

BROWN MEDICINE

Spring 2012

Volume 18

Number 2

We ♥
RJS

Student
Essays

The
Joys of
Match
Day

MINING THE MYSTERIES OF THE MIND



LETTER

FROM THE DEAN



Never a Dull Moment

It's been quite a spring in Providence. Match Day is always exciting, and this year the students matched at many of the best residencies in the country. In fact, one-third matched at top-10 medical schools, as ranked by *US News and World Report*. As always, we held a big celebration. Students opened their envelopes, yelled, hugged their friends and families, and texted everyone they know. This year the celebration was held in the new Medical School building, with a big balloon drop in the atrium. See complete Match results in this issue.

We are sorry to note that this is our last semester with Brown's iconic leader, President Ruth Simmons. During her years here, President Simmons has pushed Brown toward becoming an outstanding research university while preserving the unique undergraduate environment—quite a feat. Her vision of meaningful, truly interdisciplinary research has been achieved in many areas, such as the Institute for Brain Science (IBS). IBS has superb scientists on the Brown campus who are collaborating with their hospital colleagues from several clinical departments. Their work is highlighted in these pages. Another example of superb science is described in the profile of Professor Aggie Kane, chair of the Department of Pathology and Laboratory Science. Aggie, who collaborates with Professor Robert Hurt in Brown's School of Engineering, is a leader in the application of nanotechnology.

Sadly, this has been a season of farewells. Nelson Fausto in particular will be missed. Nelson was among the founding fathers of our Medical School and a dedicated mentor and educator in pathology at Brown University. He inspired numerous graduate students, medical students, postdoctoral researchers, and young faculty to pursue research in environmental health and human disease.

Edward J. Wing

PETER GOLDBERG



“I still strive to remain humble enough to look beyond what I expect and what I believe to observe what is.”

—Natasha Hunter, Page 40

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BY KRIS CAMBRA

Ruth Simmons will end her tenure as Brown’s president this summer, but her impact on biology and medicine will last forever. A look at some memorable “Ruth” moments.

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BY EILEEN O’GARA-KURTIS

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Cover: Diane Lipscombe and Julie Kauer on the bridge connecting their labs in Sidney E. Frank Hall. Photograph by Jesse Burke

LETTER

FROM THE EDITOR

Time Lapse

Thanks to a scheduling fluke and a show of faith, I was given the opportunity last fall to teach an adult writing course for Brown's Office of Continuing Studies. The exhaustion of preparation on top of the demands of full-time life almost killed me, but I signed on for a second semester. Why? Because of the students. I love them.

Every week when I walk into the classroom, my heart lifts. Class takes place in the early evening, just as most of the working world is calling it quits and putting its feet up. My students have all had full days, but they come back, week after week, and open their notebooks and minds. There is a moment in every class when I look out at their faces, see them squinting at the page and then at me and then back at the page, puzzling out restrictive and nonrestrictive clauses and semicolons and dashes, caring, perhaps for the first time, about words and how they work, and I am moved. They bring curiosity and skepticism and a willingness to learn. I hope that our medical students, too, as they graduate and grow up and older, will make good on their commitment to lifelong learning.

Two milestones are looming at Brown: the end of the presidency of Ruth Simmons and my 25th reunion. While one will be recorded in the annals of the University and one will not, both are hard for me to apprehend. Didn't I just meet my freshman hallmates—people who have shaped my life—a moment ago? Could almost 30 years have passed since we played that find-the-matching-shoe icebreaker? And wasn't the campus just recently rejoicing over the news of Ruth's appointment? This inability to grasp the linearity of time reminds me of E. B. White's description of a young circus performer riding her horse in circles under the Big Top: "She is at that enviable moment in life," he wrote, "when she believes she can go once around the ring ... and at the end be exactly the same age as at the start." I could be that girl's mother, but I feel exactly the same way.



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EDITOR

Sarah Baldwin-Beneich '87

ART DIRECTOR

Min O. Design

STAFF WRITER

Kris Cambra

ASSISTANT STAFF WRITER

Kylah Goodfellow Klinge

EDITORIAL INTERN

Kia Mosenthal '12

PRODUCTION ASSISTANT

Frank Mullin

PRINTING

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INBOX



AS SEEN ON TV

In “Sorry, Dr. House” (Winter 2012), Noah Rosenberg is absolutely correct, and his father-in-law overlooks some serious chinks in Gregory House, MD’s armor. Most notably, House never gets it right. At least not right away. It is understandable that a physician misses the correct diagnosis once in a while, but EVERY SINGLE WEEK? True, he comes through in the end, but not before two erroneous guesses and as many cardiac arrests, near-exsanguinations, and other disasters befall his patients. His “team” is reminiscent of rock musicians who, as an encore, play each other’s instruments: the endocrinologist operates, the infectious disease specialist performs ultrasounds, the nephrologist treats teen pregnancies. And the legal team on *Harry’s Law* couldn’t save his hospital from loss of accreditation, considering the weekly sins against conflict of interest, confidentiality, personal health information protection, and other violations. (As everybody knows, there is nothing worse than to watch your favorite medical show with a doctor. Or a cop show with a police officer, or *Six Feet Under* with a funeral director. Unless you enjoy hearing someone complain incessantly about how they got it all wrong.)

But I don’t agree with his main gripe with House—that the days of the doctor as individualist are gone. Despite the strength of the team, the importance of a multidisciplinary approach and the partnership between physicians, nurses, operating room technicians, respiratory therapists, and other health care professionals, the patient forms a unique, one-on-one relationship with “his” doctor. That doctor can be a family physi-

cian, an emergency medicine specialist, a hospitalist or a surgeon—but the degree of trust it takes for someone at his most vulnerable to place his life in someone else’s hands implies a very personal bond. Medicine is not a democracy, but a consultative dictatorship. There is no excuse for yelling at a nurse, belittling a resident or throwing a bloody sponge at a student. Medical decisions, however, are not made by consensus—certainly not the urgent ones, and current medical practice relies as much on the leadership of the physician as it did in John Hunter’s days.

Sure, when things go well, the doctor may get much more credit than he deserves—it is, after all, thanks to an entire team that the operation was a success, the delivery went without a hitch, or the treatment worked. And when things don’t go so well, the patient’s doctor may get more blame than he deserves—one person cannot be expected to know everything and be present at all times. Communication is more important than ever in medicine, as are collaboration and consultation. But one person ultimately answers to the patient. And the patient is less likely to ask “Who is my team?” than “Who is my doctor?”

François Luks, MD

*Professor of Surgery
Alpert Medical School*

HOME DELIVERY

I was intrigued by the report on associate professor Catherine Beard’s clinical trials to test the efficacy of therapy delivered by computer to treat social anxiety (Winter 2012).

My mother-in-law spent her empty nest years working with high-risk youth in the small, economically depressed

and insular community where she’s resided for nearly three decades. Since her retirement, the episodic panic attacks that have plagued her since youth have increased in frequency and intensity to the point where her participation in even relatively straightforward tasks is significantly compromised.

Finding confidential therapeutic intervention locally proved impossible due to her former professional relationships with mental health professionals, so she drives more than an hour for each appointment with a therapist in the town where her son and I reside. While Medicare lowers her out-of-pocket costs, the \$45 co-pay is still significant for someone on a fixed income. Then there’s the rising cost of gasoline and the fact that Mom can’t make the commute alone in one day, so she and my father-in-law make an overnight trip for each appointment.

Projects like Dr. Beard’s could be transformative for my entire family. Electronic delivery of mental health care is promising not only for underserved populations, including low-income, house-bound, and elderly people, but also for those with concerns about confidentiality.

Name Withheld

THOUGHTS?

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

- **Brown Medicine**
Box G-ADV
Providence, RI 02912
- Brown_Medicine@brown.edu
- Brownmedicinemagazine.org

THE BEAT

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



MAXI MED

Continuing Education

How many ways can you say “wow”?

On Saturday, March 31, as second-years studied for Boards, 70 parents, alumni, and friends of the Medical School filled the seats of the seminar rooms at 222 Richmond Street. They were attending Alpert’s first-ever Mini Med School, an all-day event that began with tours of the new Medical School building and an overview of the curriculum by Associate Dean for Medical Education Phil Gruppuso. Participants spent

the rest of the day in “class”—four one-hour interactive learning sessions taught by top faculty on subjects ranging from

human anatomy to pediatric bipolar disorder, from artificial ovaries to orthopedic treatment of joint diseases, from

fistula repair in sub-Saharan Africa to the state of health care in America.

The reception at day’s end buzzed with intellectual stimulation. “I was blown away,” parent Rich Costello said. “The faculty were very human and very, very smart—a lovely combination.” Costello also liked the building, calling it “open, transparent, and light—a good metaphor for education.”

“This was a **brilliant** idea **executed perfectly**.”

“Phenomenal!” said parent Teresa Elia. “John Donoghue was incredible. I had no idea that Brown was a front-runner in the

ADAM MASTOON (4)



Opposite: Dale Ritter, director of the morphology course, explains cadaveric dissection to interested parents. “At other schools, they start with the back, to ease students into it,” he says. “We start with the heart and lungs. They’re charismatic organs.” Above: John Donoghue, director of the Brown Institute for Brain Science, describes the brain-computer interface, one of the latest approaches to restoring movement following damage to the motor system. Left and below: Andree Heinl ’83 MD’86, mother of second-year student Rob Heinl, and Linda Olson and Rich Costello, parents of first-year student Anna Costello, seem to enjoy trading places with their kids.



area of brain science. At the end of every lecture, no one wanted to leave!”

Another parent, Robert Birnbaum, called the event “spectacular.” “It was a huge plus to have so many MD alums in the room,” he said. “The intellectual firepower was tremendous.”

The faculty, in turn, were impressed with their students. “They were all heavily engaged. I learned from *them*,” said Maureen Phipps, interim chair of Obstetrics and Gynecology, whose class focused on Brown’s participation in the National Children’s Study.

—**Sarah Baldwin-Beneich**

To find out who the guest of honor at the reception was, turn to page 26.



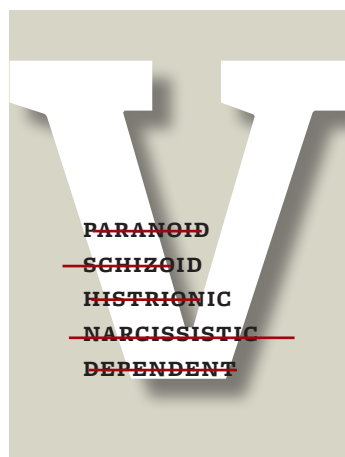
THEBEAT

By the Book

The impact of changes in the DSM-5.

What might happen if five personality disorders are deleted from the coming revision to the *Diagnostic and Statistical Manual, 5th edition* (DSM-5)? In a recently published paper, researchers say that there will be a higher likelihood of false-negative diagnoses for patients.

The DSM-5 Personality and Personality Disorders work group originally recommended that paranoid, schizoid, histrionic,



narcissistic, and dependent personality disorders be removed from the DSM-5 so as to reduce the level of comorbidity among the disorders. More recently, the work group recommended that narcissistic remain.

Lead author Mark Zimmerman, MD, associate professor of psychiatry and human behavior and director of outpatient psychiatry at Rhode Island Hospital, and his colleagues evalu-

ated how the removal of the five personality disorders from the DSM-5 would affect patient diagnoses. Zimmerman and his colleagues evaluated 2,150 psychiatric outpatients, more than one-quarter of whom were diagnosed with one of the 10 DSM-IV personality disorders. They found that after deleting the five proposed disorders, 59 patients who were previously diagnosed with a personality disorder according to DSM-IV would no longer be so diagnosed.

Zimmerman notes that no data were cited by the work group attesting to the impact this proposed deletion might have on the diagnosis and prevalence of personality disorders.

"The findings of the present study highlight our concerns about adopting changes in the diagnostic manual without adequate empirical evaluation beforehand. To be sure, there are problems with the classification of personality disorders. However, the identification of a problem is only the first step of a process resulting in a change to diagnostic criteria," says Zimmerman.

The paper was published in the *Journal of Clinical Psychiatry*.

Findings



James Woods, above, testifying in Rhode Island.

UPDATE

Let Them Eat Crow

Actor supports effort to pass a "sorry" law in Rhode Island.

Rhode Island native and Oscar-nominated actor James Woods testified before the state's General Assembly in February in support of the "benevolent gestures" law, which would allow doctors to apologize to patients and families for bad treatment outcomes (see *Brown Medicine*, Fall 2007) without exposing themselves to malpractice suits. Woods's brother, Michael, died of a heart attack at Kent Hospital, in Warwick, RI, in 2006. The actor withdrew a lawsuit after a hospital executive apologized and agreed to start an institute in Michael Woods's name.

James Woods said that the simple act of apologizing can help grieving family members process a loss caused by medical errors.

"This apology was a very effective, pragmatic solution," he said. "Usually, the people who are willing to admit their mistakes are some of the finest people."

—Kris Cambra

AP PHOTO/STEVEN SENNE

UPDATE

The Hunter Games

Students find, sequence new bacteriophages.

Alex Hadik '15 is a gold-medal Olympian. A gold-medalist in the 2011 Phage Olympics, that is.

First-year Brown students competed in the Phage Olympics as part of Phage Hunters, a new introductory biology course that is entirely hands-on. Phage Hunters was designed by the Science Education Alliance (SEA) branch of the Howard Hughes Medical Institute (see *Brown Medicine*, Spring 2011). This year both Providence College and Brown joined the fourth cohort of schools to offer the class, taught at 40 schools nationwide.

Throughout the first semester, students worked to find and isolate unknown phages from local soil samples. “They think there are around 10 to the 31st bacteriophages in the world, so the proba-

bility of you finding a new phage is much, much larger than finding one that has been discovered,” says Tina Voelcker '15.

Though the odds were in the students' favor, isolating the viruses was a long—and at times, frustrating—process. Hadik says it was challenging to determine whether his virus was one phage or a combination of several. To do this, he had to plate different strands of the virus and watch how it developed over 6- or 8-hour increments, keeping track of his

data meticulously. The trying process motivated him to name his phage “Dante,” reflecting “the layers of hell it put me through isolating it,” he wrote.

Despite these frustrations, student responses to the course have been overwhelmingly positive.

Hadik said that his creativity and problem-solving skills have grown immensely through overcoming some of the challenges he faced.

Students have also been excited about the opportunity to engage in an experimental laboratory during their first year at Brown. “It was so fantastic to be exposed to this world of actual research,” Voelcker says.

After successfully isolating his phage,

“The probability of you finding a new phage is much, much larger than finding one that has been discovered.”



“This is how science operates,” says Dr. Peter Shank, with student Alex Hadik. “The hope is to hook students early.”

Hadik entered “Dante” in the class-wide Phage Olympics and emerged victorious. Throughout the second semester, students will work together to analyze and annotate the 59,652 base pairs of Dante's genome using advanced computer software that helps analyze DNA.

If they succeed in completely annotating the DNA, the class will be able to submit their work to an online database of known phages, allowing their discovery to be accessed and used by everyone in the scientific community.

“It's not like you're replicating what someone has done 50 years ago,” says David Targan, Brown's associate dean of the college for science education. “You're doing something that is contributing to new knowledge.”

—*Kate Nussenbaum, adapted from the Brown Daily Herald*

THEBEAT

DATA

Only in Rhode Island

Scientists hope to create a comprehensive autism registry.

The Rhode Island Consortium for Autism Research and Treatment, or RI-CART, aims to build a registry that includes every individual in the state diagnosed with autism.

“Rhode Island is a very unique place with great diversity where people tend to stay,” says Associate Professor of Psychiatry and Human Behavior Daniel Dickstein ’93 MD’97. “This ‘collaboratory of RI’ offers a chance to really understand many aspects of autism that you could not do elsewhere—including unique longitudinal or population-wide studies. You can also uniquely collaborate with parents, clinicians, educators, and those in state government.”

Even though Rhode Island is the smallest state, its ethnic makeup is representative of the nation’s. If the project is successful, it will yield a dataset that can be used by state and federal governments to inform autism research and policies.

RI-CART was launched in March 2009 by a small group of scientists who recognized a need to increase collaboration among autism researchers in the state. Since then, the group has grown to include about 50 autism researchers, clinicians, educators, parent advocates, and representatives from government agencies around the state.

Often, investigators from different studies are unaware that they’re seeing the same individuals with autism. RI-CART proposes to address this problem by creating a registry with global unique identifiers, or GUIDS, which are assigned to

“Working together we have the **power ...**
to transform the diagnosis and treatment
of autism.”



Dan Dickstein, right, with his research collaborator, Associate Professor of Biostatistics Hernando Ombao.

each participant in order to facilitate efficient data-sharing among multiple autism researchers.

RI-CART plans to discharge a three-person team consisting of a psychologist, an educational specialist, and a parent advocate to travel to clinics, service providers, and, potentially, to homes throughout the state. The team psychologist would administer the Autism Diagnostic Observation Schedule (ADOS), while the educational specialist and the parent advocate would help parents and teachers understand a child’s ADOS results, and connect families with resources and treatment.

Currently, only about 10 percent of children with autism in Rhode Island have access to the ADOS, which is considered a ‘gold standard’ for the clinical diagnosis of autism.

“We think this would greatly improve the accuracy of autism diagnoses, as well as potentially improve the treatment that these kids get,” says Thomas Anders, adjunct professor of psychiatry and human behavior.

“Working together—parents, children, clinicians, and researchers—we have the power in Rhode Island and with RI-CART to transform the diagnosis and treatment of autism,” says Dickstein.

—Kia Mosenthal ’12

PATRICK O’CONNOR



Cool or Gross?

The Brown Student National Medical Association chapter held its annual “Meet the Cadaver” event on December 10, 2011. First-year med students Linda Chao and Tendo Kironde (above) and third-year Nina Karlsen-Ayala (right), taught local high school students interested in health careers about the human body.



Not to Scale

Clinical measures created in the First World are inaccurate for the Third.

Dehydration due to acute gastroenteritis is one of the leading causes of death in children worldwide. But a new study led by a physician team from Alpert Medical School and Rhode Island Hospital suggests that the dehydration scales used in low-income countries are not accurate predictors of severe dehydration in children.

The disconnect between the incidence and diagnostic measures of dehydration is a concern: in order to provide the most appropriate treatment for children diagnosed with dehydration, the severity of the dehydration must be determined.

While working in Rwanda, Adam Levine, MD, MPH, assistant professor of emergency medicine, designed a study to determine the accuracy of the three most common dehydration scales that use clinical signs. None of

these scales (the World Health Organization scale, the Gorelick scale, and the Clinical Dehydration Scale) has been validated in low- or middle-income countries.

“In this study, we found that [these scales], when performed by general practice physicians and nurses in a resource-limited setting, were not accurate predictors of severe dehydration in children with diarrhea and/or vomiting,” says Kimberly Pringle, MD, an emergency medicine resident at Rhode Island Hospital who analyzed the data Levine gathered in Rwanda. Their study rated 52 children using all three scales.

Pringle and Levine were funded by a grant from the Harvard Affiliated Emergency Medicine Residency Maryanne Povinelli Award, and worked with a team of researchers from the US and Rwanda.

“This was an incredible opportunity to work with an international team of researchers on a topic that is of vital importance to global child health,” says Levine. “We are now working on a follow-up study in Rwanda that we believe will lead to the development of better tools for assessing and managing dehydration in children with diarrhea around the world.”

—K.M.

Findings

THEBEAT

ANATOMY OF A MEDICAL ALUMNI MARSHAL

Right This Way

Once referred to as “the festival of Providence,” Brown’s Commencement got so unruly that in 1791 a law was passed requiring the high sheriff to attend to keep things under control. Today it’s a decidedly tamer affair, though still an event marked by pageantry and high spirits (and still attended by the sheriff). On the morning of May 27, the bells will peal, the bagpipes will keen, and the procession will step off. Medical alumni marshals, including Mark Migliori ’84 MD’87 (right), will proudly lead their fellows through the Van Wickle gates, down College Hill, and up the steps of the First Unitarian Church. See what Mark’s packing in his bags for Reunion-Commencement Weekend.

—S.B.B.

TOP HAT
A jumbo screen at the Van Wickle gates reminds marchers to “Doff your caps!” as they walk through them.



VIDEO CAMERA
“I’ll figure out how to post videos on YouTube later.”



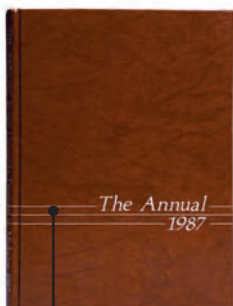
ANNA
Best backing for an iPhone, ever.



READING GLASSES
For consulting the campus map. “Admit it—we need them.”



CD
Not just a plastic surgeon, Mark also plays drums in his group, The Remnants.



YEARBOOK
What’s more fun than seeing how much better you look now?

LIBATIONS
Rx for a great weekend and recovery therefrom.



ADAM MASTOON



NEW BLOOD

Do This, Not That A new center specializes in comparative- effectiveness research.

Wine: good in moderation, or bad for your health? Seemingly different but related studies about the supposed health benefits from a particular food or dietary supplement notoriously confound consumers. But doctors too are confronted with many studies about treatments. How do doctors know which drug to prescribe, or which course of action to take?

A new center based in the Public Health Program and led by a team of five experts will advance the study of turning heaps of data in research papers into a powerful understanding that doctors and scientists can apply. The research team develops the sophisticated analytical methods necessary to reconcile those individual findings so that doctors can draw a more definitive and reliable conclusion.

“Evidence-based medicine will be extraordinarily important as we move forward in a new health care environment,” says Edward Wing, dean of medicine and biological sciences. “Clinicians and hospitals will depend on this kind of research and analysis to provide the highest quality care. Furthermore, the expertise of these individuals will be important resources for many faculty across the Brown campus. Evidence-based medicine is the core of good quality care.”

The new faculty members include Thomas Trikalinos, Joseph Lau, and Christopher Schmid, a highly regarded trio until now based at Tufts University Medical Center in Boston. Their close collaborators Issa Dahabreh and

Byron Wallace will also come from Tufts for appointments as research faculty members.

A central tenet of evidence-based medicine—that doctors should base treatment decisions on what rigorous quantitative research has been found to be the most likely outcome for patients—is a simple one. But actually determining what the medical literature has to say about a treatment, not just in one study but in many, is a complex scientific endeavor that is still a growing area of study, says Terrie Fox Wetle, associate dean of medicine for public health and public policy.

Evidence-based medicine methods have value beyond determining the comparative effectiveness of treatments. Schmid says that scientists often have questions that are surprisingly similar to those faced by doctors, offering opportunities to expand the methods into other fields. Consider the parallels between choosing the best treatment for a patient’s infection and choosing the best approach to combat an ecosystem’s invasive insect problem.

—David Orenstein and K.C.

Cream of the Crop This year’s AOA inductees.

On March 20, 13 Alpert students, residents, faculty, and alumni were inducted into the Alpha Omega Alpha Honor Medical Society (AOA). The only national honor medical society in the world, the AOA was established in 1902 to recognize and foster excellence in the profession.

Visit brownmedicinemagazine.org for a complete list of the 13 new inductees, and to see who’s in the photo at right.

HANK RANDALL



THE BEAT

DOCTORPRENEUR

Waste Not

Student-run nonprofit facilitates the reuse of medical equipment.

At a party during his junior year of high school, Jayson Marwaha '14 MD'18 learned that the US is home to an abundance of medical technology waste that is waiting to be tossed or scrapped for metal. "I thought I could make something of that," Marwaha says.

Two years post-soiree, in August 2011 and after his first year at Brown—and much research—Marwaha founded Medical Equipment Donations International (MED International), a nonprofit that donates medical equipment lying unused in the United States to facilities in developing countries.

Marwaha says the Program in Liberal Medical Education (PLME) was a "big part of the reason" he was able to start MED International, not only because it offers the curricular and extracurricular flexibility needed to devote oneself to such a project, but also because the PLME community gave him significant support.

Shortly after founding the program, Marwaha partnered with Han Sheng Chia '14, who was also interested in both entrepreneurship and the problem of disease in developing countries. Though many large-scale nonprofits have worked to donate unused medical equipment, Marwaha and Chia say they hope to succeed where others have faltered: not with the supply or delivery of donated machines, but with their utilization—the step that organizations tend to overlook. "If you don't have the third part, you're essentially transferring waste from one country to another," Chia says.

Although donated machines make up 80 percent of medical technology in developing countries, only 30 percent of those machines are used, says Marwaha.

Marwaha and Chia have explored three reasons that equipment often cannot be used in the facilities where they are donated: high operating costs, insufficient operator training, and inadequate infrastructure, such as a lack of electricity or water.

Their research shows that the key to increased utilization is understanding the needs of the recipient. With this in mind, they chose Zanzibar as MED International's first recipient. Marwaha was able to meet Zanzibar's Vice President and Deputy Minister of Health at the Tanzanian Embassy in Washington, DC, in October 2011. Zanzibar was undergoing an extensive, government-run health facility overhaul, the officials told him, and they were looking for equipment for renovated health facilities. "They demonstrated the strongest capacity to receive and implement because of the nature of this massive overhaul," Chia says.

MED International has since become a community of full-time students, faculty advisers, and consultants. In April, their first shipment of medical equipment to Zanzibar was completed. They also recently received the C. V. Starr Fellowship from the Social Innovation Initiative at Brown, a \$6,000 grant that will support their planned study of medical needs, capacities, and barriers to utilization in Zanzibar this summer.

—Kylah Goodfellow Klinge/
Michael Weinstein, adapted from
the Brown Daily Herald

MED International welcomes help from doctors, engineers, and students.
For more information, visit
www.medinternational-us.org.

Over
Heard

"My personal concern for those who hold that view isn't just that they are wrong on science, wrong about the nature of the evidence, and mistaken on a fundamental point of biology. It's that they are missing something grand and beautiful and personally enriching."

—KEN MILLER '70, professor of biology, in response to the statistic that 39 percent of Americans have rejected the suggestion that humans had emerged from the process of evolution.

ELEVATOR PITCH

Science Storytellers

Med students use compelling narrative to teach concepts.

Saturday night, and the club was packed. Brenda Devereux and her fellow interns at the investment bank, Claire Yee and Lily Palmer, were having their usual girls' night out...

Believe it or not, this is the opening to a lesson plan on cellular respiration, co-written by William Brucker '04 MD'13, executive director and founder of the Providence Alliance of Clinical Educators (PACE). PACE, founded in 2011, is a nonprofit that aims to improve high school science educational outcomes by integrating basic science into memorable stories. The stories are free to teachers online as supplemental materials in the classroom.

Bill and his sister, Brenna Brucker MD'13, PACE's chief operating officer and treasurer, talked to *Brown Medicine* about the success of their new approach to science education.

How did you develop the idea to teach science to students through storytelling?

WB: I got to teach students at Rhode Island College, where I was an adjunct professor in the biology department. Working with the students is where everything came together. They were a sort of laboratory to test different techniques, to see what worked and what didn't. In terms of science, they were a very reliable assay, because they were a tough crowd.

Why do you think science is traditionally a difficult subject to teach?

WB: Teaching science is kind of like getting people to eat something they

don't want to eat. Take eggplant, for example. You can give someone an eggplant and say, "This is nutritious, why don't you want to eat it?" And they would tell you, "This is terrible, I don't like it!" The challenge of the teacher is to use ingredients that no one likes and find a way to make them appetizing. So our task is to take an eggplant and make eggplant parmesan.

What role do you see your stories playing in the classroom, especially in relation to textbooks?

BB: I think there will always need to be textbooks to look up facts and information in a predictable way. But for me, and for most high school students, learning science is difficult, and it only gets inter-

esting once you go beyond that. So medical school is a privilege, because you can see how boring mitosis becomes relevant. A lot of high school students ask, "Why do I need to learn this?" This is why you need to learn something and mechanism in one package.

You have received positive feedback from teachers in all 50 states. What do they say is the greatest benefit?

WB: Reading across the curriculum. Teachers are really trying to get students to read, so they're pushing reading in every class. Our stories have promoted literacy in a way that teachers didn't expect.

What are your plans for PACE after you graduate?

BB: We hope that this is going to be set into motion and last many years beyond our time.

To learn more about PACE or become involved, visit <http://pacescience.org/>.

William Brucker in front of an illustration from PACE's teaching materials.



THEBEAT

Look at My Lab

On April 9, Sen. Jack Reed, accompanied by the New England regional director of the US Environmental Protection Agency and the directors of the state's environmental and health departments, visited Brown's Superfund Research Program. The Brown program is one of 14 research groups funded by the National Institutes of Health to assess and remediate Superfund sites nationwide.



Ask THE EXPERT

It's Not a "Girl Thing"

Boys are at risk for eating disorders, too.

A recent large-scale study of adolescents in the US showed that significant numbers of young males experience unhealthy weight control behaviors. How are eating disorders in males different than in females? Are there special considerations for this population? Diane Dermarderosian, medical director of Hasbro Children's Hospital Partial Hospital Program and assistant professor (clinical) of pediatrics, sheds some light.

Males develop eating disorders more frequently than previously understood. While the prevalence is controversial, most recent estimates are that 1 in 4 patients with eating disorders is male. The epidemiology is difficult to characterize, but we know that in males, there is frequently a more significant delay between emergence of symptoms and initiation of treatment. Factors contributing to this include shame about diagnosis, inadequate screening by providers, and a delay in referral to appropriate treatment even when the diagnosis has been made.

Males and females share many risk factors and clinical

characteristics. Eating disorders are an outward expression of and coping mechanism for emotional distress. The factors causing them include genetic, psychological, biological, familial, environmental, and social influences. They are associated with significant morbidity and mortality for both genders.

That said, males are susceptible to a range of different risks than females. They are often more concerned with shape than weight, looking to optimize lean muscularity with minimal body fat. They tend to increase exercise rather than restrict calories. Risks include a history of being teased for childhood obesity, a desire to improve sports performance, an attempt to avoid medical illness, and an effort to improve a gay relationship. Exercise and athletic competition represent a particular risk. Although being gay increases the risk due to rigid sociocultural body image ideals, most men with eating disorders are not gay or bisexual.

While there is limited research about males and eating disorders, studies suggest that the prognosis is equal to or better than for females. The key to optimizing prognosis for all patients is prompt and comprehensive treatment. The core treatment principles for males and females include nutritional rehabilitation, medical stabilization, and psychological support to promote behavioral change. Establishing "male-only" support groups is key.

MIKE COHEA

FROM THE COLLECTIONS

BY AMY ATTICKS AND SARAH BALDWIN-BENEICH

Press Here

Brown acquires a 350-year-old guide to pulses.

Last November, the Brown University Library acquired a rare edition of a groundbreaking medical text, *Les Secrets de la Médecine des Chinois* (Grenoble, 1671), the first European book on Chinese medicine. Comprising extracts from Chinese medical treatises translated into French by an unnamed Jesuit missionary, this work includes the first accounts in the West of the Chinese

theory of pulses, concepts that were fundamental to Chinese medical practice and of much interest to European physicians.

The small, slender volume smells like the back of your grandfather's closet, all must and old leather, and its pages crackle when you turn them. It is divided into books, which in turn are divided into chapters. Check your own

health using this rule, from Chapter I of the first book: "The regular and tempered pulse of a well-disposed person is one which, in the space of a single regular, unforced breath, beats four times; more than five and he is rushed; only three



KAREN PHILIPPI



POCKET-SIZE TREASURE

The volume, bound in sheepskin with gilt lettering on the spine, fits in the palm of your hand.

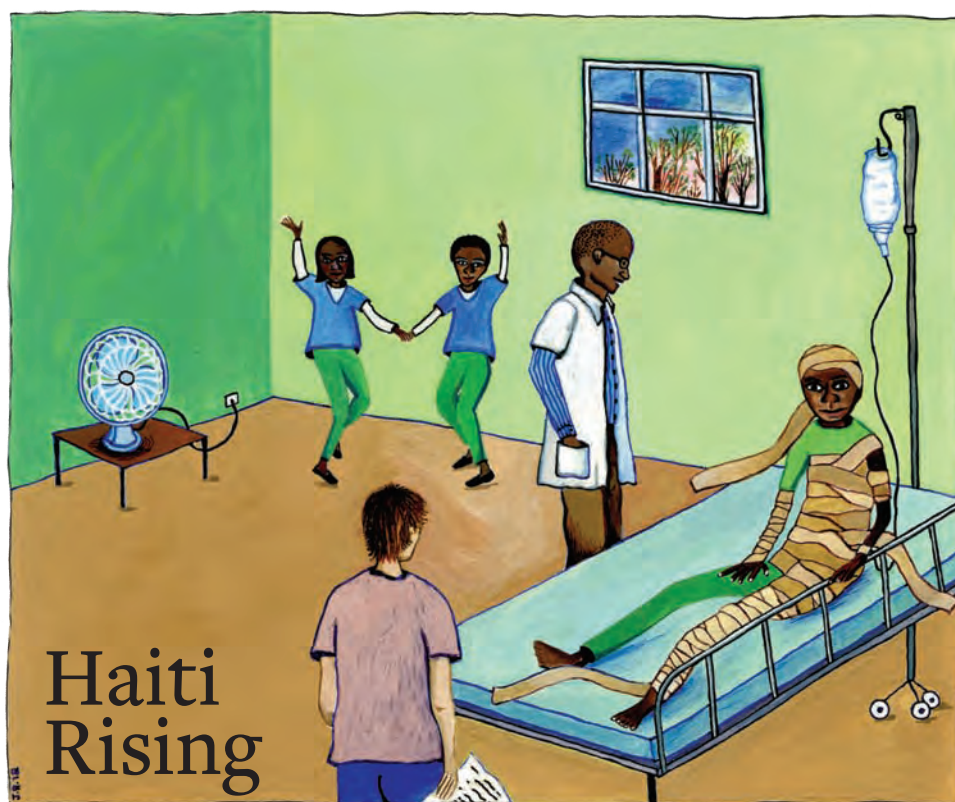
and he is slow." Or this, from Chapter II of the second book: "A broad pulse indicates heat in the lungs, dry hair, dry throat, and a sticky, viscous pituitary."

The person who compiled the text is unknown, but locates himself in Canton in 1668, having been forced from Peking (current day Beijing) along with other Christians. Brown is now one of only seven institutions worldwide to hold a copy of this text.

Amy Atticks is library communications and stewardship specialist, Brown University Library.

FIELDNOTES

BY NICHOLAS H. CARTER MD'13



More than quick fixes, Haiti needs deep and lasting investment in education and health.

As dark as moments could be at the Haitian hospital where I worked this year, there was plenty of healing to celebrate. A diabetic man living in a tent came to our clinic with a blood sugar in the 400s and an abscess that had grown to involve most of his forearm. His wasted face and body recalled the black-and-white photographs of diabetics in the era before Banting and Best discovered insulin. After an incision and drainage, daily long-acting insulin injections, and weeks of dressing changes helped our patient heal and put on weight, we felt as though we had truly seen Lazarus rise.

The wound care nurse sang “*Reveye Laza o, reveye Laza o*,” the patient beamed, several onlookers danced in the waiting area, and we all praised the gracious God who had restored health against the odds.

My wife and I moved to Haiti in August 2011 after I completed my third-year rotations at Alpert Medical School. Rachel taught English and Spanish at Louverture Cleary School (LCS) in Croix-des-Bouquets. Directed by Patrick Moynihan '87 through The Haitian Project, LCS is a free secondary school for gifted students from poor Haitian families. I

lived at the school and worked at St. Luc Hospital near the US Embassy. My primary goals were to become fluent in Kreyol and prepare for a career in surgery and medical education in Haiti. Under the direction of the Haitian administrators at St. Luc, my work included clinical service, research, and teaching.

A CLINICAL EDUCATION

In the wound care clinic and intensive care unit, I saw the heartbreaking toll of a medical infrastructure that provides inconsistent access to primary care and basic surgical procedures. Patients with extensive burns, diabetic ulcers, and fungating cancers often presented after suffering at home for weeks. Our hospital was building an operating room, but we lacked surgical staff. I

spent considerable time on the phone with nearby hospitals, hoping to arrange transfers for our most urgent surgical cases. I was stunned by the burden of non-communicable maladies like trauma, stroke, and heart failure. Yet despite the volume and acuity of disease, the almost entirely Haitian staff of doctors and nurses at St. Luc treated many of our patients successfully. The Lazarus effect is often cited in the context of antiretrovirals for AIDS, but I came to see risen patients all over the hospital, as heart failure patients with massive edema were diuresed, septic patients were resuscitated,

JESSICA DEANE ROSNER

and two-year-old weeping skin lesions were healed with regular bandaging.

In research, I worked with the St. Luc medical director and Brown pediatrics resident Elizabeth Dawson-Hahn to build an outcomes database for children with severe acute malnutrition. St. Luc enrolls malnourished children in a comprehensive program that provides vitamin-fortified peanut butter, treatment of skin and gastrointestinal infections, HIV testing, and deworming. The program is an important step toward reducing the dishearteningly high number of Port-au-Prince children who die before the age of 5 due to malnutrition-linked infections such as diarrheal disease or pneumonia. Our database will guide future St. Luc malnutrition treatment, and we look forward to publishing the results for broader dissemination. I also conducted a brief review of malnutrition among adult inpatients at St. Luc hospital. My research helped me appreciate the tremendous impact of nutrition on health outcomes in Haiti, and as a future surgeon I hope to study whether community health workers can help surgical patients supplement protein and vitamins before and after elective procedures to improve wound healing and other outcomes.

AN ANTIDOTE TO DESPAIR

As rewarding as my clinical and research responsibilities were, it was easy to feel feeble in the face of cyclical sickness and poverty. In the spring semester, I began teaching medical classes at the hospital and LCS. Teaching dedicated Haitians felt like being vaccinated against hopelessness. A paramedic friend from my former ambulance service in

Cambridge, MA, arrived in January, and together we graduated a class of technicians for a new St. Luc-affiliated hospital in Cite Soleil, a densely populated neighborhood near downtown Port-au-Prince. The curriculum included patient assessment, oxygen administration, and first aid, and we took the opportunity to offer simple steps to avoid preventable cases of morbidity and mortality that we had seen in the hospital, such as aspiration of vomit and near-exsanguination


“Global health must be more than donation shipments, one-week visits, and quick fixes.”

from traumatic neck injuries. I worked side-by-side with my students in wound care, and their commitment, ability, and desire to learn encouraged me greatly. In our first two months, 54 employees attended training, and eight technicians graduated.

My weekly medical classes with LCS students were my favorite moments of the year. Senior students speak Kreyol, French, English, and Spanish, and they use these skills as volunteer interpreters in a local clinic. Many have stories of translating in tents and makeshift operating rooms after the earthquake, and more than a few have personal stories of losing a family member to a treatable condition. These are students who have realistic aspirations to become the medical professionals of Haiti's future—LCS uses donations from supporters in Haiti and the United States to provide

many graduates with scholarships to attend medical or nursing school. In our elective, students learned anatomy and pathophysiology in four languages, discussed care for pregnant women and malnourished children, and checked blood pressures and bandaged injuries in our neighborhood.

If we direct our current zeal for global health to investment in individuals who serve broader medical institutions, then our labor can be fruitful now

and for generations to come. We will not be spared the sweat of practicing academic medicine in a poor setting, but we can stand on the integrity of an authentic solution for a nation where weak health infrastructure serves destitute patients. Technology is welcome—bedside ultrasound has been a boon for St. Luc—but global health must be more than donation shipments, one-week visits, and quick fixes. Our Brown professors invested in us as individuals with the expectation that we would make future contributions to health. We can invest in Haitians, and Haiti, in the same manner. With faith and service, we can see Lazarus rise. 

Nick Carter is a fourth-year medical student at Alpert Medical School. He can be contacted at nick.carter@brown.edu.

Small Wonder

Partnering with an engineer, a pathologist goes in a new direction.

The yellow-and-black signs outside Dr. Agnes Kane's pathology laboratory read "CAUTION: Cancer hazard." Nodding at the ominous-looking postings, Kane explains, "because of their toxicity similar to asbestos, we handle these materials as if they were carcinogens." Meanwhile, across the Providence River, at the School of Engineering, Professor Robert Hurt is hard at work creating the very materials that Kane is so gingerly studying: nanoparticles.

Smaller than 1,000th the width of a human hair—so small that you need an electron microscope to see them—nanoparticles' practical applications may be enormous: making implants more biocompatible; diagnosing and treating cancers; cleaning up oil spills. That said, the history of science is filled with promising solutions that create additional unforeseen problems of their own. No one is more aware of this than Kane, chair of Brown's Department of Pathology and Laboratory Medicine. She has spent her career on, and helped guide the Department's focus on, the human health effects of environmental and occupational exposures. She and Hurt tick off some examples demonstrating this law of unintended consequences:

"Corn ethanol," says Hurt, referring to the fact that 40 percent of the corn grown in America is used to create this alternative fuel. "Then you raise the corn prices for food."

Kane nods. "Use more fertilizer? Contaminate our water supplies. There's always these trade-offs."

One of modern history's most devastating trade-offs was of a common mineral that makes an excellent flame-retardant building material. Its usefulness notwithstanding, asbestos can cause devastating cancers and fatal lung problems both for those who mine it and for those who live and work in buildings that contain it.

SMALL, NOVEL... BUT SAFE

From the time Kane joined Brown's pathology department as a founding member in 1982, she has studied the mechanisms by which asbestos injures cells and causes cancer. When, in 2004, she gave a talk about this research to a group of colleagues, Hurt approached her afterward. The asbestos fibers that Kane showed in her talk reminded Hurt of the carbon nanofibers he had been developing. "We were not working on health effects at the time," Hurt says. "We were doing traditional nanoscience, trying to make new things that had never been made before."

But when Hurt told Kane about his carbon nanofibers, "I immediately asked him if I could have some," Kane recalls. Her worrisome discovery—that the particles were similar to asbestos in several key ways—has changed the direction of

both her own and Hurt's careers and of the pathology department's research and teaching.

Now Kane and Hunt work side-by-side to create innovative nanotechnology and, simultaneously, assess the materials' safety and toxicity. "It's a new paradigm to try to consider the implications of the technology as you develop the technology," says Hurt. "We haven't done a lot of that in the past. We just develop technology and we field it and then we worry about what its implications might be. So it's kind of fun to do these things together."

In 2007, their collaboration gave rise to the Institute for Molecular and Nanoscale Innovation (IMNI), an interdisciplinary organization comprising more than 60 faculty in nine depart-





This year marks
Aggie Kane's
30th at Brown.

ments. Kane heads IMNI's NanoHealth Initiative, which studies the environmental and health effects of nanotechnology.

TRAINING THE NEXT INTERDISCIPLINIANS

With curly chin-length gray hair and blue eyes, Kane—known to friends and colleagues as “Aggie”—smiles often and laughs readily. Her unassuming manner and commitment to collaboration, teaching, and mentorship have won her numerous teaching awards and devotees. “If it weren’t for Aggie, I wouldn’t be doing what I’m doing,” says Luba Dumenco, a lecturer in pathology and director of the Medical School’s pre-clinical curriculum. “She’s always valued teaching incredibly highly.” Just recently, Dumenco struck up a conversation with

another mom at the local skating rink. The woman happened to be a neonatologist who had trained at Brown’s medical school. “I told her I was teaching at the med school, and she said, ‘Do you know Dr. Aggie Kane? She was our favorite! We loved her!’” Dumenco says with a laugh. “She cares a lot about the students. She does a wonderful job and they’re very lucky to have her.”

The breadth of students that Kane reaches each year has grown as a result of her partnership with Hurt. In 2009, they secured a grant from GAANN, or Graduate Assistance in Areas of National Need, to fund interdisciplinary training in nanotechnology. Between six and eight doctoral students study nanotoxicology and nanomedicine with co-mentors in engineering or physical sci-

ences and biological science. Kane and Hurt also co-teach an undergraduate and graduate course called “Small Wonders: Science, Technology, and Human Health Impacts of Nanomaterials.” For their final projects, students working together in interdisciplinary teams are required both to use nanotechnology to solve some real-world problem and to address—and minimize—their solution’s potential environmental and health impacts. “I look at this as training the next generation of environmental scientists and engineers,” Kane says.

But first they have to learn how to talk to each other. When Kane and Hurt began collaborating, “it took us a while to learn each other’s languages,” says Kane, “because medicine has its own vocabulary, as well as engineering.” Kane

KAREN PHILIPPI

ZOOM

Selenium-carbon nanocomposite particles synthesized by Love Sarin in Hurt's lab as a novel chemotherapeutic agent for malignant mesothelioma.



Kane uses confocal fluorescence microscopy to visualize uptake of carbon nanotubes by target cells.

might, for example, say “mitochondria,” or “epigenetics,” and get a blank stare in return. “And so we would just keep asking each other questions, any time we didn’t understand something,” she recalls. “It took us quite some time to learn enough to communicate effectively.”

Their newest collaboration is funded by the Gulf of Mexico Research Initiative, which was established in the wake of the Deepwater Horizon disaster. Hurt has set out to design nanoparticles called nanosorbents, which by capturing and sequestering pollutants like oil, may be safer and more effective than existing methods of cleaning up oil spills. The Deepwater Horizon cleanup team—like the Exxon Valdez team before it—relied on Corexit, a dispersant which causes oil to suspend in the water as tiny particles rather than accumulate on the surface as oil slicks. “They used it in enormous amounts in the Deepwater Horizon cleanup,” says Hurt, but “it’s

not clear if it’s a good idea to use very large amounts of chemicals in a marine environment.”

But it’s not clear whether nanosorbents are a good idea, either. As Hurt designs the particles, Kane and her team set out to answer two questions. “First, will they work?” she asks. “And then, will they be toxic to the organisms?”

“They might be worse,” Hurt acknowledges. “We don’t know.”

ENGINEERING PREVENTION

To begin to answer these questions, Kane has a small steel tank in her lab. Like a miniature wave pool, the open-air tank bubbles with seawater maintained at exactly 72 degrees. Soon this will be home to a small colony of brine shrimp, tiny marine organisms that, as larvae in the wild, are eaten by small fish, which, in turn, are used as bait to catch larger fish, which are eaten by people. As such, the brine shrimp are a good “indicator

species” for study. “We don’t want to have these kinds of dispersants accumulate up the food chain,” says Kane, peeking at the churning water. A tube runs from a beaker into the basin, helping to aerate the water. As the shrimp grow in the lab, Kane and her colleagues will release oil and Hurt’s nanoparticles into the water with them to see what happens. Will they stop swimming? Will they die? Will their RNA reflect toxicity or injury?

If so, Kane says, she is confident that her colleagues can alter the nanoparticles to reflect her findings. “Engineers are very clever,” she says with a smile. “If we can identify the specific properties that are associated with the toxic effects, they can design [the nanoparticles] or process them to eliminate those properties or reduce those properties and reduce their toxicity.”

And part of the excitement of studying nanoparticles is the ability to intervene now, in the very early stages—to prevent environmental and health disasters, rather than clean them up after the fact.

“When you think about what happened with the widespread use of asbestos throughout the 20th century—and we’re still suffering the consequences because of the long latent period of those diseases—the fact that those fibers persist in the buildings and in the environment and we’re still being exposed,” says Kane, “that’s a very expensive lesson. We do not want to repeat that tragedy again.”

Beth Schwartzapfel ’01 is a Boston-based freelance journalist. Read more of her work at www.blackapple.org.

COURTESY KANE; KAREN PHILIPPI

RESIDENT EXPERT

BY NOAH ROSENBERG, MD RES



To Sleep, Perchance to Dream

The darker side of long shifts.

For the next 24 hours I am responsible for seeing every trauma patient that arrives in the emergency room—car crash, stabbing, fights, and falls. In the morning an hour might pass without a new patient, then a few come at once, and then many, as the evening progresses and bars around the city fill and empty.

The first eight hours go smoothly. I am compassionate and thorough; I take pride in suturing and splinting. The work interests me and I engage it. As the afternoon wanes and the pace picks up, my back and feet begin to ache slightly. I eat an energy bar and then gobble a piece of pizza. After 16 hours I'm tired but functional.

The next eight hours begin to erode my humanity. By the end I don't just hurt from being on my feet, I'm tired in a way that makes me nauseated and fuzzy minded and angry. When my phone goes off the sound is physically painful.

I begin to hate the nurses for calling; the patients annoy me with their stupid accidents and whining. I snap at people and curse under my breath.

Every doctor can tell you stories of being on call and profoundly fatigued. Sleep deprivation is a universally miserable experience. Oddly, though, these stories are often recounted with some bravado. A notoriously competitive bunch, doctors compete in hardship. I've heard one-upmanship over falling asleep at traffic lights driving home post-call, and senior doctors complain with pride about how their hours were even worse back in the bad old days. Sleep deprivation is part of medical culture, and trainees are eager to prove themselves and become part of the club.

As a profession we are not blind to the impairment caused by fatigue, not to mention the damage to personal

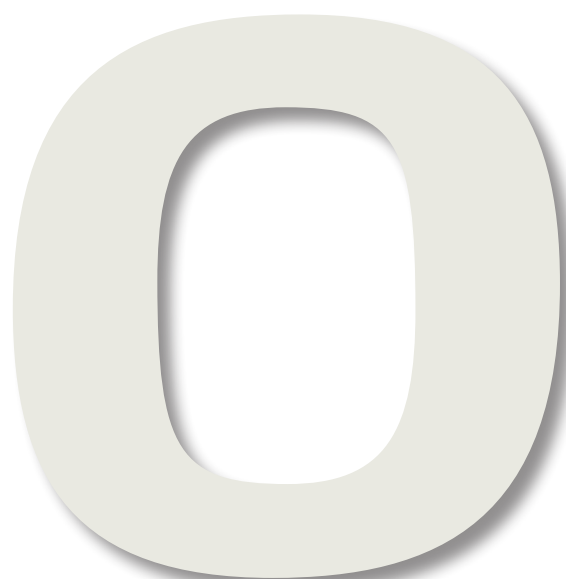
relationships. Regulations in 2003 first limited the hours a resident doctor can work, and revisions last year tightened those rules. But we have not decisively embraced shorter work hours, citing concerns about adequate experience and the increased number of potentially dangerous patient care hand-offs.

Perhaps, though, our reluctance to move to new staffing models has as much to do with our cultural legacy as it does with the inevitable trade-offs. These issues are complex and far more nuanced than I can do justice to here. But as we continue to evaluate our practice we should take care to act in the interest of our patients' and our own safety, unbiased by nostalgia for these long shifts.

That night I did finally get an hour of sleep as the sun was coming up. But the heavily fatigued, interrupted, and hyper-vigilant sleep on trauma-call is full of surreal dreams. Every hospital alarm jars me, from the echoing chime of the patient call button to the squawk of my radio. When code bells went off overhead announcing a "code red" I shot out of bed and found myself in stocking feet half way in the hall before the rest of my brain realized that I don't care about a fire as long as it is not in my room. When I went back to bed, my sympathetic nervous system still twitching, I dreamed I had arrived in the room of a new trauma patient without my shoes, and blood was spreading over the floor.

Noah Rosenberg attended Oregon Health & Science University School of Medicine. He is in his fourth year of Alpert Medical School's emergency medicine residency program and a member of the program's creative writing group.

BLAIR THORNLEY



Providence to Padua

An American professor in Italy.

On a Friday in December of 2010, an Italian colleague at the University of Padua School of Medicine informed me that competitive grants, sponsored by an Italian regional Bank (Cassa Di Risparmia Di Venezia), were to be made available to non-Italian university faculty in all disciplines to teach courses in Padua during the academic year 2011-12. The only challenge was that proposals were due on Sunday...barely two days later.

Undaunted, I outlined a one-month course of four hours of daily lecture and case discussion titled "Fundamentals of Geriatric Medicine." Mirabile dictu, two months later, I received notice of success. Included in the deal was the expectation that I give a public lecture during my stay, and of course I eagerly accepted. More about the lecture later.

My students were to be residents in geriatrics at varied levels of post-graduate training; it was uncertain how many residents would enroll in my course; I was told to expect 10 to 15. I then began to develop syllabi and slide sets to cover the most important topics in geriatrics, wrote course materials from May through early September, and on October 1, arrived in Padua with 20 flash drives loaded with lecture slides, exam questions, and references.

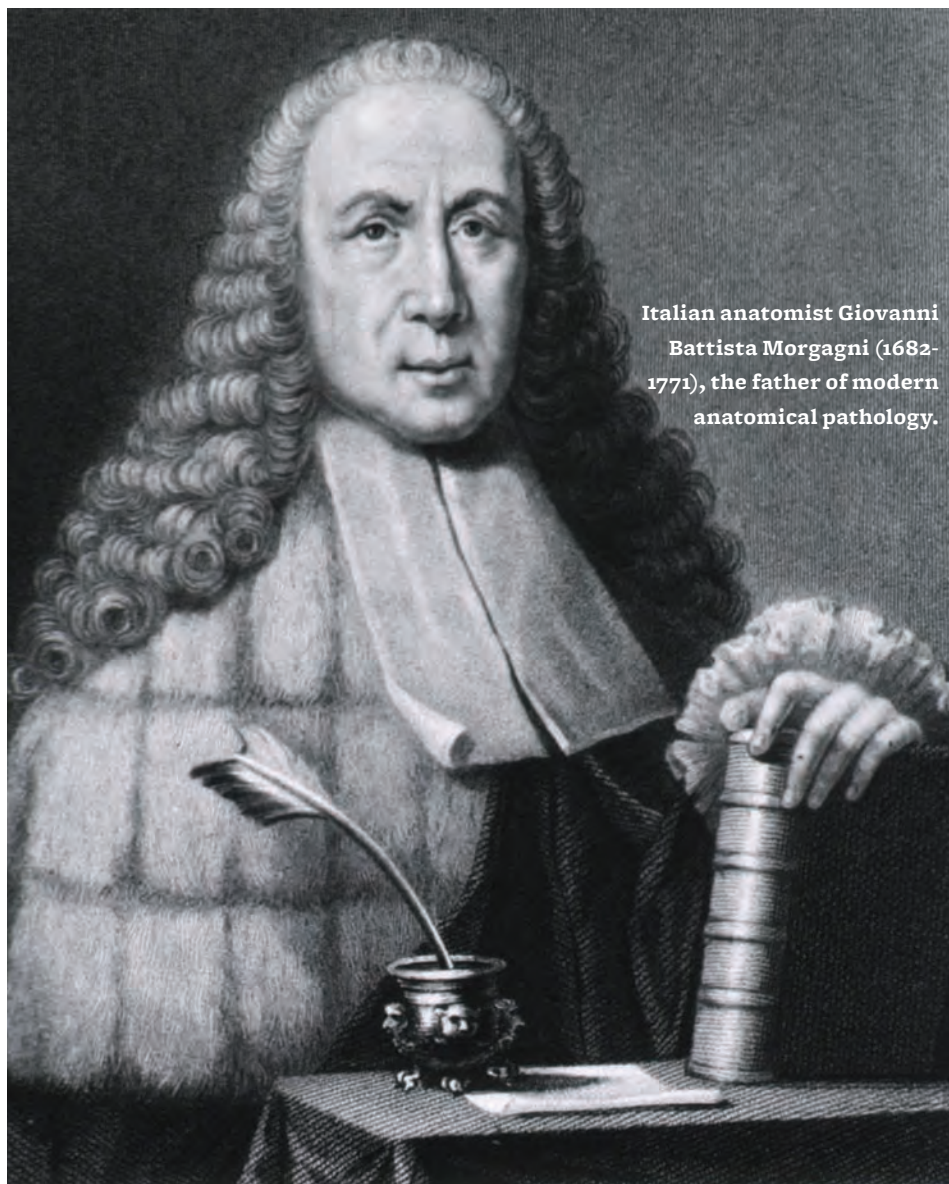
Not 15 but 35 residents and varying numbers of faculty began and finished what was to be an exciting, challenging

and deeply satisfying month for me. Although the students were accustomed to the European-style of learning—that is, sitting at the feet of the professor—we soon were spending increasing time in discussion. Still, lectures and working on test questions together were our dominant activity. Formal evaluation by the students was very positive. They particularly appreciated the opportunity to discuss challenging issues with an American professor.

The single most provocative topic for the students was end-of-life care, including advanced directives and feeding tubes for elderly patients with advanced dementia. Our most extensive and vigorous conversations centered on how to help families and patients engage in establishing goals of care, and avoiding unnecessary suffering and burden for both. They were surprised at how much we Americans value autonomy, and how much information we shared with pa-

tients and families, especially concerning bad news. Hospice and palliative medicine was a topic we returned to in discussions of other core geriatrics topics—e.g., dementia, nursing home care, pressure sores.

Multiple students contacted me outside of class and after the end of the course, interested in more detail on many of the topics we discussed. Several expressed interest in research training in the US as part of their residencies, and we continue to correspond. I came away from the experience with more than 40 new e-mail correspondents and with new mentoring roles for several of them. I learned to be more patient with students, and realized how important it is to identify and respect different learning styles. I am grateful to the students and colleagues I worked with; in toto, the month was among the most gratifying in my career as an educator.



Italian anatomist Giovanni Battista Morgagni (1682-1771), the father of modern anatomical pathology.

Nothing could have prepared me for the **several rooms of anatomical books.**

RIGHT TO THE SOURCE

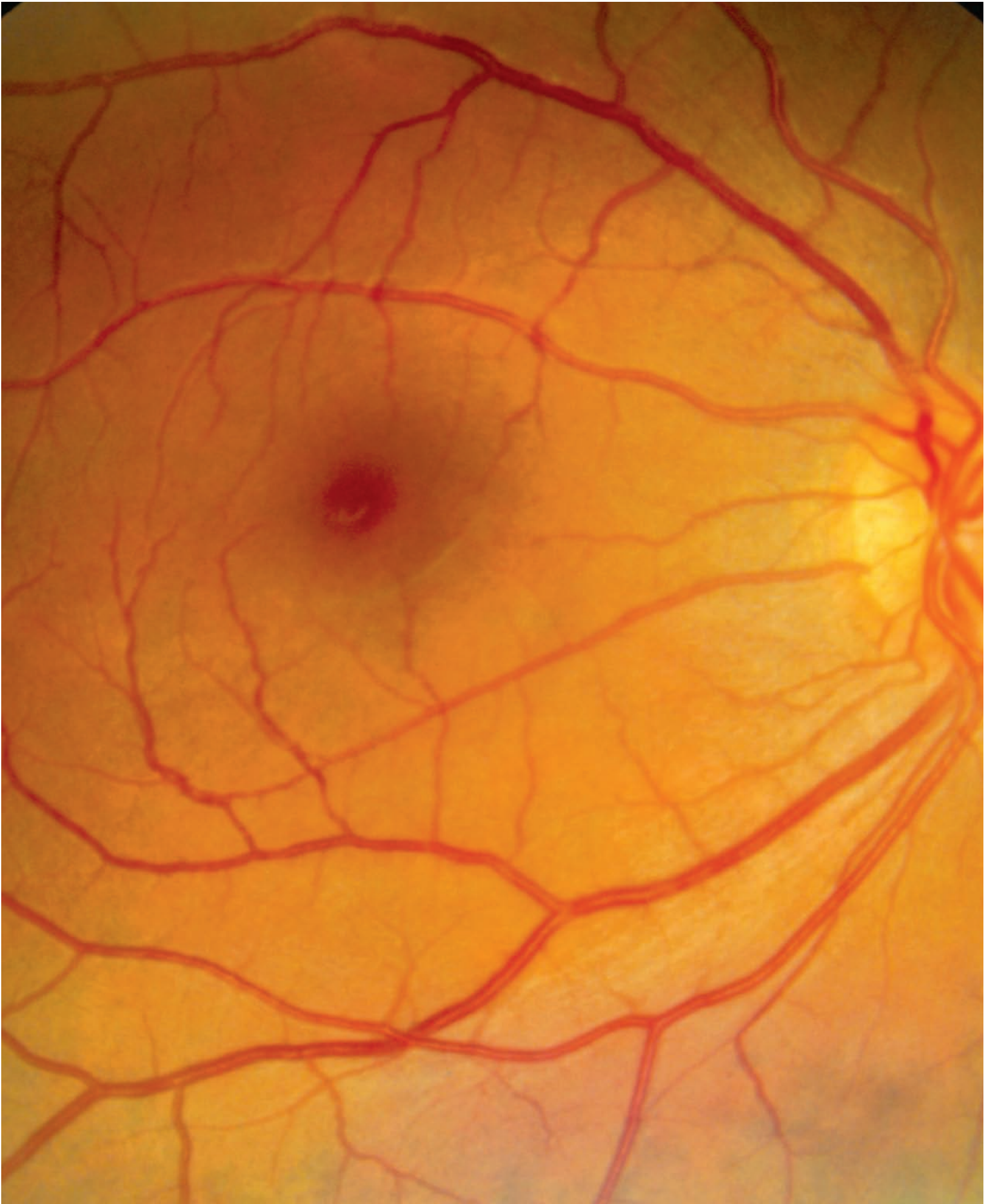
And now, back to the public lecture. A few weeks before my departure to Italy, my formal letter of invitation explained that I would deliver a Morgagni Lecture as part of the 250th Anniversary Celebration of the publication, in 1761, of Giovanni Battista Morgagni's seminal book "*De Sedibus et Causis Morborum per Anatomen Indagatis*" (On the Locus

and Cause of Disease, Investigated Anatomically). This astounding work detailed more than 700 autopsies that Morgagni conducted personally, and established the relationship of specific anatomical findings post-mortem to disease conditions in life, as well as the foundation and credibility of modern anatomic pathology. Morgagni himself was the physician of many of the patients

he subsequently autopsied and wrote about. And so I took a crash Internet course on Morgagni and the University of Padua, learning much and becoming increasingly awed by his and the University's importance in the development of scientific medicine. I had a minor epiphany: every day, on the way to my office and the classroom where I taught, I walked past both his tomb (beneath the floor of a tiny church with a charming garden) and the site of what had been his home in Padua for more than 40 of the 56 years he served on the University's faculty.

Before the lecture, I was warmly welcomed by the director of the Anatomical Pathology Institute, Professore Gaetano Thiene, and briefly toured the pathological museum with its curator, Dr. Alberto Zanatta. After a longer visit the next day, Dr. Zanatta asked if I would be interested in walking to another building to see the library of old and rare books. As a history of medicine enthusiast and lover of old books, I was excited. But nothing could have prepared me for the several rooms of 15th- through 19th-century anatomical books—the highlight of which was an original edition of Morgagni's famous treatise! I can't imagine a better way to have spent my time.

Former interim dean of medicine and biological sciences, Richard Besdine is the David S. Greer, MD, Professor of Geriatric Medicine and director of Brown's Center for Gerontology and Healthcare Research. He extends his gratitude to colleagues at Centro Nazionale Ricercha and Università degli Studi di Padova: Professore Gaetano Crepaldi, Professoressa Stefania Maggi, and Professore Enzo Manzato.





BIG SHOT

KING TO '83 MMS'86 MD'86

Window to the Body

For a picture of overall health, look inside the eye.

The retina (left, in a photo by To) is a thin, multi-layered neural tissue whose function is to receive visual images, partly process them, and then forward this information to the brain. Retinal evaluations tell us not only about the health of the eye, but also about the overall health of the patient; systemic conditions such as diabetes, hypertension, and leukemia are readily recognized in such retinal exams.

According to To, "Every part of the eye—cornea, iris, lens, ciliary body, vitreous, ocular blood vessels—serves to support the retina and ensure that the eye's optical system perfectly focuses the image of the world on the retina's photoreceptors (also known as rods and cones). We used to think the retina's role was simply to convert light to a chemical signal that was then transmitted to the brain. But many studies have since shown that the retina plays an integral role in visual processing and analysis. That is why it is often referred to as the 'business part of the eye.'"

King To is a clinical professor of surgery (ophthalmology).



BY KRIS CAMBRA

A ROUND OF APPLAUSE

A nod to the lasting legacy of Ruth J. Simmons.

A RECENT BUT BELOVED annual tradition at Brown is BEAR (Brown Employee Appreciation and Recognition) Day, when employees are recognized for their years of service to the University and awards are given for outstanding achievements. I attended BEAR Day in February to mark my own 10 years of service to Brown, and surreally, I found myself onstage, before an audience that was clapping wildly and giving a standing ovation ... not for me, of course, but for one of my fellow 10-year-service-pin recipients: Ruth J. Simmons.

Has it really been a decade? Yes, and it's been an amazing one for Alpert Medical School, thanks to President Simmons' leadership. In fact, 10 years ago, this was still Brown Medical School—before a transformative gift of \$100 million, before the Medical School had its own building, before it ranked in the top quarter of all US medical schools.

Let's take a look back at President Simmons' tenure—which in fact will have lasted more than 11 years—and give our own quiet but heartfelt standing ovation and bouquet of roses to thank her for her lasting imprint on Alpert Medical School.

2012 Simmons received the Artemis W. Joukowsky '55 Award from the Brown Medical Alumni Association on March 31. The award recognizes “meritorious service” by a non-physician.

ADAM MASTOON



2001 (Above) Just weeks after Simmons' October inauguration, Brown Medical Alumni Association President Pardon Kenney '72 MMS'75 MD'75 presented her with an honorary white coat at the Ceremony of Commitment to Medicine. (Right) An eager pupil, Simmons sits next to Chancellor Emeritus Artemis Joukowsky '55 at her first Corporation Committee on Biomedical Affairs meeting in November.



“The ethos of our University is enormously important in **shaping the values of physicians** who come through Brown.” —RUTH J. SIMMONS



2005 Simmons (left) signs her name on the final structural steel beam at the “topping out” ceremony for Sidney E. Frank Hall for Life Sciences. The Plan for Academic Enrichment included an unprecedented commitment of \$468 million to the Division of Biology and Medicine.

At the kick-off of Boldly Brown, the \$1.4 billion fundraising campaign to finance the Plan, she highlighted “Stories of Brown”—people who exemplified the University spirit. Among them was Jyothi Nagraj Marbin '96 MD'06, (bottom left), who founded and served as director of the Rhode Island Family Advocacy Program, an effort to unite doctors and lawyers to improve the health and care of low-income children.



2006 Speaking at the October dedication of Sidney Frank Hall (below), which houses the departments of Neuroscience and Molecular Biology, Cellular Biology and Biochemistry, Simmons said, “In name, scale and purpose, the Sidney E. Frank Hall for Life Sciences is a fitting memorial to Mr. Frank’s energy and creativity and a welcome addition to our campus.”



CLOCKWISE FROM TOP: COURTESY OF AMS (2); JOHN ABRAMOWSKI (2); WALTER HUNTER



2007 At Commencement (above), Simmons presented an honorary Doctor of Medical Science degree to founding dean Stanley Aronson. Reading from his citation, she said, “Healer, educator, author, and historian, you have shared your prodigious gifts with this University and the world.”

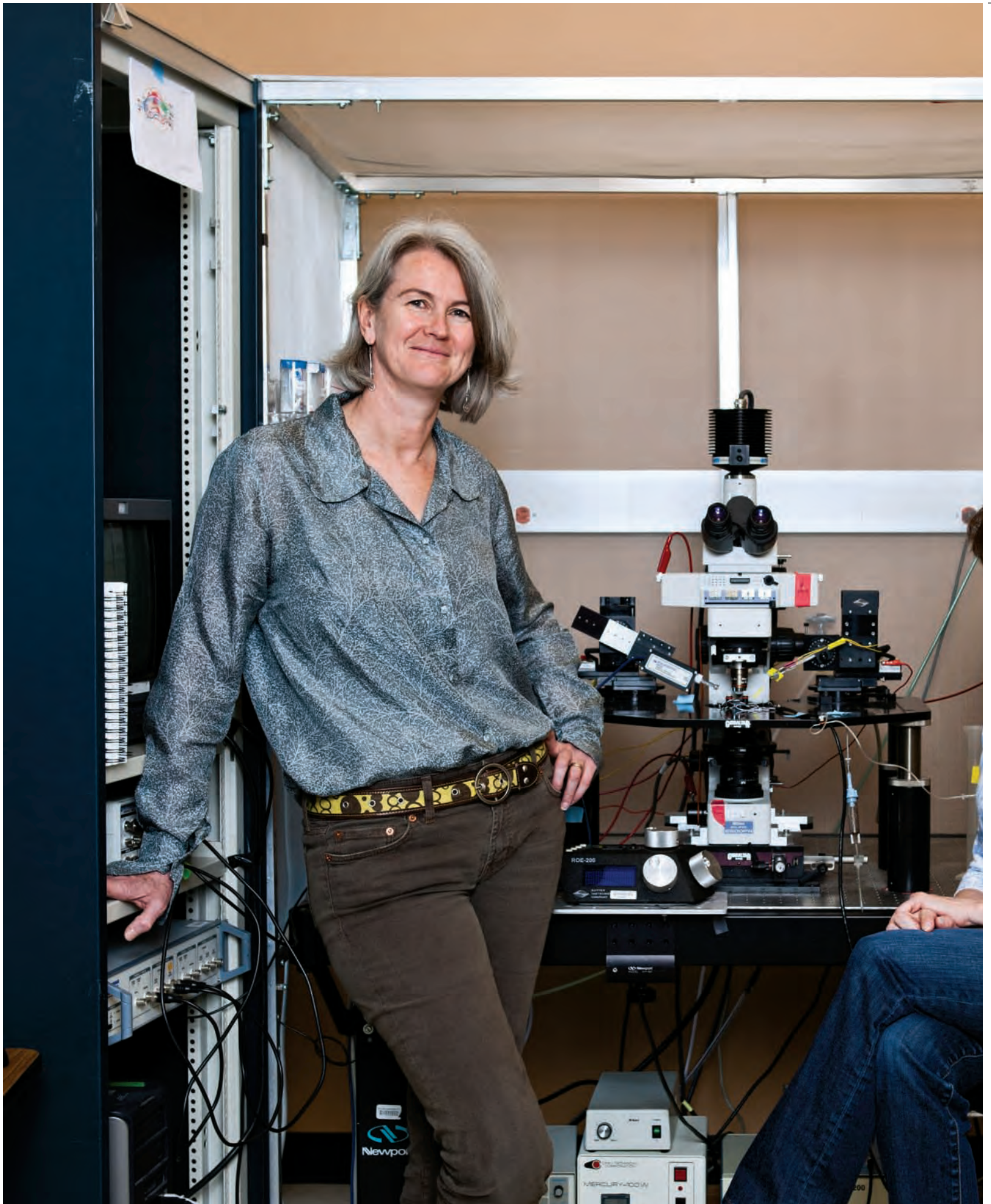
Earlier that year, in January, Simmons signed the agreement accepting The Warren Alpert Foundation’s \$100 million gift and renaming the Medical School in Mr. Alpert’s honor. With her are (left to right) Herbert Kaplan, president of the Foundation, and Eli Y. Adashi, former dean.



2010 Simmons wielded a sledgehammer (above) at the groundbreaking for the renovation of the new Alpert Medical School building in April. She and Dean Edward Wing took turns symbolically smashing the wall of the former jewelry factory.

2011 At the Grand Opening celebration in August, Simmons stressed that the new Medical School building is a gift to Brown’s medical students—students like Jenna Lester MD’14 (below). Lester represented the student body during the speaking program.







DYNAMIC DUO
Lipscombe and Kauer at
the electrophysiology
slice rig they use
to record neuronal
synaptic events.

BY EILEEN O'GARA-KURTIS
PHOTOGRAPHY BY JESSE BURKE

MEETING OF THE MINDS

Neuroscientists, engineers, psychiatrists, applied mathematicians, surgeons, and other experts explore how we hurt, how we fear, how we see, how we connect, and how we learn.

NOT QUITE A DECADE AGO, when Professor of Neuroscience Diane Lipscombe P'14 began to look into the neurological roots of pain, she briefly thought that she must be overlooking seminal swaths of literature.

"It's a really difficult problem, and so pervasive," she says. "You think 'Oh, we must know a lot about pain, I must not be reading the right things, this must already be known ...' but there are, in fact, fundamental aspects of pain that are unknown."

Indeed, Lipscombe would discover that remarkably little was understood about how perception of pain is "produced" at the neuronal or synaptic level—a lack of knowledge that, she believes, may inform a societal tendency to dismiss the phenomenon. "Pain is sometimes described as being 'all in your head,'" she says. "Well, of course it's in your head. But that doesn't mean it's not real."

The prospect of exploring a vast landscape of uncharted scientific territory, in an area with enormous clinical and social implications, drew Lipscombe in.

"Pain is a major public health problem," she says. "It crosses so many major disorders and diseases, from HIV to diabetes. It erodes productivity, and it can destroy quality of life. There's an increased suicide rate among people who suffer with chronic pain. There's a real need for new ideas and new treatments."

Lipscombe is best known for her research on the cellular mechanisms that drive the function of calcium ion channels, which regulate many critical neuronal functions such as transmitter release, nerve growth, and synaptic plasticity. She believes that the work will enhance understanding of mental illness, as well as pain—while

possibly helping to identify new drug delivery methods.

ILLUMINATING PAIN

For the past year, Lipscombe has also been collaborating with Professor of Medical Science Julie Kauer to overcome a major technical obstacle that has impeded researchers' progress in the study of pain. The two, soon to be joined by Associate Professor of Neuroscience Christopher Moore, are investigating a method for isolating the neural pathways that carry the pain response from those that transmit other sensations, such as touch or warmth, so that they can be clearly observed and tested.

"We're exploring use of optogenetic techniques to study pain pathways using a light source," Lipscombe explains. "That will allow us to look at the synapse during the pain response and see what the signal looks like, how effective the synapse is, and if the synapse changes its efficacy in response to different types of activity."

Lipscombe and Kauer are particularly interested in the process that converts acute pain to chronic pain—a remodeling of the pain pathways, commonly experienced by people with spinal cord injuries and peripheral neuropathy, among other conditions, that can generate chronic pain from the physical echo of a previous acute episode or injury. They suspect that their research may also carry implications for other disease processes that "rewire" the neural pathways, such as addiction.

"No one has ever shown what happens when pain travels from, say, the finger to the spinal cord to the brain, and nobody really even knows if there are

distinct pain pathways," says Kauer. "Exploring the basic cellular mechanisms would open the door to understanding and possibly addressing the physiological changes underlying a number of neurological and psychiatric disorders."

The work has been supported by seed funding from the University's Office of the Vice President for Research and by the Brown Institute for Brain Science (BIBS), an interdisciplinary enterprise that encompasses 19 academic departments, involves more than 100 faculty members, and extends from the College to the Medical School to its affiliated hospitals. Representatives of more than 10 departments sit on the executive committee that drives the Institute's strategic direction.

The interdisciplinary model being developed by Kauer, a molecular pharmacologist, and neuroscientists Lipscombe and Moore, as well as their use of basic science to solve problems that may affect a range of clinical areas, epitomizes the collaborations that BIBS aims to encourage. "I'm interested in receptors, Julie is an expert in the hippocampus and spinal cord, and Chris works in brain imaging," Lipscombe says. "We will be able to follow the pain response all the way from the surface of the skin to the brain. Who knows what we might find?"

ENDOGENOUS STRENGTHS

"BIBS grew out of Brown's culture," says Henry Merritt Wriston Professor of Neuroscience John Donoghue PhD'80 P'09, '12MD'16, the Institute's director. "It sounds cliché, but things really do happen here that don't happen in other places. We have a history of being inter-

disciplinary and collaborative ... of attacking interesting problems that call for diverse skills and perspectives."

He continues: "Different disorders of the nervous system seem to have common fundamental causes, and what we do well at Brown is look at those fundamental mechanisms, which gives us insight into a broad spectrum of diseases." He cites as an example mechanisms that seem to be shared between memory and muscular dystrophy, which Professor of Medical Science Justin Fallon P'07, '09 is studying. "We don't deploy major resources to target a single disease. Instead, we pursue what might on the surface seem to be wildly disparate areas that provide mechanisms that underlie a set of human diseases."

Donoghue has been building bridges between disciplines at Brown for nearly three decades. He founded the University's interdisciplinary Brain Science Program, BIBS's precursor, in 1999. He has also launched and shepherded a variety of research projects—most prominently BrainGate*, an investigational technology that aims to help people who are silenced or paralyzed by stroke, neurodegenerative disease, or other challenges to communicate through the power of their brain waves, using a computer and an implanted device. BrainGate is the product of years of research by a team of neuroscientists, neuroengineers, and clinicians convened by Donoghue.

BIBS is formalizing that approach.

"We make a deliberate effort to interweave our research, making it easy to collaborate, physically getting people from different fields in the same room on a regular basis, applying for grants together," Donoghue adds. "That kind

* CAUTION: INVESTIGATIONAL DEVICE. LIMITED BY FEDERAL LAW TO INVESTIGATIONAL USE

“We will be able to follow the pain response all the way from the surface of the skin to the brain.

→ Who knows what we might find?”

of interaction is very special, and a real strength of Brown.”

“Brown has a long history of outstanding research in many areas of brain science,” says John Davenport, who joined Brown as associate director of the Brain Science Program in 2005 and guided its transformation to an Institute in 2009. “The most insightful advances require researchers of different backgrounds to team up, and BIBS has brought people together in fundamental science, brain health, and neurotechnology. Brown’s renewed investment means we’ll continue to take advantage of this fantastic environment and make great discoveries.”

Provost Mark Schlissel believes that, over and above its contributions to brain science, BIBS may be a model for future big-picture collaborations at Brown. “BIBS really highlights what we’re good at ... bringing together bright people with a passion for problem-solving and a talent for collaboration. Significantly, BIBS brings together our whole community ... those based on campus and at Alpert Medical School and our affiliated hospitals ... in a seamless, very effective way. I’m hopeful that it’s the first of many initiatives to follow this model.”

In addition to providing the infrastructure to support the faculty who currently collaborate under the BIBS umbrella, the University has committed to the near-term hiring of seven additional scholars working in areas of strategic importance.

(Longer-term plans call for recruitment of 14 additional faculty positions when the University can provide appropriate laboratory space to support them.) New faculty will be at once affiliated with BIBS and based in individual academic departments. BIBS’s executive committee, which participates in the search process, will seek scientists “who support the BIBS mission by bridging disciplines even as they contribute to the disciplinary strength of their home department,” explains Davenport.

“Our goal is to recruit the best people, working in fields that are most fertile for growth and discovery at any given time,” says Schlissel.

BEING HUMAN

Before backing additional investments in the Institute, Schlissel did his homework.

In 2011, freshly arrived from the University of California, Berkeley, where he was dean of biological sciences, Brown’s new Provost commissioned an objective panel of national experts to assess the strengths of BIBS and its constituent departments and to evaluate the potential for scientific contribution that a full-blown Institute might have.

“Our goal was to confirm that we did actually have something special here, and that the opportunity was as significant as we thought it was,” says Schlissel. “The conclusion was that there is an

overwhelming discovery opportunity in brain science, and that our strength in the neurosciences, in psychiatry, and in other established and emerging areas positions Brown very well for important things to happen here.”

For Schlissel, himself a physician and researcher, BIBS reflects Brown’s deep commitment to exploration of the whole of the human condition while at the same time offering life-enhancing and lifesaving insights for people struggling with disease and disability.

“There is no doubt that we have the potential to help relieve millions of people from the enormous burden of devastating diseases and conditions, from psychiatric disorders to Parkinson’s disease to spinal cord injuries to learning disorders,” Schlissel says. “But it’s much broader than that. It can help us discover how the healthy brain functions, as well. BIBS provides a home for almost any scholar at Brown ... whether he or she is based at Alpert Medical School or at the Granoff Center. It can show us how we see, how we experience the world, how we discern beautiful music from cacophony. It can show us *how we are human.*”

Finding the essence of humanity within the impossibly complex and elegant structure of the brain resonates deeply with Professor of Neurosurgery G. Rees Cosgrove, the inaugural chair of the Department of Neurosurgery at



“One of the goals of all of our collective efforts in neuroscience, from a research perspective, is to discover what makes us uniquely human.”

Alpert Medical School and chief of neurosurgery at Rhode Island Hospital and The Miriam Hospital.

Cosgrove says that the University's capacity for discovery in this realm—along with the unique opportunity for growth, innovation, and collaboration that individual scientists find within BIBS—were his major incentives to come to Brown from Tufts University School of Medicine, where he served as a professor of neurosurgery, and the Lahey Clinic, where he chaired the Department of Neurosurgery after previous appointments at Harvard Medical School and Massachusetts General Hospital.

“One of the goals of all of our collective efforts in neuroscience, from a research perspective, is to discover what makes us uniquely human,” says Cosgrove.

Cosgrove also serves as clinical director of the Norman Prince Neurosciences Institute (NPNI) at Rhode Island Hospital, with which BIBS has a strategic partnership.

“With the recent decision to expand brain science through BIBS, the formation of the Norman Prince Neurosciences Institute at Rhode Island Hospital, and the recruitment of new leadership in Brown's three clinical neuroscience departments [Neurosurgery, Neurology, and Psychiatry and Human Behavior], the blocks are being assembled to support a new era of interdisciplinary, collaborative brain research at Brown,”

says John Robson, who is both administrative director of NPNI and associate director for medical research and clinical programs of BIBS.

“The many combinations that are possible between basic neuroscience and engineering, and among other fields, are really limitless,” says Cosgrove. “Because we have this large group of committed and experienced individuals who communicate with each other and collaborate in meaningful ways, you have the opportunity to build on one discovery after another, and to ask and answer essential questions about how the brain informs the different facets of our experience as human beings. This work goes to the fundamental purpose of the University.”

THOUGHT MADE MANIFEST

In a surgical suite at Rhode Island Hospital, Associate Professor of Psychiatry and Human Behavior Benjamin Greenberg leads a patient through an assessment that will determine the precise placement of an electrode that may change his life. Soon, guided by Greenberg's assessment and computerized imaging technology, Rees Cosgrove will place the electrode that will stimulate a pushpin-sized piece of brain—with the aim of liberating the patient from the most severe symptoms of debilitating, treatment-intractable obsessive-compulsive disorder (OCD).

“We're very conscious that this is brain surgery, with its inherent risks, and therefore this intervention is only open to about 1 percent of the people who seek it,” explains Greenberg. “We select people whose primary diagnosis is OCD, whose OCD is fundamentally disabling, and whose symptoms have persisted despite receiving all reasonable treatments over a five-year period.”

“It's not a cure,” he continues. “Deep brain stimulation, or DBS, works in addition to medication and ongoing behavior therapy.”

Patients generally recover at home after a one-night hospital stay following placement of the electrode. About two weeks later, they return for intensive outpatient testing and then begin a regimen of stimulation supervised by their treating psychiatrist. For long-term DBS, patients receive rechargeable brain stimulators (Rhode Island Hospital was the first in New England to use them), which are expected to last eight years.

People who receive DBS at Brown (see *Brown Medicine*, Spring 2006) are part of an eight-site national study, sponsored by the National Institute of Mental Health, designed to test the efficacy of the treatment and better understand how it may work. Greenberg, the principal investigator on the study, collaborates with a Butler Hospital colleague, Interim Chair of Psychiatry and Human Behavior Steven Rasmussen

A photograph of three men standing in front of a large screen, looking at a tablet held by the man in the center. The man on the left is wearing a dark suit and tie. The man in the center is wearing a light blue button-down shirt and khaki pants. The man on the right is wearing a white lab coat over a blue shirt and dark pants. They are all looking intently at the tablet.

TRIPLE THREAT
Rasmussen, Greenberg,
and Cosgrove (left to
right) discuss MRI
images of brain
pathways targeted
in neurosurgery.

“Translational research isn’t linear. Think of it more like the spokes on a wheel, connecting one field with another. This is an example of how clinical studies can inform basic research.”

’74 MMS’77 MD’77, P’13MD’17 and the Rhode Island Hospital-based Cosgrove, who has collaborated with Rasmussen since Cosgrove was at Massachusetts General Hospital in the early 1990s. They also see their work together as providing the nucleus for an eventual national registry of patients who have undergone psychiatric neurosurgery.

The three believe that the primary benefit—providing relief for patients—will be complemented by greater insight into what changes in brain circuits are needed for therapeutic gains, and into broader brain functions.

Says Greenberg: “Translational research isn’t linear. Think of it more like the spokes on a wheel, connecting one field with another. This is an example of how clinical studies can inform basic research.

“In the OR, while the effects of DBS on a patient are being tested by a psychiatrist, we can collect additional information about how people react to different circumstances,” he continues. “Before and after the surgery, we collect brain scans and test how well they learn things that are important in helping patients overcome their illness. Are they better at learning that harmless things (which OCD patients fear irrationally) are really safe? Can they remember that from day to day? If DBS helps them to do that, we think the stimulation can help psychotherapy work, when it failed these patients before.”

“It’s an extraordinary thing to be able to look inside the human brain,” says Cosgrove. “Clinical interventions—on behalf of patients with epilepsy, Parkinson’s disease, and other conditions, in addition to OCD—give us the opportunity to study basic human cortical physiology. We can record neurons firing in the brain and gain a deeper understanding of everything from risk-and-reward behavior to facial recognition. It’s a window into the physical manifestation of thought and action.”

The team’s work in DBS may also yield additional clinical opportunities down the road, Cosgrove suggests. “There is evidence that we may be able to promote neurogenesis through this therapy,” he says. “There is some indication that chronic stimulation of neurons and connective white matter tracts can actually grow more nerve cells.”

EXCITING TIMES

Ask Rasmussen to remember a patient with OCD whose life was dramatically improved after surgical intervention, and he will tell you about the young man from the Midwest who was the first patient he treated in 1993 with a gamma knife procedure—the precursor to today’s deep brain stimulation therapy.

After struggling for years with life-threatening OCD rituals, the 17-year-old boy weighed 80 pounds. He could not eat. He could not go to school. His

desperate parents, eventually reduced to force-feeding him a dietary supplement to keep him alive, brought him to Rasmussen at Butler Hospital. Within a year of treatment, the boy had returned to school. He went on to college, where he graduated magna cum laude, and then to graduate school. Today, he is an accomplished professional.

But Rasmussen is quick to point out that continued advances in neurosurgical approaches to intractable psychiatric disorders are dependent on interdisciplinary collaborative efforts that bring expertise from different perspectives. That, he says, is the potential of BIBS. “I arrived at Brown as an undergraduate in 1970, and this is the most exciting time for brain science here in 40 years,” he says. “There is tremendous synergy between people based on campus and in the affiliated hospitals, working together to develop new approaches to treatment in an academic environment that is truly unique.”

DOCTOR OF ENGINEERING

Leigh Hochberg is an associate professor of engineering at Brown. He is also an attending physician on the Stroke and Neurocritical Care Services at Massachusetts General Hospital and Brigham & Women’s Hospital and a member of the consulting staff at Spaulding Rehabilitation Hospital. So he’s well positioned to see the clinical potential of

BIGGER THAN THE SUM OF ITS PARTS

The Brown Institute for Brain Science brings together faculty members, graduate students, undergraduates and staff from 19 academic departments. Their areas of expertise are different but they have a shared mission: to understand, heal, and unlock the awesome power of the brain.

- APPLIED MATHEMATICS
- BEHAVIORAL AND SOCIAL SCIENCES
- BIostatISTICS
- COGNITIVE AND LINGUISTIC SCIENCES
- COMPUTER SCIENCE
- DIAGNOSTIC IMAGING
- ENGINEERING
- ENGLISH
- EPIDEMIOLOGY
- HEALTH SERVICES, POLICY AND PRACTICE
- MOLECULAR BIOLOGY, CELL BIOLOGY AND BIOCHEMISTRY
- MOLECULAR PHARMACOLOGY, PHYSIOLOGY AND BIOTECHNOLOGY
- NEUROLOGY
- NEUROSCIENCE
- NEUROSURGERY
- PATHOLOGY AND LABORATORY MEDICINE
- PHILOSOPHY
- PHYSICS
- PSYCHIATRY AND HUMAN BEHAVIOR

BIBS's work every day. Some of his patients are "locked in"—conscious and cognitively intact, but unable to communicate, move, or perform routine tasks—by stroke, traumatic brain injury, or degenerative neurological disorders.

After graduating from Brown in 1990 with an ScB (Honors) in neural science, Hochberg earned an MD and a PhD in

neuroscience at Emory University. He returned to Brown in 2004 to work with his college professor, John Donoghue, on the BrainGate project, later accepting a faculty appointment in Brown's School of Engineering.

After implanting an array of electrodes (one array of 96 electrodes is the size of a baby aspirin) in the brain, the

BrainGate team has demonstrated that the neural signals associated with the intent to move a limb can be "decoded" by a computer and used to operate external devices—such as moving a computer cursor simply by thinking about it. The work has been featured in *Nature*, among other journals.

The team has now moved on to BrainGate2, which is investigating the feasibility of giving people even more control over their environment through use of cortically controlled prosthetic limbs and assistive movement and communication devices. Professor of Engineering and Physics Arto Nurmikko, co-director of Brown's Center for Biomedical Engineering and a BrainGate team member, is working to develop a new generation of wireless medical technologies.

Leigh Hochberg is reluctant to theorize about what goes through the minds of the people who have helped to test the BrainGate devices, or to imagine what they might think about the possibilities his team may be creating for them.

But he does have a story to tell.

A few years ago, the BrainGate team brought a video of a participant in the study with them to the annual meeting of the Society for Neuroscience. The woman, who had been left paralyzed and unable to communicate by a brain stem stroke, delivered her message to the distinguished assembly. Slowly, using the still-potent force of her brain, she tapped out three words:

There is hope.



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

THESE
THINGS
I KNOW
TO
BE

Personal statements give a glimpse into the hearts and minds of four future doctors.

TRUE

SOME HAVE ALWAYS UNDERSTOOD they would become doctors. Others come to the realization later in their lives, while pursuing other careers. But after four years of schooling, medical students have a clear vision not only of where they've come from, but of where they're headed and why. And they're equipped to explain that—in some cases in remarkably lucid and compelling prose—as they apply for a position in the residency program of their choice.



Bearing Witness

NATASHA HUNTER

YEARS BEFORE I ever considered medical school, I spent several months as a journalist in Bosnia. The war had been over for years, but bullet holes still freckled the houses. My closest friend there, Svjeta, worked as an interpreter for the UN during the war. Serb troops had shelled Svjeta's neighborhood repeatedly. She and her family would sit in the dark hall outside their apartment door night after night, waiting to find out whether by the morning they would still have a home, each other, themselves.

"I can't imagine how terrifying that must have been," I said when she recounted this. Svjeta shrugged. "It's not the fear that's the worst part," she said. "It's the boredom." I didn't understand. She couldn't explain it to me. "Thinking

about your death all the time is boring," was all she could offer.

A year ago I was on my first rotation—surgery—and assigned to "Bonnie," a 67-year-old woman with an enterocutaneous fistula. I met her first on rounds,

a pasty, overweight lady staring at us as the surgery fellow inspected her wound vac and frowned at the stool leaking around the foam's edges. Later, in the operating room, I almost gasped to see the fist-sized crater revealed, with its base of eroded tissue surrounding a jagged mouth of open bowel. She went to the OR about twice a week for debridements and revisions.

Bonnie knew when she was due for her pain pill, and she worked the nurses hard. If you asked her how she was, she shook her head, or said, "Not good." Sometimes she just fixed your gaze with a withering glare until you left or changed the subject.

I liked her. She rarely had visitors, so

I would stop in when I had a free moment. We talked about her dogs, her house, her son—and, occasionally, her illness. “It must be hard—the pain, and going to surgery so much,” I said once.

She waved a hand. “It’s just boring,” she said. “That’s the worst part.”

SOMETIMES she just fixed your gaze with a withering glare until you left or changed the subject. I liked her.

I thought of the blank expression she wore when we prepped her for yet another surgery, of the daily bedside discussions about a wound that refused to heal, of her irritable blowups with nurses over ice chips, mealtimes, meds—anything she could gain some tiny degree of control over. And I thought of Svjeta’s attempts to describe the lifeless grind of waiting.

“I bet,” I said.

I entered journalism because the stories that shape people fascinated me. Describing these trajectories with honesty and without judgment, I felt, created a window through which we might better see each other and ourselves. Often that meant bearing witness to suffering—to the unexpectedness of it, to the peculiar shape it occupies in one’s life.

I enjoyed my work. But over the course of my writing career, I began to recognize that I no longer wanted to stand back: I wanted involvement. I chose medicine because it supplies many of the joys of journalism while permitting me to take action, despite the fear and responsibility this entails.

I have not been disappointed. I derive deep satisfaction from acquiring knowledge not solely for the purpose of consolidating it and transmitting it to others (admittedly, these reporting skills have proved invaluable in conversations with patients and families), but also in order

touch-typing—they can stitch up a gash, puncture a vein, percuss a liver.

I feel at home in medicine as I’ve felt nowhere else. And yet as I progress through rotations, becoming ever more active in patients’ lives, I am struck by how much of my journalist self I retain. I still protect a fundamental impartiality and rational core while connecting with and caring for my patients. I still strive to remain humble enough to look beyond what I expect and what I believe to observe what is. And when there is nothing left to do, when the terrible becomes ordinary, as with Bonnie or Svjeta, my job is the same: I still quietly accompany, and bear witness.

Tasha will do her residency training in medicine at Harvard Medical School.

Outstanding in His Field

CHINTAN PATEL

IT’S A BAT-AND-BALL GAME played between two teams. Inning after inning, they compete to score the most runs. The fielders wear caps but the batters wear helmets to protect themselves from high fastballs. They play this sport on a beautiful, expansive green during the daytime or under the lights. It’s the country’s national pastime. Sounds just like baseball, right? The sport I am describing is cricket. I will relate how I discovered this wonderful game and also my future career in medicine.

“Write a one-page paper about your individual culture” was my fourth grade teacher’s assignment. Having grown up in the outskirts of Boston in the 1990s, I wrote about my beloved Red Sox, Fourth of July fireworks, and summer barbecues. I proudly showed this assignment to my father, who read the paper in utter dismay. In his thick Indian accent he intoned, “Chintan, what is this? Write about your Indian culture!” The blank look on my face was all the answer he needed. This one incident was the catalyst for my entire family to move to India. This was my father’s attempt to

express the appreciation in my heart? Yet, at 25, no longer beset with lung problems, all I can remember from the time is the gratitude that I had. Giving others this same sense of relief when they struggled with poor health, whether it be to an asthma attack or removing an obstructing ureteral stone, was the vocation I promised for myself at an early age.

Moving to India was a difficult transition but I assimilated quickly; my father’s master plan worked seamlessly. I discovered my Indian heritage and fell in love with the people, the festivals, the traditions and above all, the game of

Brown undergraduate Program in Liberal Medical Education, I was able to take classes in anthropology, religion and cognitive science, satisfying my other intellectual interests and curiosity. I participated in basic science research at the University of Michigan and UCSF during summers and published work in well respected journals, which contributed to my investigative and writing skills. A semester on the southern coast of Spain gaining fluency in Spanish empowered me to travel to the Dominican Republic and build smokeless stoves in a rural community outside of Santiago. These experiences helped fulfill these personal goals and undeniably contributed to the evolution of who I am today.

Cricket is unlike any other sport. The sport is played in three different formats, each with a slightly different set of rules. Not only does it require the physical prowess necessary to succeed in the technical aspects of the game, but it requires comprehensive intellect, strategy, and analytical skills based on a variety of factors such as the pitch conditions, the target set by the other team, as well as the speed of the outfield. Urology is similarly distinctive among medical specialties. Although I am certain that urology residency will be challenging, I believe that the work ethic, hand eye coordination, flexibility, and teamwork I have cultivated through learning to play cricket along with my academic endeavors provide me with a firm foundation for a long and productive career as an academic urologist.

Chintan will do his residency training in urology at Tufts University School of Medicine.

I DISCOVERED my Indian heritage and fell in love with the people, the festivals, the traditions and above all, the game of cricket.

reconnect his children with their Indian heritage.

Soon after our move to India, just as I began to familiarize myself with this new culture, I developed asthmatic symptoms that required frequent visits to local hospitals. While sitting on the long brown bed in the doctor’s office, inhaling slowly from the nebulizer, it seemed as if the man in the big white coat was putting a new set of lungs into my body. I was normal again—I could sleep through the night and keep up with my friends on the cricket field. At the time, I was unable to convey the vast gratitude I felt for this wonderful person. So instead I smiled, gave him a timid “Thanks,” reached for the canister of lollipops and sauntered out the door feeling a sense of puerile invincibility. How could my 10-year-old self

cricket. I accommodated quickly to the changes from baseball; how the ball spins off the bounce, how one runs the bases with bat-in-hand, that three “stumps” replace the usual strike zone and only the catcher, or wicketkeeper, uses gloves. I learned that it is a sport that requires tenacity, hard work, dexterity, attention to detail and above all, teamwork. I was gratified to learn that I quickly adapt to changes in my environment. This game taught me the foundations of what would be required during the rigors of a demanding urology residency program.

After a few years in India full of personal growth and self-realization, we moved back to the States. I returned with a renewed confidence in my pursuit of medicine, but I wanted to continue my journey of self-discovery. Through the

The Secret Sharer

AMANDA WESTLAKE

I KNEW I HAD BEEN INDUCTED into medicine when an elderly patient awaiting a cancer diagnosis entrusted me with a secret about the death of her son. The patient, who I'll call Mrs. Silva, had come to the hospital after discovering a lump in her neck.

She sat before me, a spry 85-year-old, looking strangely elegant in her blue hospital gown. "I wonder what it could be?" she asked cautiously, knowing it wasn't by coincidence that she had been admitted to the Oncology service. Without waiting for an answer Mrs. Silva began sizing me up. "Are you my doctor? You look like you just turned 15!" She smiled wryly, and I knew we were going to get along.

I was helping her upright she leaned over and whispered, "I think I deserve a Purple Heart for that."

My rotation in Oncology had been unexpected. By chance the attending on service was my mother's oncologist five years prior. I hadn't seen Dr. Mega since the day my mom decided to stop chemotherapy. Her mesothelioma was progressing and it was getting harder for her to

I FELT suddenly grateful. I couldn't explain why I had been given the gift of this precious secret.

Over the next few days Mrs. Silva and I navigated the hospital together. At her request I escorted her to her biopsy. Mrs. Silva was indifferent to the biopsy needle but she was terrified of being in Trendelenburg on the table. "I'm falling!" she called out to me frantically. "You've got to hold me down!" I took a position at the foot of the table and firmly clamped down on her legs. A few minutes later we were both sweating and the biopsy samples were safely in labeled jars. While

breathe. My mom's medical decisions were unorthodox. No, she did not want her oxygen saturation monitored. Yes, she did want to go to Brazil to meet with a spiritual healer. At her last chemo treatment my sister and I danced to entertain her while the IVs were running. Dr. Mega was kind, but clear: these were palliative regimens. There was no meaningful treatment for her disease.

Now a third-year medical student, I stood before Dr. Mega every morning

dutifully reporting Mrs. Silva's vital signs and overnight events. Dr. Mega was as I remembered him—gentle, wise and full of spontaneous laughter. But I was different. After months spent clattering my way through the hospital in oversized clogs, clutching a copy of *Pocket Medicine*, I found myself transformed from trembling beginner to intrepid apprentice. Dr. Mega was my guide. I watched him carefully, hoping to divine the secrets of a master physician.

On the morning Mrs. Silva was to be discharged I found her reminiscing with her sister. They listened politely to my speech about follow-up appointments. I asked if they had any questions. Mrs. Silva hesitated for a moment and then said something wholly unforeseen. "My son died of AIDS in 1991," she told me. "I took care of him at home for two years." I stayed silent, waiting for her to continue. "Back then everyone was scared. My husband wouldn't touch him. He would throw my son's supper tray down on his bed and slam the door. But I read all the literature. I knew it was safe if I wore gloves and a mask."

A few hours later Mrs. Silva's sister stopped me in the hallway. "I've never heard my sister talk about her son like that. Certainly not with a stranger." She squeezed my hand goodbye. I felt suddenly grateful. I couldn't explain why I had been given the gift of this precious secret. I thought about how many similar stories Dr. Mega had accumulated. It was now my turn to carry Mrs. Silva's story with me on my journey through medicine.

Amanda will do her residency training in medicine at Columbia University Medical Center.

“I STILL CAN’T MOVE, but my toes and fingers are tingling. That’s a good thing.”

Fathers and Sons

EDWARD CHEUNG

HE LAY AWKWARDLY crumpled with his snowboard and feet over his head, chin to his chest, not moving. Jokingly, I told him to quit playing around and tried to help him. Calmly, but firmly, my dad said, “Don’t touch me, I can’t move. Call ski patrol, and call Dr. Lager, my neurosurg friend. I think I broke my neck.”

As an 8th grader already interested in medicine as a career, I was simultaneously terrified that my father was now paralyzed and awed by his ability to take control of the situation. A physician by trade and teacher by heart, my dad used this experience to teach me a number of lessons. He maintained his clinical acumen and remained calm and in control of his emotions. He focused on solving the problem at hand. I held the phone to his ear and waited for the ski patrol as he spoke with Dr. Lager. Together, they formulated a plan and directed the ski patrol to pull traction on his neck and untwist his body. Minutes seemed like hours. Even as he was vomiting from motion sickness after the ski patrol brought him to the helicopter, he paused and said, “I still can’t move, but my toes and fingers are tingling. That’s a good thing. See you at the hospital.” In the midst of everything, he still communicated clearly. Though at the time, I had no idea he would eventually recover full function, his actions and words modeled how to teach, work in a team, and communicate in the most difficult of situations—all characteristics that I am de-

veloping and hope to master as a future orthopedic surgeon.

My family raised me to be a problem solver. This originally manifested itself through small household projects—dissecting old electronics to try to fix them, or mending leaking sprinklers or broken light fixtures. Though it was cheaper and easier to hire a trained professional, the diagnosis, research, and use of my hands to fix the problem always pushed me to choose the more time-intensive path. In college, I applied these same principles to a health and development project in the Dominican Republic. While studying abroad and volunteering at a rural medical clinic, I spoke with locals and learned about their struggles with poor education, health care, and limited access to economic opportunities. Their needs and wants motivated me to co-found a project that encourages community development in the area. My efforts have led to tens of thousands of dollars in fundraising and multiple trips with student, professor, and physician volunteers. Organizing and directing an international project has taught me to anticipate problems before

they arise, and adjust to different situations, personalities, and cultures while still moving toward a common goal. Whether it is tinkering with gadgets or collaborating with community members, finding creative solutions for difficult problems has always been a big part of my life.

My interest in medicine and personal injuries as an athlete attracted me to orthopedics early. In high school, I observed an orthopaedist use tension bands like twist-ties to fix a comminuted patellar fracture. He had to piece together the patella with his mind’s eye and then execute his plan with his hands. The surgery was mesmerizing, and the outcome was stunning. In college and medical school, I continued to explore my interest through bench and animal research. It was exciting to be on the front lines of academic knowledge. I was fascinated to learn more about how mechanical stimulation and chemical influence both affect bone growth in different and dramatic ways. Throughout my third year, I kept an open mind through my clinical rotations and loved each rotation for different reasons. My core rotations culminated in an orthopedic elective. What initially made me pursue medicine as a career—the ability to directly transform someone’s life by identifying a problem and solving it—made orthopedics unique. It combines teamwork, adaptability, and problem solving while allowing practitioners to use their hands to make a tangible, life-altering impact on their patients’ everyday lives.

Ed will do his residency training in orthopedic surgery at David Geffen School of Medicine.



OPPOSITE PAGE: Ann Kuo just might be happy with her match. **CLOCKWISE FROM TOP:** Balloons made a festive, if messy, addition to the event. Sunny Intwala phones in the good news. Alex Morang presents envelopes to Katherine Thompson, Amy Tsai, Michelle Tsang Mui Chung, and Victoria Tseng.

• **Anesthesiology**

SHYAMAL ASHER

University of Chicago Medical Center/Pritzker School of Medicine

NAIDA COLE

Massachusetts General Hospital/Harvard Medical School
Cambridge Health Alliance/Harvard Medical School (Transitional)

JONATHAN D. LIN

Jackson Memorial Hospital/University of Miami Miller School of Medicine
Rhode Island Hospital/Alpert Medical School (Medicine-Prelim)

ZERLINA WONG

Hospital of the University of Pennsylvania/University of Pennsylvania

• **Dermatology**

ALINA MARKOVA

Boston University Medical Center/Boston University

School of Medicine

Massachusetts General Hospital/Harvard Medical School
(Medicine-Prelim)

ANNIE WANG

Rhode Island Hospital/Alpert Medical School
Rhode Island Hospital/Alpert Medical School (Medicine-Prelim)

WESLEY WU

Baylor College of Medicine-Houston/Baylor College of Medicine
Harbor UCLA Medical Center/David Geffen School of Medicine (Transitional)

• **Emergency Medicine**

SARAH GARCIA

University of California San Francisco-Fresno/University of California San Francisco

ANGELA HUA

Mount Sinai Hospital/Mount Sinai School of Medicine

SARAH LEEPER

University of North Carolina Hospitals/UNC-Chapel Hill School of Medicine

LINDA PANIAGUA

University of Texas Medical School/University of Texas-Houston

• **Family Medicine**

JESSICA-RENEE

GAMBOA

David Grant USAF Medical Center/Travis Air Force Base, CA

RIABIANCA GARCIA

California Hospital Medical Center/Keck School of Medicine of USC

LAUREN GODDARD

Memorial Hospital of Rhode Island/Alpert Medical School

SUNIL HEBBAR

University of California Los Angeles Medical Center-Santa Monica/David Geffen School of Medicine

LILY PIKE

Einstein/Beth Israel Medical Center
Albert Einstein College of Medicine

HANNAH WATSON

Boston University Medical Center/Boston University School of Medicine

APRIL WILHELM

Allina Family Residency Program/Allina Hospitals and Clinics

• **Medicine**

DAVID COHEN

Rhode Island Hospital/Alpert Medical School

JOSEPH GROSSMAN

Beth Israel Deaconess Medical Center/Harvard Medical School

SARAH HOUSMAN

Beth Israel Deaconess Medical Center/Harvard Medical School

NATASHA HUNTER

Beth Israel Deaconess Medical Center/Harvard Medical School

MATCHDAY

MIYAKO IGARI

University of Southern
California/Keck School of
Medicine of USC

SUNNY INTWALA

Northwestern/McGaw/NMH/
VA/Northwestern Feinberg
School of Medicine

SALMAN KHAN

New York University School of
Medicine/ New York University
School of Medicine

ANN KUO

University of California San
Diego Medical Center/
University of California San
Diego School of Medicine

SARAH LEE

Oregon Health & Science
University/Oregon Health &
Science University

JONATHAN LIU

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

JONATHAN T. LIN

Mount Sinai Hospital/Mount
Sinai School of Medicine

ALEKSEY NOVIKOV

New York-Presbyterian
Hospital/Weill Cornell Medical
Center

NILAY PATEL

Massachusetts General
Hospital/Harvard Medical
School

TRACEY SIMON

Brigham and Women's Hospital/
Harvard Medical School

KATHERINE THOMPSON

Boston University Medical
Center/Boston University
School of Medicine

AMANDA WESTLAKE

New York-Presbyterian
Hospital/Columbia University
Medical Center

ALI ZARRABI

Mount Sinai Hospital-NY/
Mount Sinai School of Medicine

•Medicine-Pediatrics

DAN SCHWARZ

Brigham and Women's Hospital/
Harvard Medical School

•Medicine-Prelim

THOMAS KIM

Boston University/Boston
University School of Medicine

LAWRENCE KWON

Griffin Hospital/Yale School of
Medicine

•Medicine-Primary

RYAN GRADY

Johns Hopkins/Bayview Johns
Hopkins Health System

•Neurological

Surgery

FRANCESCO PUCCI

Rhode Island Hospital/Alpert
Medical School

TRISTAN STANI

Oregon Health & Science
University/Oregon Health &
Science University

KUMAR VASUDEVAN

Emory University School of
Medicine/Emory University
School of Medicine

•Neurology

JENNIFER KIM

Brigham and Women's Hospital/
Harvard Medical School
Brigham and Women's Hospital/
Harvard Medical School
(Medicine-Prelim)

JAY LEVIN

Rhode Island Hospital/Alpert
Medical School
Rhode Island Hospital/Alpert
Medical School (Medicine-
Prelim)

•Obstetrics/ Gynecology

GRACE BHAK

Pennsylvania Hospital/

University of Pennsylvania
Health System

BENJAMIN BROWN

University of Chicago Medical
Center/Pritzker School of
Medicine

KAREN BROWNING

Women & Infants Hospital/
Alpert Medical School

JULIE MCFARLAND

Maine Medical Center/
University of Vermont College
of Medicine

ELIZABETH RODRIGUEZ

Stamford Hospital/Columbia
University College of Physicians
and Surgeons

•Ophthalmology

YASIR AHMED

Milton S. Hershey Medical
Center/Pennsylvania State
University

Mt. Auburn Hospital/Harvard
Medical School

(Medicine-Prelim)

VICTORIA TSENG

LA/EyeSTAR Jules Stein Eye
Institute/UCLA School of
Medicine
Harbor UCLA Medical Center/
David Geffen School of Medicine
(Medicine-Prelim)

JASON ZHANG

University of Texas Medical
Branch Hospitals/University of
Texas-Galveston
Roger Williams Medical Center/
Boston University School of
Medicine (Medicine-Prelim)

•Orthopaedic Surgery

EDWARD CHEUNG

UCLA Medical Center/David
Geffen School of Medicine

JONATHAN-JAMES ENO

•Stanford University/Stanford
University School of Medicine



HANK RANDALL (3)

OPPOSITE PAGE: Tracey Simon congratulates Amanda Westlake. **RIGHT:** Nilay Patel and Chintan Patel will no longer be asked, "Are you brothers?" (They're not.) **BELOW:** Hannah approves of mom Sarah Housman's match, and the free balloons.



• **Otolaryngology**

JAMES AZZI

New York Eye and Ear
Infirmary/New York Medical
College

NEDIM DURAKOVIC

Barnes-Jewish Hospital/
Washington University School
of Medicine in St. Louis

• **Pediatrics**

ANA CREO

Mayo School of Graduate
Medical Education/Mayo School
of Graduate Medical Education

VIVEK SHENOY

Tufts Medical Center/Tufts

University School of Medicine

KAITLIN THEIN

UC San Francisco/UC San
Francisco School of Medicine

LAWREN WELLISCH

University of Chicago Medical
Center/Pritzker School of
Medicine

• **Psychiatry**

DEBORAH BROOKS

University of Maryland Medical
Center/University of Maryland
Sheppard Pratt Health System

JEROME LIU

Butler Hospital/Alpert Medical
School

• **Psychiatry-Triple
Board**

WEI SONG

University of Utah Affiliated
Hospitals/University of Utah
School of Medicine

• **Radiology**

CHRISTINE CHEN

Beth Israel Deaconess Medical
Center/Harvard Medical School
CA Pacific Medical Center/
Sutter Health System
(Medicine-Prelim)

MICHELLE TSANG MUI

CHUNG

Rhode Island Hospital/Alpert
Medical School
Rhode Island Hospital/Alpert
Medical School
(Medicine-Prelim)

JASON ROTHSCHILD

UC Irvine Medical Center/UC
Irvine School of Medicine
Tufts Medical Center/Tufts
University School of Medicine
(Transitional)

KOMAL TALATI

Beth Israel Deaconess Medical
Center/Harvard Medical School
Wilson Memorial Regional-
UHS-NY/United Health
Services Hospitals
(Transitional)

AMY TSAI

Boston University Medical

Center/Boston University
School of Medicine
Cambridge Health Alliance/
Harvard Medical School
(Transitional)

• **Surgery-Prelim**

SHILPA GOWDA

University of Southern
California/University of
Southern California School of
Medicine

RICHARD HINDS

Rhode Island Hospital/Alpert
Medical School

• **Urology**

GEOLANI DY

University of Washington/
University of Washington
School of Medicine
University of Washington/
University of Washington
School of Medicine (Surgery-
Prelim)

CHINTAN PATEL

Lahey Clinic Medical Center/
Lahey Clinic Medical Center
Tufts University School of
Medicine/Tufts University
School of Medicine (Surgery-
Prelim)

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MOMENTUM

Honor Thy Teacher

Karlsons lead effort to pay tribute to Professor George E. Erikson.

Anatomic dissection is still the preferred method of teaching anatomy in medical schools. The course is often called “transformative,” in that it is the first of many experiences that change a lay person into a physician. As such, the professor who leads the student through this transformation is often mythologized, revered, and certainly, never forgotten.

Such is true of Professor Emeritus of Medical Science George (Erik) Erikson. Erikson served as co-chair of the section of population biology, morphology and genetics, and taught anatomy at Brown from 1965 to 1990. He taught in the traditional manner, relying heavily on prosection and demonstrations he performed in front of the class. Students in the master of medical science and early Program in Medicine watched from spring-loaded stools in the Biomedical Center’s basement anatomy lab.

“As we started our journey in medical school, it was Professor Erikson who first educated us about the sanctity of life—and respect for the human body—by teaching us about death and anatomy,” says Karl Karlson ’74 MMS’77 MD’77, P’06. “He conveyed to his students that it is truly an honor and a privilege to dissect the human body—that in medicine, we must be reverent.”

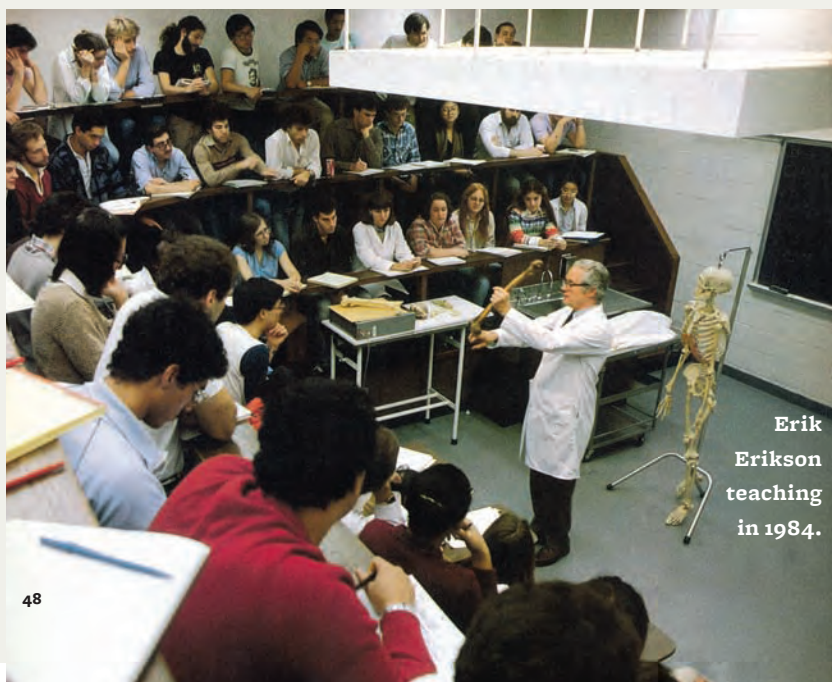
From 1990 to 1999 Erikson was a visiting lecturer on surgery at Harvard and a senior anatomist at Massachusetts General Hospital. He died in 2009.

The Karlson family, including Brown Medical School graduates Karl and

James ’84 MMS’88 MD’88, are leading an effort to honor Erikson’s legacy with a gift to the new Medical School building that would name one of the anatomy labs for him. The Karlsons, whose father was a cardiothoracic surgeon and founding faculty member of the School, have made a \$500,000 gift toward the effort and are challenging the Brown community to raise the remaining \$500,000. A gift committee has been established to garner support among alumni.

“It is gratifying for our family to see the effort that our father began 40 years ago come to fruition in such a world-class building. When we toured the building

“He conveyed to his students that it is truly an honor and a **privilege to dissect the human body.**”



Erik Erikson teaching in 1984.

our thoughts returned to our first-year experiences which were dominated by Gross Anatomy and defined by Dr. Erikson. Of course the new anatomy lab should be named after Dr. Erikson. Hopefully others with similar experiences will help make this dream come true,” says James. —**Kris Cambra**

For more information about the Karlson Challenge or to participate on the committee, please contact Erin Shreve, major gifts officer, Biomedical Advancement, at 401 863-3679 or erin_shreve@brown.edu.

JOHN FORASTÉ

<http://brownmedicinemagazine.org>

ALUMNI ALBUM

CHECKING IN WITH BROWN MEDICAL ALUMNI



PUMP IT
Mr. Slim Goodbody visited
the Pawtucket Heart Health
Program festival on
June 11, 1988, in Slater Park.

CLASSNOTES

1975

Glenn W. Mitchell '67 ScM'69 writes:
"Jane and I are restoring an 1860 brick
farmhouse in Carlisle, PA, in prepara-
tion for my planned retirement at the

end of 2012. I am enjoying my role as
chief medical officer for Mercy Health in
St. Louis, but I am looking forward to fly
fishing instead of managing change!"

Robert Starzak '70 writes: "I am
now 32 years at Kaiser Permanente
Medical Group as a pediatrician. My

WHAT'S NEW?

Career news, weddings, births,
reunions...it's all good. Go to **med.
brown.edu/alumni** and click on
"Updates and Class Notes."

ALUMNIALBUM

wife, Diane, is a pediatric nurse practitioner. One of my twin daughters, Christina, is an associate producer on *The Ellen DeGeneres Show*, and Amanda is working on her master's in architectural restoration at the Savannah College of Art and Design."

1977

Joel Shalowitz '74 was a Fulbright Senior Specialist and Visiting Professor at the Scuola Superiore Sant'Ana/University of Pisa. This was his third Ful-

"My youngest child is just safely back from Afghanistan," writes Gregory Bianconi.

bright award. Joel is a professor at the Kellogg School of Management, Northwestern University, and Professor of Preventive Medicine at the Feinberg Medical School, Northwestern University. His wife, **Madeleine Shalowitz** '75 MD'78 is on the faculty at the University of Chicago and working on IT strategies as well as health care disparities. Joel and Madeleine have three children, David, Kira, and Llana. If classmates are living in the Chicago area, please let Joel know at j-shalowitz@kellogg.northwestern.edu.

Gregory Bianconi '74 RES'80 works in family medicine at the Central Maine Medical Center. Gregory writes, "I can't believe it has been so long ... I still enjoy family practice, with the longitudinal care of three, four, and occasionally five generations in a single family. I am blessed with a wonderful marriage of 33 years, three great kids, and five (with one more on the way) grandchildren. My youngest child is just safely back from Afghanistan."

1978

David V. Diamond '75 is associate medical director, Massachusetts Institute of Technology Medical Department, and chief of Employee Health and Occupational Medicine at MIT. He was elected to fellowship status, American College of Occupational and Environmental Medicine (ACOEM), in 2011. He is a past secretary/treasurer of New England College of Occupational and Environmental Medicine (NECOEM), and was NECOEM representative to the ACOEM House

of Delegates and to the Mass. Medical Society Interdisciplinary Committee in 2012. He was recently promoted to assistant clinical professor, Department of Medicine, Harvard Medical School.

John Keats '75, P'04 has moved to Phoenix, AZ, to take a new job with Cigna Health Care.

1979

Griffin Platt Rodgers '76 MMS'79 was elected a fellow of the American Academy of Arts and Sciences with its 2012 class. He is the director of the National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health.

1980

Mark A. Musen '77 was appointed to the National Advisory Council for Biomedical Imaging and Bioengineering (NACBIB) of the National Institute of Biomedical Imaging and Bioengineering

(NIBIB). Mark is head of the Stanford Center for Biomedical Informatics Research and professor of medicine and computer science at Stanford University. His current work addresses mechanisms by which computers can assist in the development of large, electronic biomedical knowledge bases; his work on the Protege system, an ontology editor and knowledge-base framework, has led to an open-source technology now used by thousands of developers around the world. Mark is an elected member of the Association of American Physicians and is a recipient of the Donald A. B. Lindberg Award for Innovation in Informatics of the American Medical Informatics Association.

Judy Owens '77 was a panelist at the Women's Leadership Conference: 120 Years of Women at Brown for a session called "Happy Kids/Happy Parents: What's the Secret Sauce?" Judy is director of sleep medicine at Children's National Medical Center.

1992

Valerie Parkas '88 is a physician practicing in New York City. She is the associate dean for admissions at Mount Sinai School of Medicine and lives in New York City with her husband, daughter, and son.

1993

Oliver Soldes '89 has been practicing pediatric surgery at the Cleveland Clinic since 2006. This year he will move his practice to the Akron Children's Hospital. Contact him at osoldes@mac.com.

1994

Apurv Gupta '89 received the NRI Institute's 2011 Parvasi Award, on January 10, 2012, at the Meridian Hotel in New Delhi,

Thoughtful Endings

Hospice doctor gives and gets comfort and perspective.

Ellen Melnick Brown '80 MD'83 treats patients the "old-fashioned way": at home, with personal attention to their body, mind, and spirit.

As medical director of Pathways Home Health and Hospice in Sunnyvale, CA, Brown visits four to eight of her 50 hospice patients each week, spending 30 to 90 minutes at each visit.

Her 15-year career in hospice has led her to be "more mindful and present, and more careful about staying in touch with people I love," says Brown. "My whole life has changed."

Despite our society's reluctance to discuss death, Brown insists that working with hospice patients, even pediatric patients, is "not depressing. We see joy, and we are inspired by our patients and their families."

Pleased to witness the significant growth in hospice use in the past 15 years—up to 40 percent of patients at end of life now use hospice, according to national



**Ellen
Melnick
Brown**

they can live as well as they can for as long as they can."

While her work affords her great joy and satisfaction, Brown wishes that Medicare's regulations on hospice access were less restrictive. Her passion for end-of-life care led to also working as a physician specialist and clinical assistant professor of medicine at Stanford School of Medicine, where she mentors and precepts medical students and fellows in hospice rotations.

In 2011, Brown was lauded for her contributions to the hospice movement when the California Association for Health Services at Home, a statewide association of home health care providers, named her Physician of the Year.

Brown's hospice team of nurses, social workers, medical students, and physicians provides sustenance and support not only to the patient and the patient's family

members, but to other team members, as well. They experience, she says, a "huge sense of amazingly good and valuable work." Just as they support the patient and the patient's family, they "support one another as well."

Just as we are joyously brought into the world through the hard labor of childbirth, Brown says, we should be brought out of life in an equally moving and thoughtful manner. Hospice, she says, enables patients to live well until they die.

—Nancy Kirsch

Brown champions more awareness, more conversation, and expanded palliative care and hospice services.

data—Brown champions more awareness, more conversation, and expanded palliative care and hospice services in this country.

Patients and their families benefit greatly by accessing hospice earlier, Brown says. With nearly 33 percent of patients receiving hospice care for a too-brief seven days or less before they die, Brown says, "It's hard to do living well at that [late] stage. I hope that with better communication, people accept hospice earlier so that

JOLLY GOOD FELLER

If you, like many alumni, are grateful for the compassion, wisdom, and dedication Professor Ed Feller unfailingly shows his students, why not honor him?

Show your gratitude by contributing to the Dr. Edward Feller Term Scholarship. **BUT HURRY:** the plan is to announce the scholarship when Dr. Feller receives the W.W. Keen Award on **May 25**.

What could be a more fitting tribute to Dr. Feller's total commitment to students than to invest in a medical student in his name?

Gifts can be made at <https://gifts.development.brown.edu>.

Contact Bethany Solomon at (401) 863-1635 or Bethany_Solomon@brown.edu with any questions.



BROWN
Alpert Medical School

ALUMNIALBUM

India. The NRI Institute 2011 Parvasi Award is presented to non-resident Indians for their outstanding achievements in their chosen field and their contribution to the socioeconomic development of India and the country of their adoption. Apurv is founder and managing partner of Physician Performance Improvement Institute (PPII), a provider of innovative solutions to improve health care outcomes in the United States. Apurv has received degrees and training from Harvard School of Public Health, Brown University School of Medicine, and Harvard Medical School, and is an expert in health care quality improvement and patient safety.

1997

Srihari Naidu '93 was promoted to associate professor of medicine at SUNY Stony Brook School of Medicine. Hari writes, "Thanks to all of you who helped along the way."

2000

Michelle Quiogue '96 was appointed to serve as a member of the American Academy of Family Physicians' Commission on Health of the Public and

have such great friends! Gagan is CEO of a VC-funded Internet software company, and I'm currently practicing neuroradiology at Musculoskeletal Radiology in Los Angeles." Contact Sapna at skjrocket@yahoo.com.

2005

Rob Gray '01 completed a hand fellowship last year at the Mayo Clinic. He is a hand/upper extremity surgeon and assistant professor of clinical orthopaedics at the University of Miami, seeing "tons of trauma," he writes. "Megan and I have two huskies."

George Hardy writes: "Erica is expecting our second child in May, and Maggie, our first, is almost 20 months. She is so much fun and doesn't like vegetables. I'm working in a med/peds practice in Rhode Island. Things are going great."

Lorraine Ng got married in 2009 to Matthew Cuaycong (Washington University '98, New Jersey Medical College '04), a neonatology attending at Winthrop University Medical Center on Long Island. "We currently live in New York City," she writes. "I completed

"Maggie is almost 20 months. **She is so much fun and doesn't like vegetables.**"

Science for a four-year term that began in December.

2004

Sapna Jain Palrecha '00 married Gagan Palrecha on July 16, 2011, in Dearborn, MI. Sapna writes: "We had a blast at the celebration and are so lucky to

a pediatric emergency medicine fellowship at the Children's Hospital at Montefiore, Albert Einstein College of Medicine, and am currently finishing up a one-year emergency ultrasound fellowship at St. Luke's Roosevelt Hospital Center. After this year, I promised my husband no more fellowships and have accepted a job as assistant clinical pro-

<http://brownmedicinemagazine.org>

fessor of pediatrics at the Morgan Stanley Children's Hospital at Columbia University Medical Center, where I will help start up their pediatric emergency ultrasound program."

2007

Janet Shu '02 is currently completing her fellowship in Psychosomatic Medicine at Boston University Medical Center. She completed her residency at the Harvard Longwood Psychiatry Residency Training Program. Janet is excited to announce her engagement to Marc Helmick. She writes, "I hope to find a job in the New York/New England area to stay close to my friends and extended family."

2010

Peter Chai '06 MMS'07 married Zoe Tseng '06 RES at the Stone House in Little Compton, RI, last year. A number of Brown alumni were in attendance. Peter is a second-year resident in emergency medicine at Rhode Island Hospital and Brown, and Zoe is an intern in Brown's internal medicine residency.

RESIDENTS

1983

Robert Bona joined the faculty of the Frank H. Netter, MD, School of Medi-

cine at Quinnipiac University. Robert was previously on the faculty at the University of Connecticut School of Medicine as a professor of medicine. Robert specializes in hematology and will coordinate the core block in hematology and related issues at Quinnipiac. He earned his medical degree from the State University of New York Upstate Medical College and completed his internship and

nal medicine in The Miriam Hospital-Brown program.

2006

Anna Abramson is a co-founder of Medicine of Cycling (www.medicineofcycling.com), an organization dedicated to improving the medical care that cycling athletes receive. The group holds an an-

"I have great memories of Providence, as **it is** where I met my wife."

residency at Brown University and Rhode Island Hospital. Of his time at Brown, he writes, "I have great memories of Providence, as it is where I met my wife."

1986

Maher Albitar was recently appointed chief medical officer of research and development of NeoGenomics, Inc., a leading provider of cancer-focused genetic testing services. Maher previously served as the medical director for hematopathology and oncology, and chief of research and development for Quest Diagnostics Nichols Institute. "NeoGenomics has established an excellent reputation as one of the premier cancer testing laboratories in America and I am honored to join the executive team," says Maher about his new position.

2000

Lynn Phillips has joined St. Francis Hospital and Medical Center in Hartford, CT, as a hospitalist. She received her medical degree from The University of Vermont College of Medicine and completed her residency in inter-

nual medical conference jointly sponsored with the University of California, San Francisco (UCSF) and in collaboration with USA Cycling. The group also publishes guidelines on cycling injuries, such as concussion.

Anna completed her internal medicine internship at Brown. She is currently an attending physician and assistant clinical professor in the Department of Medicine at UCSF. Along with her husband, Mark Abramson, a past president of USA Cycling (2008-2010) and current vice-chairman of USA Cycling, and James Watkins, MD, a trauma surgeon at Brigham and Women's Hospital in Boston, she founded Medicine of Cycling in 2010.

2007

Nancy Harper is medical director of the Child Abuse Resource and Evaluation (CARE) Team at Driscoll Children's Hospital in Corpus Christi, TX. Nancy is one of five people appointed by Gov. Rick Perry to the state Task Force to Reduce Child Abuse and Neglect and Improve Child Welfare.

She completed her forensic pediatrics fellowship at Brown.

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OBITUARIES

RESIDENTS

JULIUS C. MIGLIORI, MD

Julius “Jules” Migliori P’78MD’81, ’79MD’82, ’83, ’84MD’87, GP’11, ’12, ’13, ’14, age 83, of Cranston, RI, died Friday, January 13, 2012, at his home surrounded by his beloved wife of 57 years, Gloria A. Migliori, and their children Richard J. Migliori, MD, Michael E. Migliori, MD, Jill Marie Migliori, Stephen J. Migliori, MD, Mark R. Migliori, MD, and Donald A. Migliori, Esq. He is survived by daughters-in-law Joan, Marianne, Sidney, Sara, and Mary, and he was the proud grandfather of 12.

Migliori graduated from Cranston High School in 1946 and Providence College in 1950. He received a master’s degree in bacteriology from the University of Rhode Island in 1952, before heading to the University of Bologna, Italy, where he obtained his medical degree in 1957. He returned to Rhode Island to do his medical internship at St. Joseph Hospital in Providence and his anesthesia residency at Rhode Island



**Julius C.
Migliori**

Hospital. Thereafter, he was the chairman of the Department of Anesthesia at St. Joseph’s Health Services for 40 years. He founded the St. Joseph Hospital School of Anesthesiology in 1962, which continues to be a nationally accredited school in North Providence. He was the clinical coordinator of the hospital’s Ambulatory Care Center for 20 years

Bulge, and was honorably discharged as a major. After the war, he was a resident at Rhode Island Hospital and in 1947 was the first co-recipient of the Haffenreffer Fellowship in Medical Sciences at Brown University and Rhode Island Hospital.

DiMaio entered private medical practice in Providence in 1948 and

A clinical examination room in the new Alpert Medical School building is dedicated in the name of Julius and Gloria Migliori.

and served as hospital medical chief of staff. He was recognized for his contributions to the development of the St. Joseph Pediatric Dental Residency Program serving underprivileged children. Migliori also served in the U.S. Navy Reserves.

A lifelong resident of Cranston, Migliori was inducted into the City of Cranston Hall of Fame in 2005. In recognition of his dedication to his family and his practice, a clinical examination room in the new Warren Alpert Medical School of Brown University building is dedicated in the name of Julius and Gloria Migliori.

MICHAEL DIMAIO, MD

Michael DiMaio, 99, died January 24, 2012. He attended Rhode Island State College, now the University of Rhode Island. He was the first graduate of RISC to attend the Johns Hopkins University School of Medicine, where he obtained an MD in 1939. He volunteered for military service soon after Pearl Harbor was attacked on his 29th birthday. He saw action as a flight surgeon with the 9th Air Force in the European Theatre of Operations, including the Battle of the

served on the medical staff of Rhode Island Hospital until he retired in 1983. He specialized in internal medicine and was an early advocate of sodium restriction in patients with hypertension. He was awarded the Distinguished Service Award from the Rhode Island Department of Health and was the recipient of the American College of Physicians Irving A. Beck Award for distinguished service to patients. He was a fellow of the American College of Physicians and a diplomate of the American Board of Internal Medicine. He held several leadership roles in the Rhode Island Medical Society and the Providence Medical Association. For 25 years, he served as the Chief Proctor of the Providence Subsidiary Board of the National Boards of Medical Examiners. Initially appointed by Governor Christopher Del Sesto in 1959, he served on and chaired the Rhode Island Board of Medical Examiners and its successor, the Board of Medical Review, until 1983. He took great pride that his signature was on the medical licenses of the great majority of the physicians practicing medicine in the state.

DiMaio was also a skilled artist and

an avid photographer. Using a second-hand camera, he documented the liberation of Europe in thousands of photographs, some of which were published in the *New England Journal of Medicine* and exhibited in Newport, Providence, and New York City. He met Livia (Lee) Chiovoloni, a student nurse at Rhode Island Hospital, while he was an intern, and travelled through Europe during the war with “Lee” stenciled on his ambulance. They were married soon after the war and were approaching their 65th wedding anniversary. He is survived by Lee and their children, Michael Jr., Judith, and Daniel, as well as three grandchildren. Memorial gifts may be sent to: The Johns Hopkins University Basic Sciences Discovery Fund in honor of Michael DiMaio, MD, Attn: Director of Development, Institute for Basic Biomedical Sciences, Rangos 554, 855 N. Wolfe Street, Baltimore, MD, 21205.

FACULTY

NELSON FAUSTO, MD

Nelson Fausto, 75, founding chair of Brown’s Department of Pathology and

ed a highly successful research program in liver regeneration. One of the first faculty members recruited to the nascent Program in Medicine, Fausto organized and directed General Pathology for first-year medical students for 20 years. Year after year—from 1971 to 1988—medical students recognized his enthusiasm and dedication by giving him the Distinguished Teaching Award. Fausto also served as director of the Cancer Biology Program, deputy director of the Brown University/Roger Williams Cancer Center, and Asa Messer Professor of Pathology. In 1983, he became the inaugural chair of Brown’s Department of Pathology and Laboratory Medicine. A recognized mentor for a generation of teachers and experimental pathologists at Brown, Fausto inspired graduate students, medical students, postdoctoral researchers, and young faculty to pursue research in environmental health and human disease—research that has been sustained for 30 years. He was married to fellow researcher and Brown professor Anne Fausto-Sterling from 1966 to 1992.

In 1994, Fausto was recruited to the University of Washington School of Medicine, where he became the third

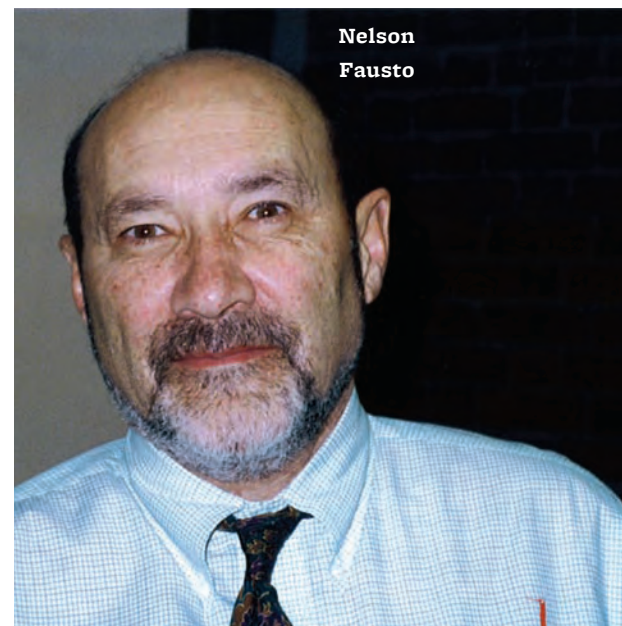
Year after year medical students **recognized his enthusiasm** and **dedication by giving him the Distinguished Teaching Award.**

Laboratory Medicine, died at home in Seattle on April 2, 2012, after a long struggle with multiple myeloma.

A native of Brazil, Fausto joined the Department of Pathology at the University of Wisconsin, Madison, before coming to Brown as an assistant professor of medical science in 1967, when he initiated

chair of the Department of Pathology as well as senior adviser to the dean.

Fausto was co-editor of the universally used medical textbook *Robbins and Cotran Pathologic Basis of Disease* and of *Arias’s The Liver: Biology and Pathobiology*. In addition, he was the recipient of numerous awards, notably the Distinguished



**Nelson
Fausto**

guished Achievement Award from the American Association for the Study of Liver Disease, the Arnaldo Vieira de Carvalho Medal from the University of São Paulo, the Gold-Headed Cane Award from the American Society for Investigative Pathology, and the Distinguished Service Award from the Association of Pathology Chairs.

Fausto is survived by his wife, Ann De Lancey, his brothers, Boris Fausto of Brazil and Ruy Fausto of France and Brazil, his nephews, Sérgio and Carlos, his niece, Luisa, and his three great-nephews, Miguel, Felipe, and Antonio.

In a letter to the Biomed community last month, Dean Edward Wing wrote, “Nelson Fausto leaves a great legacy of excellence and passion for science and teaching and will be remembered with respect and admiration.”

THE NELSON FAUSTO INITIATIVE

Friends, colleagues, and former students of Nelson Fausto are raising funds in tribute to his leadership, mentorship, and enthusiasm for teaching. The deadline to support this initiative is June 30, 2012. For more information or to contribute,

OBITUARIES

contact Andrew T. Horgan, major gifts officer, at Andrew_Horgan@Brown.edu or 401 863-1459.

PAUL J.M. HEALEY, MD

Paul Healey passed away in Providence on September 11, 2011, at the age of 79.

Healey, a native of Pawtucket, graduated from Fordham University in 1953 and Boston University School of Medicine in 1958. After completing his surgical residency at Boston City Hospital, Healey returned to Rhode Island to begin a 30-year career in general and vascular surgery.

Healey's primary surgical practice was at Memorial Hospital, but he was also affiliated with other hospitals around the state, including Notre Dame Hospital in Central Falls, where he served as chief of surgery.

During his career, Healey was an active member of the Rhode Island surgical community, serving as president of the Rhode Island chapter of the American College of Surgeons, the Providence Surgical Society, and the Rhode Island Medical Society. Healey also founded Blackstone Valley Surgicare Inc., a free-standing, same-day ambulatory surgery center in Pawtucket.



Paul J.M.
Healey

Healey was long involved in surgical education, training Brown surgical residents from 1991 until 1994. He was the brother of Eugene Healey, MD, clinical assistant professor emeritus of surgery.

HENRY F. IZEMAN, MD

Henry Izeman, clinical associate professor emeritus of medicine, died January 6, 2012, at the age of 79.

Izeman graduated from Brown, Phi Beta Kappa, in 1954 and Tufts School of Medicine in 1958. He completed his internship and residency training at Rhode Island Hospital, Buffalo General Hospital,

in 1961, completed his residency at St. Francis General Hospital in Pittsburgh and fellowship at Harvard/Beth Israel Hospital in Boston. Rege joined Rhode Island Hospital in 1965. He was soon invited to work with Dr. Louis Leone, with whom he pioneered the development of the Department of Oncology at the hospital, now the Comprehensive Cancer Center.

Rege was at the forefront of development in the field of oncology, participating in clinical cancer research and assisting in the development of an innovative chemotherapy for melanoma. He

Rege pioneered the development of the Department of Oncology at Rhode Island Hospital, now the Comprehensive Cancer Center.

and Georgetown University. He served as a captain in the U.S. Air Force.

He was one of the first board-certified geriatricians in Rhode Island, and served as medical director of Oak Hill Nursing and Rehabilitation Center and the Jewish Home for the Aged. He also served as president of The Miriam Hospital Staff Association.

Izeman is survived by his wife, Paula, three children, and four grandchildren. Donations in his memory can be made to the geriatrics program at Alpert Medical School or to nursing education at The Miriam Hospital.

VISHRAM B. REGE, MD

Vishram B. Rege, clinical associate professor emeritus of medicine, 81, passed away on February 6, 2012. Educated in Bombay, India, he received a BS in microbiology from Xavier College and a medical degree from Grant Medical College. He immigrated from India

also took part in the management of pediatric patients before pediatric oncology had been established. During the ensuing 35 years the Oncology Department expanded significantly under Rege's guidance, and he served as a mentor to many medical students. After retiring in 2000, he worked as a senior physician with his colleague, Dr. S. T. Sambandam, at Hematology and Oncology Associates of Rhode Island.

He is survived by his wife, Lalita, with whom he had recently celebrated their 50th wedding anniversary, and their three children, Sandy, Maya, and Sujata, and six grandchildren. Aside from their annual trips to India, the Reges traveled in the United States and beyond, to the Near and Far East, and to many European countries. Gifts in his memory may be sent to: Rhode Island Hospital Foundation/Dr. Vishram Rege Memorial Fund, PO Box H, Providence, RI 02901.

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They know that 100 percent of your gift to the Brown Medical Annual Fund benefits medical students like them. Your gift is a vote of confidence in the future of medicine – and Alpert Medical School!

On behalf of Alpert medical students,
Thank You!

*Standing above, left to right: Corey Spiro MD'15,
Courtney Mannino '11 MD'15, Isha Parulkar MD'15,
Robert Heintz MD'15, Nicolette Rodriguez '11 MD'15
Seated, left to right: Vivian Garcia '11 MD'15,
Shankar Ramaswamy MD'15, Shakir McLean MD'15*

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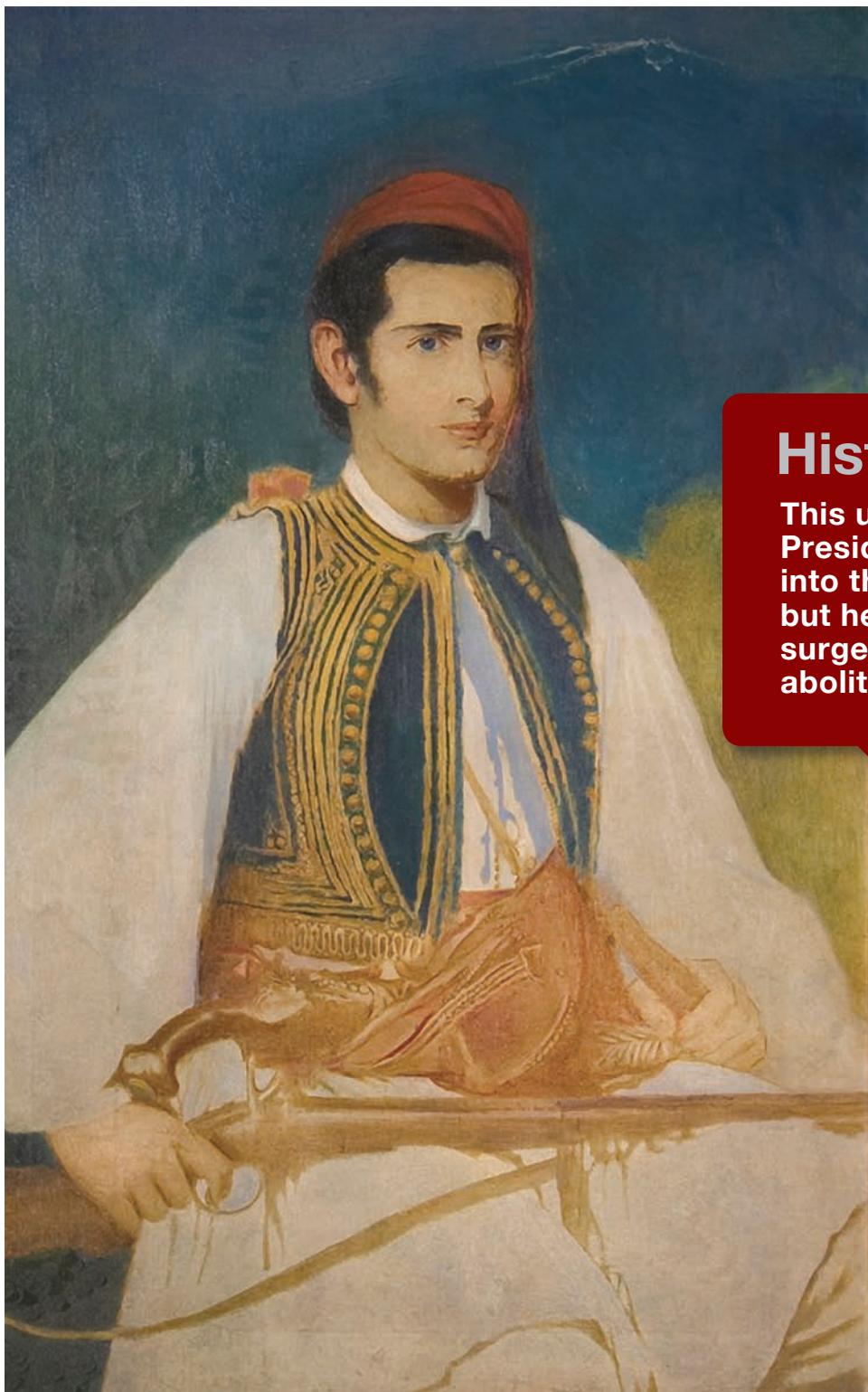
Questions? Contact Bethany Solomon, director of the Brown Medical Annual Fund, by email at Bethany_Solomon@brown.edu or phone at 401- 863-1635.



BROWN
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History's Mysteries

This unruly alum once led President Asa Messer's horse into the belfry of University Hall, but he's better known as a war surgeon, reformer, and abolitionist. **WHO IS HE?**

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