of more than 30 peer-reviewed manuscripts.

2010

Jason Lambrese '06 and Andrew Clifford PhD'10 were married in August 2014 at Manning Chapel. The reception was held at the Brown Faculty Club. **Andrea Lach Dean** MD'11 was a member of the wedding party; also in attendance were **Jackie Hatch** '06, **Joanna MacLean** '06, **Ronen Stein** '06, and **Mary Beth Sutter** RES'13. Jason is a fellow in child and adolescent psychiatry at Boston Children's Hospital, and Andrew is a science teacher at the Commonwealth School in Boston. Contact Jason at jason.lambrese@gmail.com.

Griffin Platt Rodgers was named the *Washington Post* **Federal Player of the Week.**

2011

Tina Charest '07 RES'14 joined Southcoast Physicians Group in Dartmouth, MA. She completed her residency in family medicine at Memorial Hospital of Rhode Island and serves Brown as an alumni interviewer. Tina is married to **Albert Lin** '07 RES'14.

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EYE ON ALUMNI

Body and Mind

Disasters teach that mental health is inseparable from bodily health.

Allen Dyer

In May 2014, psychiatrist Allen R. Dyer, MD, PhD '67 MMS'70 received an award from the Iraqi Medical Sciences Association for his humanitarian efforts in Iraq.

Since 2001, Dyer has worked with Iraqi physicians, educators, and government officials to improve the country's health care infrastructure in a sustainable way. Dyer, who graduated in the charter class of the two-year Brown medical program and went on to get his MD and PhD at Duke University, believes in a "bio-psychosocial-spiritual" approach to medicine, and nowhere is the need more clear for such an integrated approach than in war-torn countries. Iraq, which has been under extraordinary stresses for more than 30 years, experiences an incidence of cancer up to eight times global rates, a higher incidence of heart disease and diabetes, and high rates of depression, Dyer says.

Civilian populations that have endured conflict, loss, and chronic displacement experience what Dyer calls ongoing traumatic stress disorder, and it's necessary to devote the right health care resources to those people. "You have to look at the whole social organization," he says. "What is the developmental history of trauma that has led to physiological symptoms? How does a community come together, heal, grow, and thrive? You have to identify the social supports to reinforce resilience."

Dyer's work in Iraq began when, as a professor of psychiatry at East Tennessee State University, he was part of a delegation to help the Kurds in Iraq develop a medical infrastructure. He left academic medicine for a time to work as the senior health adviser for the International Medical Corps, where he was involved in disaster response and improving health services around the world. He continues the mission today, as professor of psychiatry and behavioral science at George Washington University (GW).

"One of my key goals at the International Medical Corps, and now at GW, is to increase the knowledge base around global mental health," Dyer says. "The integration of mental health and primary care is first and foremost a strategy for low- and middle-income countries, but is also important for the US."

Dyer continues to work with Iraq, setting up continuing medical education programs to help Iraqi medical professionals update their skills in areas such as psychopharmacology, child psychiatry, psychotherapy training, and research.

He believes it is increasingly important to practice medicine that looks beyond diseases, the traditional purview of physicians, and takes into consideration how conflict affects communities. GW is involved in the Palestinian Medical Education Initiative, which supports Palestinians through international partnerships with health sector institutions and clinicians, and mental health is one aspect. "We have learned that poverty in many instances leads to dangerous ideologies," Dyer says. The strategy lies in a coordinated approach of defense, diplomacy, and development. "What we need now," he says, "is a humanitarian surge." ***—Mary Stuart***

COURTESY ALLEN DYER

EYE ON ALUMNI

Dispatch from West Africa

An alum reports on his work fighting Ebola.

Peter Kilmarx MD'90 directs the country office for the US Centers for Disease Control and Prevention (CDC) in Zimbabwe. He was deployed to Sierra Leone to serve as the CDC Ebola Response Team Leader in September and October 2014. He shared his experiences with Brown Medicine *before returning to West Africa for another month in January.*

As team leader, I was overseeing all CDC activities in Sierra Leone. When I first arrived, we had 33 CDC staff focused on surveillance and epidemiology, infection prevention and control, and health communication. We also had a team supporting screening at the airport to prevent export of cases and a team running an Ebola diagnostic laboratory.

All along, the greatest challenge has been coordination and management. I spent a lot of time working on these with the leadership of other national and international organizations. We were able to put some critical changes in place, including involving the Sierra Leone Army where their capacity in logistics and command and control was needed.

We analyzed the surveillance data and found that most of the transmission was actually from corpses and not from live patients. One of our staff took a lead role in establishing a national policy on "Safe, Dignified Medical Burials," as well as developing standard operating procedures for burial teams. We also established and helped implement a national policy on "Interim Home Protection and Support" to prevent household transmission and provide oral rehydration solution for patients suffering at home while facilities for safe transport and care were inadequate to meet the demand.

We had fantastic support. I was able to add 30 new CDC staff while I was there to fill critical new functions and to expand to newly affected districts. We also had plentiful funding and flexibility. For example, we quickly procured 28 motorcycles to establish a national laboratory specimen transport system.

It was among the most intense and most satisfying professional experiences of my life. While I was there the infection rate was doubling every 30 days. I worked until after midnight every night and awoke at 5 a.m. most mornings, energized to meet the challenges of the new day. I was very proud of our CDC staff, especially the younger epidemiology intelligence service officers I visited, working shoulder to shoulder with local staff in the most highly affected districts. I shed tears one day the last week I was there, for the suffering of the people, but also for the extraordinary opportunity to serve. The exponential increase in cases has stopped. Going back, I'm optimistic that the numbers of cases will soon finally start to come down.

—Peter Kilmarx

Peter Kilmarx, far right, was deployed to Sierra Leone to head up a CDC Ebola response team.

COURTESY PETER KILMARX

Jessica Marrero '07 is an attending physician at the Children's Health Fund's South Bronx Health Center/Center for Child Health and Resiliency. Jessica focuses on women's health, HIV medicine, primary care, and advocacy.

2012

Shilpa Gowda '08 began a two-year residency and fellowship in occupational and environmental medicine at the University of Washington School of Public Health, where she will also pursue her MPH. Before coming to Seattle, she completed a tropical medicine observership serving patients in Bangalore, India, and an internship in general surgery at Los Angeles County Hospital and Keck Hospital of the University of Southern California.

2013

Andrea Batchelor '09 and her husband, Ryan Patrico '08, announce the April 2013 birth of their daughter, Rosalie.

2015

Keith H. Butts and Sarah S. Smith were married in August at the First Unitarian Church in Providence. Keith, a fourth-year medical student, earned his undergraduate degree from Williams College. Sarah is pursuing a master's degree in medical science from Tufts University.

2016

Brittany L. Katz '12 and Scott B. Phillips '11 were married in August in Huntington, NY. Brittany is a PLME student who concentrated in human biology and has served Brown as an alumni interviewer. Scott is a senior consultant for retail strategic product development at CVS Caremark in Woonsocket, RI.

RESIDENTS

1981

Carl Levick, MD, joined Newport Hospital's Cardiovascular Institute in Newport, RI, last summer. Previously he served as the director of cardiology at King Edward VII Memorial Hospital in Bermuda, held academic appointments at the Geisel School of Medicine at Dartmouth and Harvard Medical School, and founded a multiphysician cardiology practice in Concord, NH.

1994

Chong Park, MD, was named chief medical officer at Jefferson Hospital in Jefferson Hills, PA. A cardiothoracic surgeon who previously chaired the department of surgery and medical director of Allegheny Health Network's Cardiovascular Institute at Jefferson, he also served on the boards of Washington & Jefferson College and the American Heart Association in Pittsburgh.

2008

Matthew Siegel, MD, is the director of the Developmental Disorders Program at Maine Behavioral Healthcare. He studies autism and serious behavioral disturbance at the Maine Medical Center Research Institute and as an assistant professor of psychiatry at Tufts University School of Medicine, and founded the Autism & Development Disorders Inpatient Research Collaborative.

2014

Jennifer Foster, MD, and **Thomas Foster**, MD F' joined the medical staff at Baxter Regional Medical Center in Mountain Home, AR. Tom, a psychiatrist and native Arkansan, is medical director of the hospital's Hensley Behavioral Health Center. Jennifer is a general surgeon at Ozark Surgical Group in Mountain Home, her hometown.

Shilpa Gowda completed a **tropical medicine observership** serving patients **in Bangalore, India.**

FELLOWS

2006

William Nichols, DO, joined Bronson Adult Critical Care in Kalamazoo, MI. He completed his critical care fellowship at The Miriam Hospital.

2013

George Charlton, MD F'14 joined Lifespan's Cardiovascular Institute in July 2014 to help build a new practice at Newport Hospital in Rhode Island. He was an attending hospitalist at Virginia Hospital Center in Arlington before coming to Brown, where he completed fellowships in general cardiology and preventive cardiology. George will continue to teach echocardiography to fellows at The Miriam Hospital.

OBITUARIES

ALUMNUS

KENNETH D. BLOCH '78 MD'81

Kenneth D. Bloch, 58, of Chestnut Hill, MA, died September 13, 2014. A cardiologist at Massachusetts General Hospital, he held a joint appointment in the Department of Anesthesia and the William T.G. Morton Professorship at Harvard Medical School. An investigator in the Cardiovascular Research Center, Ken was never more at home than when he was working in his lab, where he focused on cardiopulmonary diseases and congestive heart failure, making major contributions in the field. For his commitment to the training of cardiac fellows, Harvard Medical School gave him the Excellence in Tutoring Award in 2010 and the Clifford Barger Excellence in Mentoring Award in 2012. Also a longtime volunteer for the American Heart Association, he earned its Meritorious Achievement Award in 2013 and Distinguished Achievement Award in 2014. Survivors include his parents, his brother, and his niece and nephew. Donations in his memory may be made to the Kenneth D. Bloch Memorial Fund at the American Heart Association, 7272 Greenville Ave., Dallas, TX 75231.

FACULTY

HOWARD A. HALL, MD

Howard A. Hall, 80, of South Dartmouth, MA, and Providence, died October 25, 2014. An obstetrician and gynecologist in private practice and on the staff of Women & Infants Hospital, he was clinical assistant professor emeritus at Alpert Medical School. He served on numerous medical and professional boards, including the boards of Medical Licensure and Discipline and Home & Hospice Care of Rhode Island. A graduate of the University of New Hampshire and the Medical College of Virginia, he was an Army veteran of the Korean War. He is survived by his wife, Myrna; a daughter and two sons; two stepchildren; and nine grandchildren. Donations in his memory may be made to Community Nurse and Hospice Care, 62 Center St., Fairhaven, MA 02719, or to Home & Hospice Care of Rhode Island, 1085 North Main St., Providence, RI 02904.

DAVID S. GREER, MD

World Changer

BY DAVID ORENSTEIN

David S. Greer, MD, former dean of Alpert Medical School and professor emeritus in the Brown School of Public Health, died November 18, 2014, at his Fall River, MA, home. He was 89.

Greer, a fellow of the Institute of Medicine who was dean of medicine from 1981 to 1992, built a large legacy at Brown, says Jack A. Elias, MD, dean of medicine and biological sciences.

"It is remarkable to consider how many of the initiatives that Dean Greer founded or championed have grown to become fundamental aspects of the Medical School and now the Brown School of Public Health," Elias wrote in a letter to the Division of Biology and Medicine marking Greer's death.

Greer founded and chaired the Department of Family Medicine, the Department of Community Health, and the Center for Gerontology and Healthcare Research. He also helped to establish the Center for Alcohol and Addiction Studies and the Program in Liberal Medical Education (PLME).

Stanley Aronson, MD, the Medical School's founding dean and Greer's predecessor, says Greer was "a close and faithful friend." He recalls recruiting Greer, a fellow native of Brooklyn. Greer had been an outstanding medical student at the University of Chicago, where he earned his degree in 1953, Aronson says. He went on to residencies at Chicago and Yale.

"Dave eventually established a practice in Fall River, building a reputation that extended into Rhode Island," Aronson says. "In 1974, when Brown's medical school was but two years old, there was a pressing need to recruit someone to organize and manage the many medical disciplines under the title Community Health. We recruited Dave, appointed him as associate dean of medicine, and in his new post he flourished."

Greer was not only a caring physician and loving husband, father, and grandfather, but also a visionary, says Associate Dean of Medicine Julianne Ip '75 MD'78 RES'81. He worked with Stephen Smith, MD P'01MD'06 to establish the PLME, a single eight-year course of study leading to a bachelor's and then a medical degree.

"They viewed medicine as a humanitarian pursuit, not a trade to be learned but a lifelong dedication to patients through compassion—a broad-based education to give context to practice and ongoing learning," Ip says. "They wanted physicians who would be thoughtful leaders in the community. PLMEs are encouraged to have a strong science background but also to go beyond that to understand the context

CAROLINE GOLLUB

FRIENDS TO THE END: From left, David Greer, Dean Jack A. Elias and his wife, Sandy, and Dean Greer's wife, Marion, at the tribute to Dean Stanley Aronson in May 2014. The Greers had remained active members of the Brown community.

of medicine: the social, behavioral, economic, cultural, political, religious, and ethical aspects of medicine."

A LOCAL AND GLOBAL ACTIVIST

Greer was beloved by his patients in Fall River, but he also served the community beyond his own practice. In the late 1960s he helped to establish Fall River's Highland Heights Apartments, an early public housing facility for the frail, elderly, and others with physical impairments, according to Vince Mor, PhD, professor of health services, policy, and practice. Greer and his late wife, Marion, who died in September 2014, also served as trustees of Bristol Community College in Fall River.

In 1985 Greer became known across the world when, as a founding director of International Physicians for the Prevention of Nuclear War, he shared in the award of the Nobel Peace Prize. In making the award, the Nobel committee wrote that the group, which represents doctors, medical students, and other health workers, "has performed a considerable service to mankind by spreading authoritative information and by creating an awareness of the catastrophic consequences of atomic warfare."

"A hundred years from now, someone may decide to write a book about Brown's medical faculty and its outstanding graduates," Aronson says. "I hope that this historian will remember Dave as one of the pioneers of this academic and health-providing enterprise."

David Lewis, MD, founding director of the Center for Alcohol and Addiction Studies, says Greer was "a valued friend and mentor." "His understanding, kindness, and consistent support made it a privilege to work with him," Lewis says.

Mor recalls how his longtime friend brought him to Brown in 1980 to research hospice care with him. That study led Medicare to establish a palliative care benefit. "This is a guy who taught me so much about what it means to be a leader," Mor says. "He's the reason I'm here. ...

"He understood what a jewel and wonder it was to be at Brown, but he also knew there's the hill and there's the rest of the world," Mor says. "He was very down to earth. He was a remarkable guy. He was just the best."

As a **founding director** of International Physicians for the Prevention of Nuclear War, **he shared in the award of the Nobel Peace Prize.**

MOMENTUM

MEETING OF THE MINDS: From left, Diane Lipscombe, Julie Kauer, Chris Moore, Associate Director of BIBS John Davenport, and Carl Saab at a recent migraine team planning session.

Pain and Gain

A new grant supports collaboration in migraine research.

Migraines have no cure, a daunting fact for the estimated 28 million Americans who suffer from this debilitating chronic disease. It's even more daunting for researchers who are still struggling to understand the basics of migraine—its causes, its triggers, even how it works.

"We have all seen friends and family members crippled by the unrelenting pain of migraine," says Diane Lipscombe, PhD, professor of neuroscience. "But our current lack of knowledge of the basic mechanisms underlying this type of pain limits new therapeutic strategies for treatment."

Thanks to a grant from the Association for Migraine Disorders, Lipscombe, the interim director of the Brown Institute for Brain Science, is partnering with three BIBS colleagues, all of whom study the physiology of pain, to investigate the cells and circuits that cause migraine as well as opportunities for creating therapies.

The $100,000, multi-investigator pilot grant will also support Julie Kauer, PhD, professor of medical science and neuroscience; Christopher Moore, PhD, associate professor of neuroscience; and Carl Saab, PhD, assistant professor of neurosurgery and neuroscience. Their research also may involve the development of a mouse model to better understand the physiology behind migraine. In addition the association, which is based in North Kingstown, RI, committed $200,000 for a postdoctoral fellow.

BIBS unites researchers across disciplines to study brain function and health, and diverse working groups such as this—with investigators who will examine migraine at the behavioral, circuit, cellular, and molecular levels—reflect the institute's core mission, says Lipscombe: "to facilitate collaborative research aimed at understanding basic and disease mechanisms of the brain."

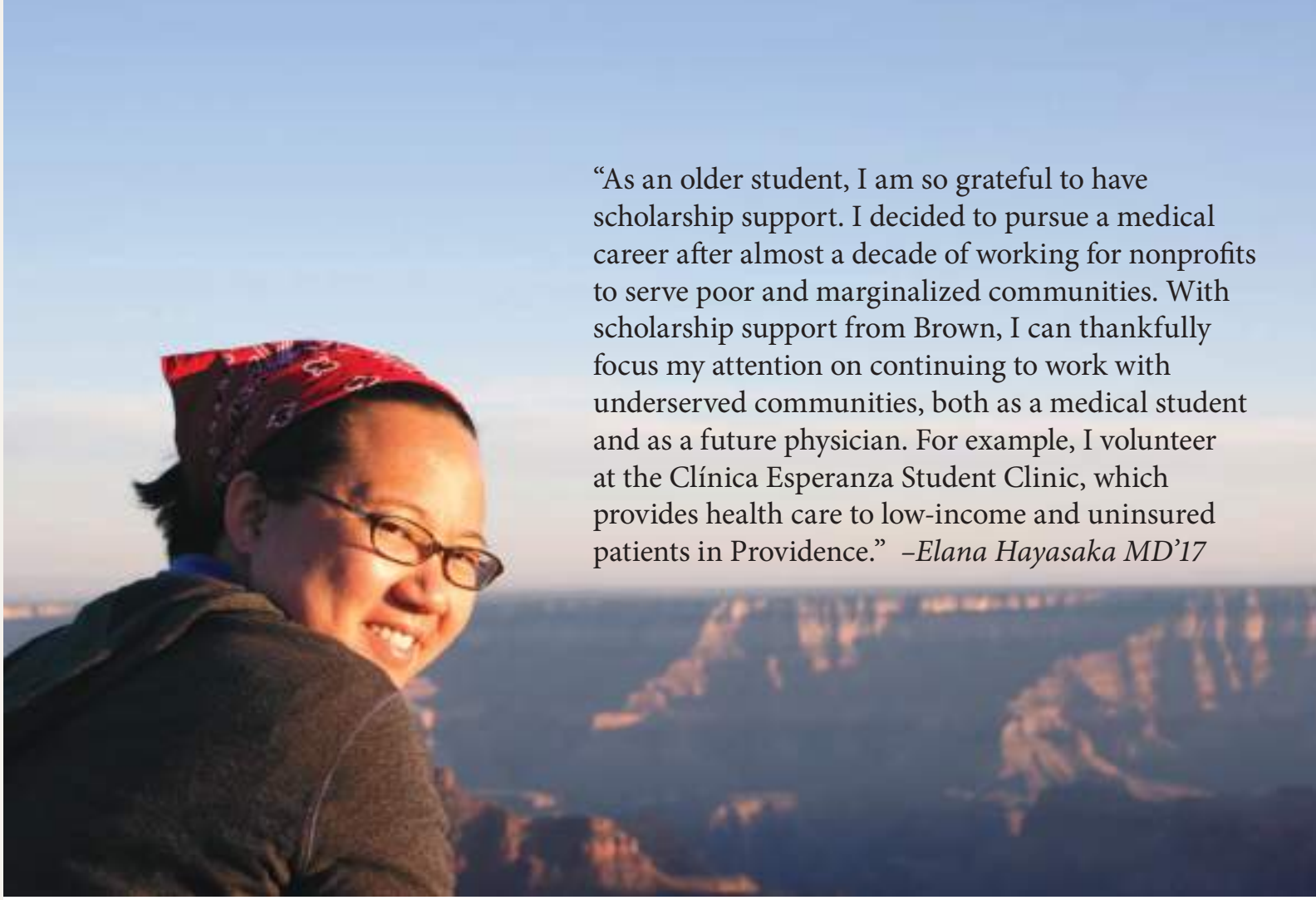
The grant integrates several efforts at Brown into one cohesive project, breaking down the barriers that often inhibit research and discovery. "Individually, a number of labs at Brown are working on pieces of the migraine puzzle from different perspectives," Moore says. "This new partnership with the Association of Migraine Disorders is letting us bring these together in a coherent attack on the problem—one that leverages these distinct areas of expertise. It's a great opportunity to make a real impact across multiple levels."

Frederick Godley, MD, president of the association, says he hopes the grant is just the beginning of a long-term collaboration with Brown researchers. "Our goal is to help migraineurs everywhere gain more attention for their chronic disease," Godley says. "We see the partnership with the Brown Institute for Brain Science as a unique part of our organization's plan to lead the effort to understand and cure migraine disease."

—Phoebe Hall

> The new partnership **integrates several efforts** at Brown **into one cohesive project.**

SCOTT KINGSLEY



"As an older student, I am so grateful to have scholarship support. I decided to pursue a medical career after almost a decade of working for nonprofits to serve poor and marginalized communities. With scholarship support from Brown, I can thankfully focus my attention on continuing to work with underserved communities, both as a medical student and as a future physician. For example, I volunteer at the Clínica Esperanza Student Clinic, which provides health care to low-income and uninsured patients in Providence." *–Elana Hayasaka MD'17*

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Questions? Contact Bethany Solomon, director of the Brown Medical Annual Fund, at Bethany_Solomon@brown.edu or (401) 863-1635.

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Day of Biology

Join us for a day of seminars, panel discussions, and networking to celebrate the past, present, and future of the life sciences at Brown University.

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Closing reception begins at 4 p.m.

The Day of Biology is dedicated to the memory of Associate Dean of Biology Marjorie Thompson.

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