

BROWN MEDICINE

Volume 19 | Number 1 | Winter 2013

Troubled Waters

In Philadelphia,
Amy Nunn helps
spread the gospel
truth about HIV:
Test.

Treat.

Prevent.

PLUS:

CHILDREN OF MEN

MODEL PATIENTS



Change Makers

This edition of *Brown Medicine* highlights one of the exciting areas of research and clinical care at Brown, HIV/AIDS. Brown faculty are national experts in women and HIV, prisoner health, HIV and underserved populations, and HIV in developing countries including Kenya, Ghana, Haiti, South Africa, and India. Federal funding for research in this area at Brown tops \$20 million annually.

Further research by Amy Nunn has been focused on the prevention of HIV in high-risk areas like some neighborhoods of Philadelphia. In addition to research, the group headed by Tim Flanigan has provided outstanding clinical care coupled with dynamic education. I observe this each week when I see patients at the same time as Tim and other faculty in The Miriam Hospital Immunology Center. The center is filled with students, residents, fellows, and visiting physicians from other countries, as well as a variety of other people including high school students with an interest in medicine.

Additional articles in this issue include a feature on fascinating translational research in urology headed by Kim Boekelheide in Pathology and Mark Sigman, chief of the Division of Urology. A photo essay on the clinical skills suite shows a very popular and busy part of the new Alpert Medical School building. (Not mentioned but soon to come online is a new fitness center for students on the fourth floor of the building.)

Finally, there is a profile of our outgoing associate dean for medical education, Phil Gruppuso. Phil has been an extraordinary dean during the past seven years. He oversaw a complete revision of the medical curriculum. During his term he has earned respect from students, faculty, and the entire Brown community for his honesty and commitment to excellence. He has also been innovative in developing a proposal for a new Primary Care-Population Health Program and research fellowship opportunities for research-oriented students. Phil isn't disappearing from education and will continue to teach and advise in the new Alpert Medical School building.



PETER GOLDBERG

Full of Grace

I spend a lot of time with doctors, both in my professional and personal life. As I write this, my son is in the operating room for yet another procedure. Most of the doctors who care for him are kind, gracious people—people who choose to work on the most complex cases, the tiniest and most fragile bodies, and to deal with the attendant overwrought parents. But once in awhile, I encounter a doctor who rests on the knowledge that he or she knows more than I do, who fails to listen or dismisses my concerns, and in so doing puts my son in danger. Those doctors I want to send to Alpert Medical School to take the Doctoring course, which you'll read about in this issue.

For one year I was a member of the Doctoring course's non-physician faculty, so I know well its curriculum and its patient-centered approach. Students are taught to presume nothing and to remember that while the doctor may be an expert in the medicine, the patient (or the parent, I'd add) is the expert in his or her experience of the illness.

While doctoring courses are gaining momentum in academic medicine, I can only hope that soon *all* doctors will receive and practice these lessons. For now, I am grateful to know that Brown-trained physicians go out into the world each year, for the comfort and safety of patients and parents like me.



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INBOX



HEARTIEST CONGRATULATIONS

It's long overdue that David Egilman was made a professor of family medicine (*Brown Medicine*, Fall 2012). His blend of idealism and practicality, accompanied by a wicked sense of humor, was memorable so many years ago, when I was a medical student rotating through the

JARED LEEDS; MINDY OSWALD

WRITE US.

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

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Precious Medals

Brown Medicine has made another strong showing in the Council for the Advancement and Support of Education (CASE) District 1 Excellence Awards. In the external magazine category (circulation under 25,000), *Brown Medicine* captured the Silver for Best Overall, Bronze for Best Writing, and Honorable Mention for Best Design.

Medicine stint and he was a resident charged with teaching my group. We didn't necessarily make his task of both getting care done and doing no harm easy. He stood out even then as a very capable doctor and out-of-the-box thinker as he tried to lead us. Over the years it has been brutally apparent that the biggest medical challenges are not high tech at all, and it is gratifying that he is trying to address some of them and improve "family medicine."

Chris Indech '76
MMSc'79 MD'79
Norcross, GA

MOVE THAT BARGE

The brilliant blue span of the new Providence River Bridge (or Iway) was the perfect backdrop for a story on new linkages between health care providers and faith communities. Photographer's assistant Brianna Babick helped Jesse Burke make the most of the fading December sun, while art director Mindy Oswald convinced the Providence Steamboat Company to move a river barge that was ruining the aesthetic. Anything for a great cover shot!

COMING ATTRACTIONS

March 15, 2013

Match Day

May 24-26, 2013

Commencement-Reunion Weekend
brown.edu/go/medicalreunion

October 18-20, 2013

Medical Family Weekend



THE BEAT

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

Groups of pharmacy, nursing, medical, and social work students work through “paper cases.”



NEW DIGS

Team Effort

Students learn in interdisciplinary health care teams.

Inside the exam room, a woman has pneumonia. Outside, three women and a man talk about a plan to make her well.

The team—a doctor, a social worker, a pharmacist, and a nurse—discuss the notes from their interview with the ailing middle-aged patient. Is she a smoker?

Can she afford the antibiotics she will need? What other medicines is she taking? Does she encounter anything in her life that would make it harder to breathe?

They head back into the exam room with their plan. They present it to the patient and answer her questions, advis-

ing her to stop taking her iron-laden multivitamin because it could conflict with the antibiotic. Then time is up and the doctor, social worker, pharmacist, and nurse get feedback from an instructor.

In truth the team members won't have those professional titles until they are done with school—and the patient, thankfully, isn't really sick. She's an actor playing a patient for the sake of an unusual workshop hosted last November for more than 400 students from Alpert Medical School, the University of Rhode

MIKE COHEA

MIKE COHEA

—David Orenstein



INTOXICATING

Indecent Exposure

Study finds high blood levels of environmental pollutants in most women ages 16-49.

Almost one-quarter of American women of childbearing age meet or exceed the median blood levels for lead, mercury, and PCBs, which can harm fetal and infant brain development.

That's the conclusion of a study by Brown researchers who analyzed blood test results of more than 3,000 women between the ages of 16 and 49. The study, which was published last November in the journal *Environmental Research*, also found that more than half of the women exceed the median for at least two of the three pollutants.

Marcella Thompson, PhD, lead author of the study and a postdoctoral research associate for Brown's Superfund Research Program, says her team focused on lead, mercury, and PCBs because they are pervasive and persistent in the environment. The research “points out clearly the need to look at health outcomes for multiple environmental chemical co-exposures,” she says.

The data analyzed in the study were collected from 1999 to 2004 for the Centers for Disease Control and Prevention National Health and Nutrition Examination Survey. The survey also elicited information on health behaviors and socioeconomic and demographic characteristics, allowing Thompson and coauthor Kim Boekelheide, MD, PhD, professor of medical science, to identify risk factors associated with increased levels of the pollutants, which pass to fetuses through the placenta and to babies through breast milk.

The most significant link the researchers found was age: compared to teens, women in their 30s and 40s have 12 times and 30 times greater risk, respectively, for above-median levels of two or more pollutants. Fish and heavy alcohol consumption are also risk factors.

The study did discover one factor that greatly reduces blood pollutant levels: breastfeeding. Unfortunately, Thompson says, that indicates that nursing mothers are passing the pollutants that accumulated in their bodies to their infants.

Thompson says women should learn about their risks of co-exposure to lead, mercury, and PCBs well before they become pregnant—especially if they plan to have a baby in their 30s or 40s. “We carry a history of our environmental exposures throughout our lives,” Thompson says.

—D.O.



Fox Wetle leads the Public Health Program through its next transition.

ELEVATOR PITCH

Prepare for Launch

Public Health Program is well on its way to becoming Brown's third professional school.

Terrie (Fox) Wetle, PhD, associate dean of medicine for public health and public policy, is the administrative and academic leader of Brown's public health enterprise. Since her arrival at Brown in 2000, Wetle has led the University's strategic growth of the Public Health Program. Under her leadership the faculty has grown from just over 100 to more than 200, student enrollments have tripled, and research support has more than tripled, with annual external research funding at more than \$60 million. The Program has also grown to support five master's programs—including a robust, fully accredited MPH program—as well as three PhD programs, four academic departments, and 11 nationally renowned research centers.

Brown University's Public Health Program is now poised to be a school of public health. The faculty voted unanimously in support of the school last November, and the Corporation will review the proposal in February (near press time). If the proposal is approved, the school will apply for official accreditation with the Council on Education for Public Health.

Wetle talked to *Brown Medicine* about these next steps—and the importance of public health broadly.

Why is public health so important?

Public health focuses on understanding, protecting, and improving the health of our population. Success means lower rates of disease and improved quality of life, more appropriate use of health care, and lower costs of care in general—all

critically needed in our current health care environment. There are many missed opportunities for promoting health, and our goal is to address that failure by developing new knowledge and then translating that understanding into meaningful public health policy and practice.

How is Brown different from other programs and schools of public health?

Public health at Brown draws upon the University's culture and philosophy of student-directed and individualized education and the discovery of new knowledge through high-quality interdisciplinary research. Our Program is built upon our internationally recognized public health centers that conduct research that informs improvements in promotion of health, delivery of health care, and quality of life.

What are Brown's areas of strength in public health?

We have particular strengths in understanding, preventing, and treating misuse of alcohol; in encouraging healthy behaviors by addressing physical activity, diet, and tobacco use; and in improving health care delivery by studying service use, identifying the most appropriate evidence-based interventions, and examining the impact of changes in health policy.

What will becoming a school of public health mean to your Program and to Brown University at large?

Becoming a school of public health will heighten our visibility, expand the pool of applicants to our educational programs, and improve our eligibility for specific sources of funding.

How confident are you that Brown will be accredited as a school of public health? How long will the process take?

We have worked very hard to address all criteria for accreditation as we have grown and evolved our programs. The process of accreditation requires two years of consultations, site visits, a detailed self-study including external review of our programs, and a vote by the board of the accrediting agency—the Council on Education for Public Health.

—Kylah Goodfellow Klinge

PETER GOLDBERG

UPDATE

Smoothing the Handoff

An app ensures thorough transfer of patient info.

A former software consultant who developed a passion for health care, Scott Guelich MD'11 was already working to bridge his experiences in Silicon Valley and medicine while a student at Alpert Medical School. On his clinical rotations, he recognized that physicians needed an easier way to find lower-cost drug equivalents for patients and created Generics, an iPhone app that was downloaded more than 10,000 times (*Brown Medicine*, Winter 2011).

But Guelich's drive to provide physicians with more effective tools for patient care didn't end there. Upon gradu-



“Medicine is practiced by teams, and we need better tools to support coordination.”

ation, he co-founded Care Thread, a Providence-based company that is focused on improving one of the most problematic areas in clinical care: the patient handoff. Communications during handoff were identified by the 2010 Joint Commission Center for Transforming Healthcare as a critical area in need of improvement.

To keep every clinical team member up to date, Care Thread enables secure, HIPPA-compliant mobile messaging between clinicians or entire care teams. It also streams a feed of important clinical events for each patient, giving providers a real-time rundown of the course of care, and offers handoff summaries to ensure safer care transitions. The tool is available for Apple and Android devices and also works with a web browser.

“Care Thread was created to solve the fundamental communication challenges that health care providers face today,” says Guelich. “Medicine is practiced by teams, and we need better tools to support coordination. By connecting people, we can improve patient outcomes.”

The company recently announced a \$250,000 investment from the Slater Technology Fund, a Rhode Island-focused economic development fund. Care Thread has also partnered with Yankee Alliance, a group purchasing organization for hospitals—a collaboration that will expand its sales reach throughout the Northeast—and was named “App of the Month” by Nuance Healthcare.

Learn more at www.carethread.com.

—K.G.K.

Over Heard

“Up to 75 percent of women use herbal and complementary medicines to treat their postmenopausal symptoms. Therefore, it is vitally important for health care providers to be aware of and informed about the non-pharmacological therapies available for women who are experiencing postmenopausal symptoms and who are looking for an alternative to HRT.”

—IRIS TONG, MD, director of Women's Primary Care at the Women's Medicine Collaborative and assistant professor of medicine, in a review of herbal and complementary medicine used to treat symptoms of menopause published in the January issue of *The Obstetrician and Gynaecologist*.

COURTESY SCOTT GUELICH (2)

THE BEAT

ANATOMY OF A FIRST-YEAR MEDICAL STUDENT

Second Course

To hear Dave Lieberman tell it, the segue from cookbook author and TV chef to medical student is a natural one. For his 2009 book, *The 10 Things You Need to Eat*, about superfoods that are easy to find and prepare, the 33-year-old Philadelphia native thought beyond the recipe to consider obesity, cardiovascular disease, and other diet-related afflictions. “I had always wanted to take my career in a more social-issue direction, and saw health and medicine as the perfect way to do it,” says the former Food Network host of *Good Deal* and *Eat This*. In his first year at Alpert Medical School, Lieberman has plans to blend his old career with his new one—but for now he’s letting them marinate. —Phoebe Hall



TOOLS OF THE TRADE

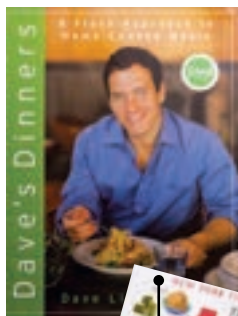
The former New York City apartment dweller loves cooking in his “big, bright” Providence kitchen.

STUDY AID

Thanks to digital recordings of his professors’ lectures, Lieberman can listen to them again online.



BIG DOG, SMALL CITY Lieberman walks his 3-year-old French Briard in a park near his home, but “he’s a big, lazy dog” who loves to sleep.



COOKBOOKS

Young and Hungry and *Dave's Dinners* feature simple, affordable meals that will impress guests and families alike.

Lieberman co-wrote *10 Things* with his Yale roommate Anahad O'Connor, a *New York Times* health columnist.



ADAM MASTOON

AN APPLE A DAY

Last fall Lieberman picked Rhode Island apples to make hard cider—“a good start to the season.”

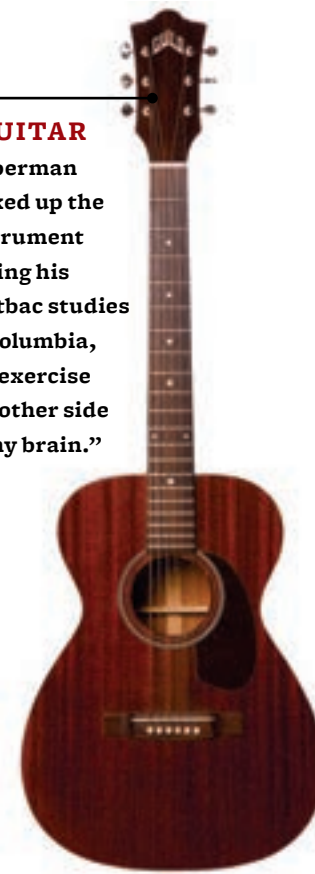


FRENCH PRESS

Believe it or not, Lieberman needs only a couple of cups of coffee each day to stay awake.

GUITAR

Lieberman picked up the instrument during his postbac studies at Columbia, “to exercise the other side of my brain.”



KIM DIDONATO-FERRO/PROVIDENCE VETERANS AFFAIRS MEDICAL CENTER

NEW FRONTIER

Nerve Center

Brown partners with the VA to seek therapies for patients with severe injuries.

A new research center in Providence may help some injured veterans regain their independence.

The Center of Excellence for Neurorestoration and Neurotechnology, housed at the Providence Veterans Affairs Medical Center and led by Brown-affiliated scientists, develops and tests technologies and therapies for former servicemembers with brain disorders, psychiatric conditions, and limb loss.

“The research aims to restore the ability of our veterans to pursue fulfilling and independent lives,” John Donoghue, professor of neuroscience and engineering and director of the center, said at its dedication ceremony in October.

The new center, which the VA is funding with \$4.5 million over five years, involves more than 30 researchers from regional hospitals as well as the Brown Institute for Brain Science. Already they are conducting clinical trials with real patients, Donoghue said.

“Advancing science to restore health and quality of life for people with neurological disorders and limb loss is a tremendously inspiring research mission,” Brown President Christina Paxson said. The center “has the potential to yield many beneficial innovations for veterans and others,” she added.

The center focuses on four areas of research: advancing prosthetics for upper-limb amputees; robotic- and computer-assisted rehabilitation for patients with strokes, multiple sclerosis, and other disorders; neuromodulation technologies, such as electrical and magnetic brain stimulation, to treat chronic pain and psychiatric conditions; and the BrainGate brain-computer interface for people with severe paralysis, which the National Institutes of Health highlighted as a top research breakthrough of 2012.

Two BrainGate patients, Bob of Connecticut and Cathy of Massachusetts, traveled to Providence for the VA ceremony. As research participants, the two tetraplegics had, through a neural interface, manipulated robotic arms to grasp objects.

Their feat foreshadowed what Providence VA Chaplain Daniel Cottrell invoked for the center at the ceremony’s onset: “May the mysteries unlocked not only be the success of science, but the triumph of the human spirit.” —D.O.



Cathy, one of the patients who tested the BrainGate neural interface, attended the VA ceremony.

FINDINGS

Hover Moms and Dads

Careful parenting may offset genetic risk.

In a new study,

addiction researcher Robert Miranda Jr., associate professor of psychiatry and human behavior, found that attentive parenting can overcome a genetic predisposition to alcohol use disorder among teens. Previously, Miranda and colleagues had found that teens with a single difference in their genes were more predisposed to alcohol use disorder. In this follow-up study in *Alcoholism: Clinical and Experimental Research*, he found that the risk was largely overcome when parents were specifically mindful of their teen's behavior and peer group.

Of the 104 adolescents ages 12-19 in the study, the team found 30 with the incriminating allele. The data suggest that the association between this genotype and risk for an alcohol use disorder was moderated by greater parental monitoring and reduced relations with negatively influencing friends.

As this work is still in early stages, continued research on a larger population is needed to substantiate the interrelationship. However, Miranda says, "the take-home message from this research is that parents worried about their teen and drinking should closely monitor their child's behavior and peer group." —Adapted by Dani Grodsky '14 from an interview by David Orenstein

COOL TOOL

Power in Your Pocket

New apps make diagnosis and management a snap.

Could your patient's symptoms be indicative of a life-threatening disease, a treatable infection, or an adverse reaction to a drug? These questions are asked in hospitals and doctors' offices daily. Now a smartphone app, Sensitivity and Specificity, can help determine which tests will most effectively and accurately provide the answers necessary to find the correct diagnosis. By searching through a database filled with hundreds of peer-reviewed and hand-selected journal



"By doing this, we can effectively reduce medical costs by avoiding unnecessary testing."

publications, a doctor or medical student can find various testing options and the average percentage of accurate positive and negative results for a specific ailment by simply typing in its name.

The app was developed last year, spurred by the coincidental meeting of Timothy Jolis MD'13, the man with the idea, and Waihong Chung MD'14, the man with the technological know-how,

while both were working at Memorial Hospital of Rhode Island.

Sensitivity and Specificity helps doctors practice evidence-based medicine while serving as a learning tool for students, as well as doctors, to build up their knowledge of the most effective and reliable assessment options according to concrete experimental observation. This has great potential benefit in that,



COURTESY TIMOTHY JOLIS; RICK AND STEPHANEY FARRELL

Timothy Jolis MD'13 is app happy.

as Chung explains, "by doing this, we can effectively reduce medical costs by avoiding unnecessary testing."

The app includes almost 400 tests—the product of Jolis's and Chung's work reading and understanding thousands of

meta-analyses and judging credibility based on factors like a journal's prestige, size of study, and diversity of patient population.

"We continue to stay current with the literature and update the database, but we also added a feature so that you can request additional data if a test cannot be found," Jolis explains. Each test's statistical summary includes a direct link to the source so that users can draw their own conclusions from the data.

The pair will release another app called Doctor Said What, which provides the same function except translated into terms that patients can better understand.

"When I told my family about the original app, they downloaded it but then said they couldn't use it because it wasn't in English," Jolis jokes.

The 99-cent application works on

many platforms, including the iPhone, Android, and Blackberry. "There is no other application—no webpage, no book, no journal—that provides this service," Jolis says.

"We encourage people to check it out and give feedback. We are always open to suggestions and want to make it the most useful product it can be," Chung adds.

The pair recently released a third app, Vitals & Fluids Medical Care Tracker, which helps doctors and nurses keep track of patient vital signs, fluid status, and much more. Chung and Jolis have individual ambitions to integrate their medical knowledge and business acumen to create companies whose software can further facilitate the process of differential diagnosis and provide innovative assistance in the clinical setting.

—D.G.



MINDY OSWALD; COURTESY TIMOTHY JOLIS

NOSTALGIA

Welcome Back

Felise Milan MD'91, professor of clinical medicine at Albert Einstein College of Medicine, speaks about innovations in teaching at the General Internal Medicine Residency Program reunion in October. The event, which drew more than 100 resident alumni, current residents, faculty, and their guests, included a one-day conference at the Medical School on the past, present, and future of primary care and the residency program. For alumni, who enjoyed a cocktail reception, dinner, and other opportunities to reminisce and reconnect with each other, the past was the best part.

Outside the Walls

An intern volunteers for the Sandy relief effort.

After Hurricane Sandy hit, I packed my duffel bag with medical supplies and scrubs, and—with the blessing of my program director—hopped on a bus headed for New York City. I grew up in Connecticut; with my medical training, I felt I could offer something tangible to my neighbors.

When I arrived in New York, I linked up with Occupy Sandy at St. Jacobi Lutheran Church in Brooklyn. Within the hour, I was paired with two volunteers to make house calls to apartments that had been listed as “requiring medical care.” We were briefed and dispatched almost immediately. Sitting in the back of a car with people I had just

met, watching the devastation out of the window flash by, it all seemed surreal.

I was nervous. It was my first time wearing my white coat outside of a medical setting; I had graduated from medical school only six months prior. I didn’t know what to expect, or how much good I could actually do. And I confronted more immediate fears too: I was in an unfamiliar area, with multiple reports of looting and crime; the streets were dark, the lights out.

In the first apartment building, we faced pitch blackness and the shocking stench of garbage, urine, and feces. The apartments had lacked running water and sanitation for more than a week. People

BY PIYUSH GUPTA, MD RES’

were throwing trash into the hallways and relieving themselves in the staircases.

We turned on our headlamps, fought through the debris to our target apartment, and knocked. No answer. “Hello, my name is Doctor Gupta, and I am here to help,” I said—words that I had never spoken outside the hospital. After a moment, the door opened a crack, and an elderly lady peered around its bolted chain. Eyeing me, she opened the door farther, let us in. We assessed her medical needs, made notes, told her news from “the outside,” gave her food and water.

For the next few days, I made similar house calls in Coney Island and the Rockaways. I came across myriad medical problems and for the first time made decisions without a senior resident or attending to verify my assessments. I saw children with asthma exacerbations and no access to inhalers; elderly patients who had run out of their blood pressure medications and were experiencing dangerously high blood pressures; disabled people who, without running elevators, were restricted to their apartments; individuals with severely infected wounds; and people experiencing suicidal ideations. All were grateful, trusting.

Their confidence buoyed my own. After my first few patients, I became more sure of my evaluations and recommendations, less insecure about my relative inexperience, and more keenly aware that medicine is just about a doctor and a patient, a person with a need and a person who will try to help, in or outside the hospital’s walls.

Piyush Gupta is an intern in Brown’s Categorical Internal Medicine Residency Program.

BENJAMIN COLLIER ’02

BY JAYSON MARWAHA ’14 MD’18



Like a Machine

What does it take to keep a hospital running in Zanzibar?

Along the coast of the East African islands of Zanzibar sits a cluster of crumbling, concrete, whitewashed buildings that constitute Mnazi Mmoja, the islands’ biggest hospital. Lining its dim, rancid hallways are ancient machines with frayed cables, gathering dust.

It was here that I met an ENT surgeon from Somerset, England, who had traveled to Zanzibar to volunteer. I was working for MED International, a medical equipment nonprofit that I founded in 2011 and run with Han Sheng Chia ’14.

“How is it that every piece of equipment in my [own] hospital is always in perfect condition?” the surgeon asked. “I don’t think I’ve ever stepped into an OR where broken equipment was a problem.”

The seamless efficiency to which the

surgeon was accustomed was in sharp contrast to what we found in Zanzibar. As of June 2012, about 80 percent of Mnazi Mmoja’s equipment in the maternity theater—and about 75 percent in the

Simpler equipment didn’t work either. I saw doctors use kidney dishes to scoop blood out of patients because suction machines rarely functioned. I saw nurses surround preemies with hot water balloons because the incubators wouldn’t heat up.

WELL OILED

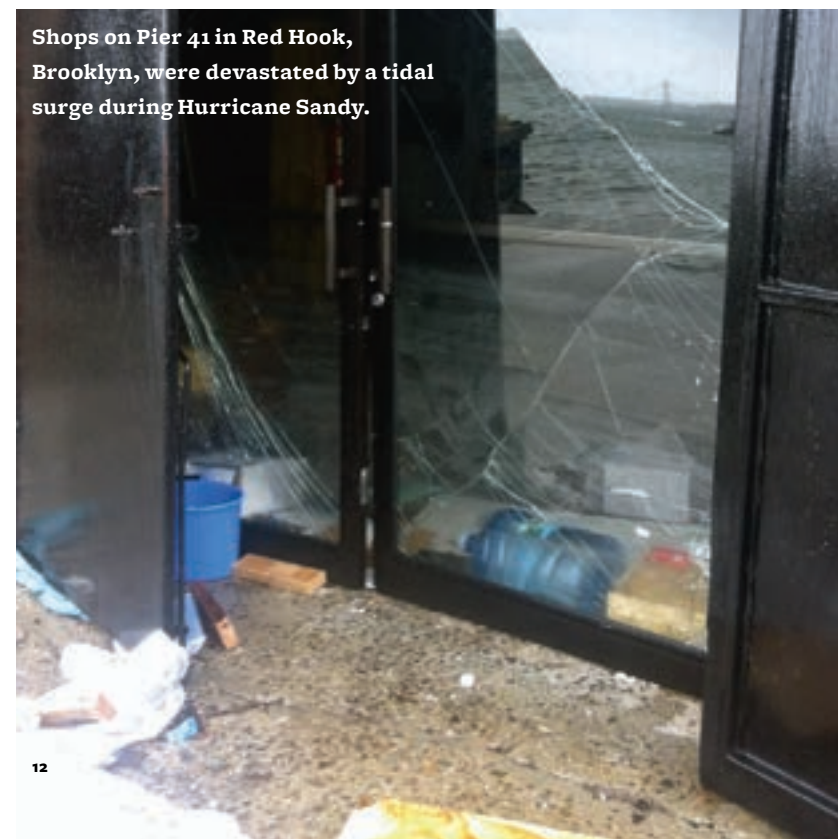
Hospital machinery requires an astonishing amount of maintenance. Some

Three of the four **ultrasound machines** were broken, and women waited for hours outside radiology each day.

neonatal unit—was broken. Though the hospital had four ultrasound machines, three had long been broken, and dozens of women waited for hours outside the radiology room each day.

top-of-the-line ultrasound machines won’t last 90 days without regular checks and adjustments. And a quarter-million-dollar CT scanner? Probably even less than that.

JESSICA DEANE ROSNER



Shops on Pier 41 in Red Hook, Brooklyn, were devastated by a tidal surge during Hurricane Sandy.

FIELDNOTES

In America and other developed nations, equipment stays running because it is supported by professionals wholly dedicated to its upkeep. In addition to all the nurses and doctors darting around a hospital, there is also an army of carefully coordinated clinical engineers and on-call technicians focused on keeping everything functioning—all day, all night, all year, and in compliance with

It doesn't make financial sense for Mnazi Mmoja to set aside some of its budget for basic maintenance if it receives donated machines every month.

industry and state regulations. They are aided by multimillion-dollar software that issues alerts for machines that need maintenance or parts replacements.

It's a remarkable system, one that runs on tight management, relevant expertise, and strict regulation.

It is a system that operates so smoothly that even some doctors barely notice it until its absence is unmistakable—in a setting like Mnazi Mmoja.

NEEDS ASSESSMENT

Last summer, I went to Zanzibar with Han Sheng to take a closer look at the problem. What occurred was remarkable: In under an hour, an American technician working with us put a suction machine back into service with cardboard and electrical tape. He fixed a vacuum motor and an ultrasound monitor with parts from an old desktop. He went from machine to machine in kind, until more than half were fixed with the

types of items found in kindergarten classrooms and only a basic understanding of electronics. *If things are so easy to repair, why were they not being fixed?*

On our trip and through our research, we have discovered that the answer lies largely in the prevailing dependency on foreign donors. It doesn't make financial sense for Mnazi Mmoja to set aside some of its own budget for procurement or

even for basic maintenance if it receives crates of donated machines from dozens of relief organizations every month.

Donors rarely take time to study the hospital's needs, however, so those crates often carry equipment that misses the mark. One day in June, I heard that several dozen bed frames had been donated by an aid organization. I was surprised to see the frames in a grassy patch behind the hospital later that day; they stayed there for a good part of the summer. The director of the hospital told me that pulse oximeters were one of Mnazi Mmoja's greatest needs. The beds, on the other hand, were irrelevant: Mnazi Mmoja simply had no immediate use for them.

But the problem isn't as straightforward as overdependence on aid broadly and on oft-unsuitable donated equipment specifically. It is also rooted in issues of management and expertise. The hospital doesn't have the relevant knowledge or system to track and fix breakdowns.

One morning I walked into the technicians' workroom and found one of them taking a screwdriver to an ironing press. "Do you know if there are any new breakdowns in the main wards today?" I asked.

"No, I don't," he replied.

"Why are you working on the ironing press?"

"Because the laundry room manager asked me to fix it."

They have no way to prioritize repairs or to organize workflow: There is no system for reporting breakdowns, assigning technicians to specific machines, or issuing deadlines. So when Mnazi Mmoja's laundry man wants to be able to iron out wrinkles, his request becomes the top item—the only item—on the to-do list.

These are the challenges that MED International is trying to address. We are working to make donations more relevant, management more efficient, and expertise more available. If our solutions work, they'll wean Mnazi Mmoja off of equipment donations by providing an incentive to invest in maintenance and procurement of relevant technology—all while creating an obvious change in availability of life-saving equipment. And if they're really successful, in time they may even disappear behind the scenes, leaving Zanzibar's doctors wondering, "How is it that every piece of equipment in my hospital is always in perfect condition?"

Jayson Marwaha is the founder and co-executive director of MED International, a nonprofit that designs, implements, and advises governments on medical equipment interventions. For more information, visit www.medinternational-us.org.

FROM THE COLLECTIONS

BY SARAH BALDWIN-BENEICH

Go Deep An early-17th-century book delves into the human body.

In 1543, **Andreas Vesalius** ushered in the era of modern anatomy with *De humani corporis fabrica librorum*, the first book of drawings and descriptions of the human body based on direct observation (see *Brown Medicine*, Fall 2004). Three-quarters of a century later—almost four centuries before 3D computer imaging became commonplace—Johan R Emmelin (1583-1632), a physician in Augsburg, created what can be considered the first interactive anatomy book.

Titled *Catoptrum microcosmicum* (microscopic mirror), R Emmelin's masterpiece comes close to rendering the human body in three dimensions, and is still widely regarded as the most ambitious and impressive anatomical flapbook in history. It contains three full-page plates, which feature a man, a woman, and a man and woman flanking a pregnant torso. The elaborately adorned engravings are by the artist Lucas Kilian and based on R Emmelin's own drawings. In each, flaps (also known as fugitive sheets) peel back from different body parts to reveal the body's anatomy layer by layer, some cross sections going 15 layers deep! Lift the skin of the man's front or the woman's back, for example, and you see veins and arteries. Lift a few more, and you reveal muscles. Keep going, and eventually you see organs, and ultimately skeleton. You can also peel away the layers of the pregnant torso to reveal the uterus and, finally, the fetus. There



Lift the sun's four flaps and you'll find a cupid, a man's portrait, and, finally, this: A deo est omnis medela (All healing is from God). Given the times, a sign of political prudence?

flaps, prevented it from being a widely used or enduring didactic tool. This extremely rare book is part of a 1987 gift of 55,000 books and antique medical instruments from the Rhode Island Medical Society to Brown. Housed at the John Hay Library, it was recently on display as part of an exhibit marking RIMS's bicentennial.


Sarah Baldwin-Beneich '87 is the former editor of *Brown Medicine*. She is now the communications director at Brown's Watson Institute for International Studies.

BIG SHOT

BY MIKE COHEA

Breaking Dawn

A rooftop vigil yields illuminating results.

You can't capture great photos without having great access, so I'm always trying to go places where people aren't usually allowed. The roof of the Sciences Library is a unique vantage point of campus, Providence, and beyond. This photo is from a time lapse, which uses still photos to speed up time visually, that I did on a brisk October morning for a video project. I was up there for about three hours, starting at 5:30 a.m., with my very patient facilities escort, Joe Souza, and my student worker. I dressed in layers and brought some coffee, but mostly I kept warm moving around a lot, checking my three cameras, adjusting exposures, and checking out the views. It was still fairly dark out, so I used a five-second exposure to capture all the available light from the east. It was dark enough that a lot of lights were still on, but enough light was coming from the horizon to illuminate campus. More than a few people have thought this was Photoshopped or computer generated, which is quite the compliment! 

Mike Cohea is the University's multimedia producer and photographer. His photos appear regularly in Brown Medicine and other University publications. To see his time lapse sequences, go to <http://vimeo.com/52797966> and <http://vimeo.com/56075656>.



BY EDWARD WING, MD
JEFFREY BORKAN, MD, PHD
PHILIP GRUPPUSO, MD
AND PAUL GEORGE '01 MD'05 RES'08

MED ED 2.0

A new program will train the future primary care physician.

President Obama's second term assures further implementation of the Affordable Care Act, and with it, the acceleration of sweeping changes in American health care. Amid these changes, our current workforce may no longer meet the demands of the future health care system. With more insured patients and a greater focus on primary care and prevention, we'll need more comprehensive, whole-person, first-contact care provided by generalists such as family physicians, primary care internists, and pediatricians.

But the primary care of the near future can't just be the primary care of the present merely on a larger scale. In the emerging system, primary care doctors must be leaders in caring for communities and populations, in addition to providers of excellent care to individuals. Tomorrow's doctors must be as facile in matters of population health, information technology, and care coordination as they are with using a stethoscope. Medical schools must re-imagine medical education.

At The Warren Alpert Medical School

of Brown University, with the support of Brown's leadership, we are planning for a unique primary care program for 24 additional medical students beginning in 2015, pending regulatory approval. Its focus is described in its title: the Primary Care-Population Health Program. To our knowledge this is the first program of its kind in the United States.

The new program is consistent with an emerging national realization, well expressed in a recent Institute of Medicine report, that primary care means doctors not just treating the person or

family in front of them, but also managing the entire group of patients who regularly see them, and the community from which their patient panel comes. Paying attention to population health leads to better individual care and vice versa. For example, ensuring near-universal childhood immunization rates across Rhode Island, helping all those with diabetes get their glucose levels and blood pressures into the normal range, or combating the prescription narcotic addiction epidemic would improve the health and wellness of the state as a whole. At the same time, it would reduce suffering for individual patients—and even save money.

Physicians need to understand what is happening in the community to identify such problems and to craft interventions. What are the rates of alcohol and drug abuse? What percentage of pregnant women gets easily accessible prenatal care? Is there adequate education and nursing support for people living with diabetes? What are the rates for heart disease risks, and what programs exist to reduce smoking, hypertension, and obesity? In short, doctors should examine the population as well as the patient.

This shouldn't just be learned on the job. It is time to bring this philosophy into medical education. The new program will combine the usual emphasis on basic and medical science, with training in population health, epidemiology, and health policy. Students will be selected for their commitment to primary care

and population health and, in part, their connection with Rhode Island. The curriculum will be patient focused, driven by information technology, and team based. There will be a focus on active learning with few lectures in a curriculum that integrates topics in a seamless fashion. Our hope is for students to pursue both an MD and a master's degree that adds rigor, scholarship, and broad-

specialty clinics to nursing homes and patients' homes.

The program will draw on Brown's strengths in public health, as well as other parts of the University. There is much to learn from other professionals in health care—pharmacists, nurses, nurse practitioners, physicians' assistants, and social workers. We hope to partner with other Rhode Island health

Tomorrow's doctors must be as facile in population health, information technology, and care coordination as they are with using a stethoscope.

ened horizons in population health to their skills.

There will be additional leadership training as well as ongoing mentorship from the best primary care physicians in the state. Rather than chopping up clerkships (medical student rotations) into the usual six-week rotation blocks, we'll offer students "longitudinal" clerkships of nine to ten months to combine the core specialties such as internal medicine and surgery. This will provide them with continuity of teachers and, most importantly, patients. Students will follow a panel of patients through the health care system—from inpatient hospitalizations, surgeries, and births to outpatient visits in primary care and

professional schools to expand interdisciplinary training experiences.

A RISING TIDE

Brown's Medical School, founded in the early 1970s, has contributed greatly to Rhode Island's health care quality, research enterprise, and economic base. But these last 40 years have also produced unintended consequences, including an imbalance of too few primary care physicians relative to specialists.

We believe that the graduates of this new Primary Care-Population Health Program will become leaders in health care who can help solve some of the problems we face. We expect that these students will do "practice plus": provid-

ing primary care and leading physician groups and health systems, teaching the next generation of physicians, doing research, serving in government and health departments, or taking roles that are just emerging. We hope a significant percentage will enter primary care residencies in Rhode Island and settle here. We anticipate more than just the contributions of the graduates who stay. We also expect that there will be a "halo effect" that will energize, transform, and attract new faculty and practitioners to Rhode Island (both in primary care and in the range of specialties) as well as energize and transform health care groups, hospital systems, and emerging new models of care through the involvement of students, faculty, and practitioners.

Beyond our small state's borders we hope to make a contribution to innovation in medical education. Our experiment and experience should transfer to medical education endeavors around the nation. Through these and other measures, we hope to fulfill the potential of health reform and improve the health of the individuals, families, and communities we serve.

Edward Wing is dean of medicine and biological sciences. Jeffrey Borkan is assistant dean for Primary Care-Population Health Program Planning and chair of Family Medicine. Philip Gruppuso is associate dean for medical education. Paul George is assistant professor of family medicine.



ZOOM

The Doctor's Progress

Associate Dean Philip Gruppuso makes plans to continue teaching and learning as part of a medical school he helped to transform.

This summer, Philip Gruppuso will step down as associate dean of medicine for medical education. But he's not going far.

You'll still be able to follow the sound of Gruppuso's tinkling jazz piano to downtown Providence clubs, where he'll continue to indulge his 30-year passion for bringing syncopated vitality to the city's soundtrack—and to the occasional on-campus gig. You'll find him in the

classroom, where he'll continue to deliver 20 or so lectures every fall on topics in biochemistry and nutrition. And you'll find him in his lab, where he'll continue his NIH-funded research on regulation of cell growth.

At press time, he's waiting to hear about another major grant that will allow him to collaborate with colleagues at Brown to study environmental factors

in fetal development. And, oh, there's also the 200-year-old house just over the line in Massachusetts, where he and his wife, Martha Manno, raised their two daughters—the one that serves as a really interesting continuous restoration project.

Gruppuso approaches life as a rich blend of interlocking passions—all built on the foundation of a three-decade

PATRICK O'CONNOR

IN HIS ELEMENT
Phil Gruppuso, center, always makes time to offer guidance and encouragement to students. He's shown here with, left to right, Audrey Butcher MD'13, Kartik Venkatesh '06 PhD'11 MD'13, Jenna Lester MD'14, and Jonathan Hernandez MD'14.

career in pediatric endocrinology. It's a worldview that has informed his leadership during a time of unprecedented growth and ferment at Alpert Medical School.

TRANSFORMATION

"Phil has been responsible for some major changes and transitions," says Dean of Medicine and Biological Sciences

Edward Wing. "He and his team have transformed the first two years of medical school here, developing an integrated curriculum that follows a systems approach. For instance, students might study a blockage in the GI system through the lenses of anatomy, physiology, and biochemistry all together. And they've built in a robust feedback loop, using student focus groups, so that we have a continuously improving curriculum.

fore," says Wing, "and our culture is one in which students support each other and compete with themselves. I think Phil has done a lot to advance that."

NEW PARADIGM, ENDURING VALUES

Gruppuso has been a valuable mentor as well as a talented leader, Wing says. "Our students really respect him. They know how much he supports them."

"He and his team have **transformed the first two years of medical school here.**"

We're now in the midst of implementing changes of a similar scale for the third and fourth years—giving students shortened and more consolidated clerkship periods and more flexibility in focus."

Curriculum innovations—along with admission policy changes, an "academy structure" that organizes the student body into three tightly knit "academies," overseen by advisers and mentors, and the transformative gift from The Warren Alpert Foundation that made the Medical School's state-of-the-art physical home possible—have turned Brown into a magnet for creative, mission-driven medical students. Class size has increased from 70 to 120 students, about half of whom enter via the Program in Liberal Medical Education (where Gruppuso also made changes to enhance students' preparation for medical school), with the rest arriving from other top universities and via unique life and career paths.

"Our community is more diverse, dynamic, and exciting than ever be-

That's probably because Gruppuso's such a fan. "It's been an extraordinary opportunity, working with our students," he says. "They come to us so accomplished, and they're all so brilliant and committed." It's also because he's walked the walk; Gruppuso knows what it takes to build a successful career in academic medicine.

Gruppuso came to Providence for a pediatric residency at Rhode Island Hospital in 1977 and built a career at Brown—complementing his clinical practice and leadership roles first by teaching biochemistry, then by leading the MD/PhD Program, and finally by becoming associate dean of medicine for medical education eight years ago.

When then-Dean Eli Y. Adashi recruited Gruppuso, today's Alpert Medical School was still a dream.

"I was recruited before the Alpert gift, so—although everybody knew we needed a new building—there was nothing definite," Gruppuso remembers.

"I was hired with the charge of leading a comprehensive redesign of the curriculum. But the scope of what has happened here over the last eight years has been beyond what any of us could have anticipated."

Gruppuso points to the structural changes in the curriculum—particularly the launch of the integrated curriculum, the introduction of the scholarly concentrations program, and an incipient major initiative in training future leaders in primary care (see page 18)—as his major contributions. But it's all built on a single mission: educating the best doctors possible.

"Our job is to provide our students with the fundamental skills they need and to instill values that will dictate how they take care of patients—being a gifted communicator, being altruistic, putting the patient first," he says. "It's also increasingly imperative now, in the midst of this explosion in knowledge

that we're experiencing, to teach them how to keep up with the science over the course of their careers, how to find and manage information."

IT'S ABOUT THE PATIENT

Gruppuso has already been through one major career transition in the last year. In 2012, he stopped seeing patients as a practicing pediatric endocrinologist.

"I think about the transitions I've seen in my career—training in the PICU, working in acute care medicine, dealing with trauma and death and dying, taking care of very sick patients, and seeing the psychosocial and behavioral sides of managing diabetes in children—and I realize that what it's given me, fundamentally, is a deep respect for the patient," he says. "Take the epi-

"Our job, as physicians, is to be compassionate and thoughtful and supportive."

He'd nurtured many patients into young adulthood. And the health care system had changed, with physicians being called upon to navigate an increasingly complex practice environment and see more patients in a compressed schedule.

It was time to open another chapter.

demic of childhood obesity that we're seeing. We had no inkling, 20 years ago, that this was coming. There tends to be judgment of parents when you see a kid who's overweight. But it's complicated, and it's not appropriate to blame anybody. Our job, as physicians, is to be compassionate and thoughtful and supportive, and give parents the tools they need to raise healthy kids."

The key to being a great doctor, says Gruppuso, is that respect. "What you're doing is not about you. It's about the patient. You have to know what you're doing, be able to communicate, and put yourself in the shoes of people whose experience may be very different than yours."

It's a lesson he intends to keep sharing with students for a long time to come.

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

HANK RANDALL



JAZZ HANDS
Gruppuso and his band have an annual gig at Match Day.

BY HEATHER M. CASSIDY, MD

Life Preserver

There's more than one way to save someone.

Perhaps it was growing up with Chris that fostered my ease with those conditions we cannot cure. Surely we knew early on that my brother's developmental delays would not melt away; there would be no fix-it pill, no miracle procedure, and he would grow up to be a true man-child: young at heart and of mind. We adjusted in hundreds of tiny ways so that his—and our—lives would be the most full.

Years later, in medical school, a speaker asked our class how many of us would like to save a life. We tentatively raised our hands, our eyes flicking uncomfortably for a census of our neighbors' responses: *Was this a trick question?* The teacher went on: *What does that look like to you? What does it mean?*

It was our first formal lesson in medicine's ambiguities, crafted to wake us to the assumptions and desires we each bring to the bedside. For me, "saving a life" raised specters of adrenaline and procedural heroics, neither of which were my kin. And the eleventh-hour diagnosis—while no doubt satisfying—harkened to television melodrama in my mind. So I must confess: when I raised my hand that day, I was not entirely earnest. Of course, if given the chance, I would run the code. But I had come to that classroom seeking a quieter type of patient encounter that existed in gray tones rather than black and white.

In medicine, we each have to understand our style of "save." My husband is



a surgeon, as is my father. Much of their satisfaction with medicine and their connection with their patients lies in "the fix": the ability to tangibly and physically correct what ails the patient.

I find purpose in helping patients weave their lives around what we cannot cure. As a general internist I get to be a teacher, a scholar, a social worker, and a social innovator. A stoic power exists in maximizing quality of life. But for me to help a person do that, I must understand that person—her hopes, her responsibilities, and what she needs from me, her doctor.

With my patients, the real work lies in uncovering the context of their illness. We heal what we may, but just as importantly we wrap their lives around that which persists. Here knowledge's power stands strong, and the role of doctor as teacher is vital: patients may regain some degree of control as they come to comprehend their illness.

I challenge myself to sit down with

each patient fresh and without judgment. I challenge myself to hear not just the story, but also the questions swirling underneath and above it. Indeed, part of the craft of medicine is inferring what the patient needs from us, both in terms of reaction and results. Above all, I challenge myself to find ways to communicate with those patients—like my brother—who are "hard" and may not tell their stories in the ways we are trained to hear ... or who may not be able to tell a story at all. I have found that often, for these most vulnerable patients, their primary care doctor is one of a precious few communicating that their health—their life—is important. And though it took me a while to see it, this may be its own, no less urgent, type of "save."

Heather Cassidy earned her medical degree at the University of Colorado School of Medicine. She is a chief medical resident in Brown's Internal Medicine residency program.

BLAIR THORNLEY

TESTING 19143

Americans with HIV now have normal life expectancies, thanks to the availability of effective antiretroviral therapies. But more than 50,000 new cases of HIV are reported every year. Thousands are infected and don't know it. And people are still dying from AIDS. Brown researcher-advocates are taking to the streets in some of America's hardest-hit neighborhoods—like Philadelphia's zip code 19143—with a lifesaving message: *Get tested.*

BY EILEEN O'GARA-KURTIS
PHOTOGRAPHY BY JESSE BURKE



STREET-FIGHTING WOMAN
Amy Nunn, pictured in the lee of Providence's Point Street Bridge, divides her time between research at Brown's Center for AIDS Research and Southwest Philadelphia, where she is working with community leaders to stop the spread of HIV/AIDS.

“This is about social justice,” says Assistant Professor of Medicine (Research) Amy Nunn, ScD. “This is about geography and poverty and where you live.”

Nunn is talking about her work in Southwest Philadelphia, where a small army of religious leaders and city officials, along with students, local residents, and other volunteers, have joined her in a crusade to get residents of zip code 19143—an HIV “hot zone”—tested for the virus.

“Maps tell the story, and tell us where we ought to focus our efforts,” says Nunn. “Many people don’t know they live in a hot zone, and may think they’re not at risk because they haven’t had a lot of partners. However, that’s no longer a good criterion for assessing true risk for HIV.”

Nunn’s work in the community began in 2010, when she took a sobering look at maps that revealed the grim truth

of HIV/AIDS in zip code 19143. About 2 percent of residents were living with the virus—an incidence rate closer to that of Sierra Leone than the United States, and above Philadelphia’s already-high (about five times the national average) citywide incidence. Most alarming: residents of 19143 were dying of AIDS at nearly twice the citywide rate.

“There was a clear unmet need for testing and treatment,” Nunn recalls.

Nunn, who splits her time between her work in Philadelphia and research at Brown’s Center for AIDS Research (CFAR), recruited a powerful community-based coalition, the core of which is a group of activist clergy called Philly

Faith in Action, to do something about it. Their Do One Thing campaign, launched in June 2012, has now tested more than 3,000 people for HIV and recently also began testing for hepatitis C. Screening happens in a mobile testing unit, at clinics, and at a Walgreens that offers free testing every Friday. The effort is supported by a public-awareness campaign that encompasses billboards, door-to-door canvassing, social media, and a commitment by local clergy to preach prevention from the pulpit.

“Do one thing,” the ministers and imams say. “Get tested.”

STATUS: UNKNOWN

Universal testing is the new gold standard in HIV prevention.

Since the advent of antiretroviral therapies in the 1990s, HIV has become a manageable chronic disease. Physicians now routinely treat patients who have lived with the virus for decades—long enough to be more challenged on a daily basis by age-related conditions than by HIV. But thousands of HIV-positive Americans remain untested and untreated.

The Centers for Disease Control and Prevention (CDC) believes that 75 percent of infected Americans know their HIV status. The other 25 percent are thought to be responsible for more than half of the 50,000 new infections recorded every year in the United States.

The concept of building a national HIV strategy on testing has been gaining momentum for several years. The CDC recommended routine HIV screening in 2006. Last November, the US Preventive Services Task Force endorsed routine testing for all Americans between the ages of 15 and 65, and all pregnant women.

CAROL BATES PHOTOGRAPHY, INC.

“There is now absolutely no question that getting people into treatment, and getting viral load down, significantly reduces risk of transmission.”



Beth Rutstein, a Penn medical student, urges Jhane Franklin to be tested for HIV. The Do One Thing campaign deploys more than 80 volunteers who go door to door to distribute information and help residents get tested for HIV.

Research shows that people who know their HIV status practice safer sex and make other positive behavioral changes. Testing also leads to treatment, which has game-changing implications for both individual and population health.

By reducing viral load, or number of copies of the virus in the blood, treatment dramatically reduces the odds of transmitting HIV. A groundbreaking 2011 study by the HIV Prevention Trials Network, heralded by *Science* as that

year’s top breakthrough, showed that people who adhere to drug therapy have a 96-percent lower risk of infecting others—confirming what the medical community had long intuitively known.

“There is now absolutely no question that getting people into treatment, and getting viral load down, significantly reduces risk of transmission,” says Assistant Professor of Pediatrics Nicole Alexander, MD, MPH ’11, who co-directs the pediatric HIV clinic at Hasbro Chil-

dren’s Hospital and serves as an epidemiological consultant to the Rhode Island Department of Health with special focus on HIV. “The essence of CDC’s redirection is to make testing routine for everyone.”

POWER OF ADVOCACY

Alexander’s own epiphany as a physician advocate came in 2006, when she treated an HIV-positive 4-month-old at Hasbro Children’s Hospital. It was a



Pastor Mark Tyler, right, preaches about HIV/AIDS in March 2012.

“Geographically, 40 to 50 neighborhoods account for about half of all HIV infections in the United States.”

scenario she had never seen during training in pediatrics and internal medicine in New York City, where routine prenatal HIV testing was in place. The baby’s mother had given birth in Rhode Island, where HIV testing was “opt-in” rather than “opt-out” at the time, and she had not been tested. Mother and child had not received prenatal and post-delivery treatment that can reduce a baby’s risk of contracting the virus from 40 percent to 2 percent.

The experience spurred Alexander to earn an MPH from Brown’s Public Health Program and become a passionate advocate for testing. As part of a state-wide coalition of health care providers and community advocates, she helped to change Rhode Island’s HIV testing law to “opt-out,” with documented verbal consent replacing written consent, for pregnant women. Before the legislative change in 2007, 53 percent of expectant mothers in Rhode Island were tested for HIV; today, 100 percent are tested. Alexander is now a leader in the state’s push to achieve the CDC’s five-year goal of “getting to zero” new HIV cases.

“At Brown, our research and advocacy to tackle the HIV/AIDS epidemic locally has yielded dramatic results,” says Professor of Medicine Timothy P. Flanigan, MD, who serves as scientific director of HIV care at the 25-year-old Miriam Hospital Immunology Center, the largest provider of HIV/AIDS care between New York and Boston. “Our work in Rhode Island’s Adult Correctional Institutes has resulted in a nearly 90-percent drop in new HIV infections among incarcerated people over the past 10 years. Our advocacy for needle exchange and the legal purchasing of needles has helped to drive an

80-percent decrease in new infections among injecting drug users over roughly the same period. Universal testing is the next frontier. We’re now piloting an initiative to include offering HIV testing in all routine pre-admission testing at The Miriam Hospital, and we’re actively involved in Rhode Island’s efforts to promote testing.”

The ubiquity of lightning-fast, online-initiated sexual hookups makes routine testing even more critical, Flanigan says. “We need to introduce routine HIV testing in the context of people’s everyday lives. Do we want people to get treatment for addiction? Of course. Are we worried that having multiple casual partners is driving this epidemic? Yes. We want people to know their HIV status, for the sake of their own health and the protection of the community.”

The new focus on testing marks a seismic shift in the US approach to HIV/AIDS. Since the early days of the pandemic, prevention efforts have focused on behavior change. First defined as a killer of gay men, HIV was thought best addressed by promoting protected sex in that community. As the virus cut a widening swath, prevention continued to focus on reducing at-risk behaviors such as needle sharing and unprotected sex.

Testing also became largely a function of behavioral profiling. Pregnant women and “high-risk” patients were most likely to be offered an HIV test, usually on an “opt-in” basis. People who didn’t meet subjective risk assessment criteria, or didn’t disclose high-risk behavior, slipped through the cracks. The protocols also didn’t address the fact that HIV infections tend to cluster geographically, and that an important factor in

HIV risk is “sexual networks”—the way people are linked, directly or indirectly, through sexual contact. People whose risk is elevated simply by virtue of where they live, or through their sexual networks, slipped through the cracks, too.

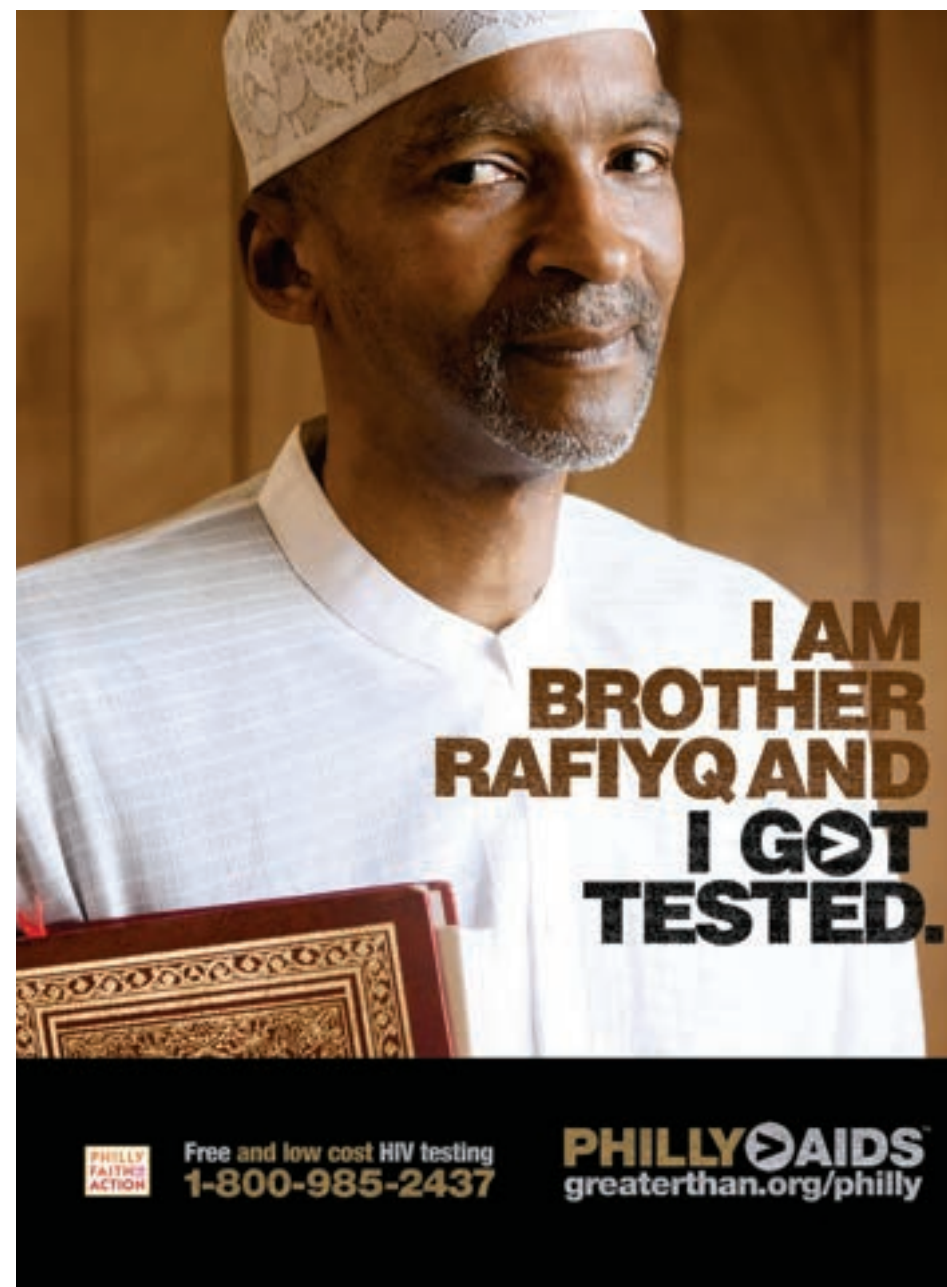
People like the residents of zip code 19143.

MAPPING HIV

The story of HIV in America mirrors the broader narrative of our national struggle with health disparities. One’s chances of getting the virus—as well as the likelihood that it will progress to AIDS, even in this age of effective treatment—has much to do with one’s neighborhood.

The higher the HIV incidence rates in one’s social networks, the greater one’s chances of encountering an HIV-positive partner. And the factors that contribute to health disparities—poverty, housing status, race and ethnicity, and residence in an area with limited access to education, transportation, employment, health services, and other social determinants of health—often culminate in unmet need for HIV testing and treatment, which in turn contributes to higher “community viral load.”

“Geographically, 40 to 50 neighborhoods account for about half of all HIV infections in the United States,” says Amy Nunn. “Those neighborhoods tend to have limited access to health services and more limited access to HIV testing and treatment—resulting in higher viral load for the community and greater likelihood that people will come into contact with the virus, even if they don’t engage in high-risk behavior. Where you live may be as important as what you do.”



Philly Faith in Action promotes HIV testing from the pulpit, in the neighborhoods, and through compelling use of media.

Race is also a critical factor. Although blacks/African-Americans don’t engage in higher-risk behavior than people of other races, CDC data reveal rates of HIV infection seven times greater in black men than in white men. Black women are infected at nearly 15 times the rate of infection of white women. Diagnosis and treatment also tend to come later in the black community.

Zip code 19143 is 83 percent black/African-American. Nearly 25 percent of neighborhood residents live at or below the poverty level. Nearly 15 percent have no health insurance. Two community health clinics serve 64,000 people.

Epidemiological data put HIV on the map in Southwest Philadelphia. The imperative, Nunn says, is to make sure it’s on the radar of the people who live there.

SHARING EXPERIENCE AND GAINING KNOWLEDGE

Ask Nunn how she got involved in fighting HIV in Southwest Philadelphia, and she will start by giving you a brief, self-deprecating tour of her curriculum vitae: “I couldn’t get a job after college,” she says, in her rapid-fire Arkansan cadence. “So I kicked the can for a while, and then I went to Guatemala.”

More precisely, Nunn was awarded a Fulbright Fellowship to study women’s health in Guatemala—followed by master’s and doctoral degrees from the Harvard School of Public Health, with a dissertation (later published as a book) on the politics and history of AIDS treatment in Brazil. She became passionate about Philadelphia’s HIV crisis when her husband, German Velasco, was training in endocrinology at Thomas Jefferson University. “I’m interested in social movements and how effective leadership can advance the fight against HIV/AIDS,” she says. “If you take the long view, the most important factors driving effective policy response in both Brazil and the United States have been political leadership and activism.”

Flanigan recruited Nunn to Brown from Harvard. While excited about coming to Providence, she was equally committed to continuing her work in Philadelphia. For Flanigan, there was an obvious synergy of mission.

“Amy’s doing what research universities are meant to do,” he says. “We’ve had significant success in Rhode Island, and we’ve learned a lot. Amy’s work in Philadelphia will yield more important knowledge. We’re committed to going wherever we can help and learn, around the world and across the US.”



Pastor Jay Broadnax '84, center, and Pastor Arthur White, second from right, march with other pastors from West Philadelphia in March 2012 to raise awareness of high rates of HIV infection in the area.

Nunn is a white child of the South. The daughter of activist parents, she says that her worldview was deeply impacted by her experiences as a student at Little Rock Central High School, which had become a crucible of the civil rights movement when it was desegregated by the National Guard in 1957. "Ending racial disparities in HIV infection," she says, "is another chapter in America's social justice struggle."

CLARION CALL

Nunn's work in Philadelphia began with the demise of the firewall between science and spirituality.

"African-American churches are the backbone of many heavily impacted communities in the United States, and enlisting clergy is critical in addressing

the epidemic," she explains. "Philadelphia ranks near the top of the list of American cities for number of faith institutions, which play an incredibly influential role in the community. Scientists have to do a better job of bridging the gap between mobilizing the scientific and medical communities and engaging faith leaders."

Nunn started in the Mayor's Office of Faith-Based Initiatives, where its then-executive director, the late Rev. Dr. Marguerite Handy, an African Methodist Episcopal minister, championed the cause and introduced Nunn to the leaders of Philadelphia's most prominent black churches—including Handy's own pastor, Jay Broadnax '84.

Working with Broadnax, who had worked on HIV/AIDS issues as part of

the Black Ministerial Alliance of Greater Boston, and other faith leaders, Nunn conducted focus groups and meetings that led to the founding of Philly Faith in Action, a coalition of Brown's Global Health Initiative and more than 70 clergy members. The group made a transformative commitment to promoting HIV testing and prevention—working with Nunn to develop faith-friendly educational sermons, talking points, and scripture guides, and using them to encourage their congregations to get tested.

"Many of us weren't aware of the full intensity of the HIV epidemic in our community until Amy presented her data," says Broadnax. "We saw it as a clarion call to action."

One Sunday, Broadnax placed a chair

"There is a very broad spectrum of ways to respond to HIV in our community. The only thing we can't do is nothing."

in front of the altar and got tested in front of his congregation.

"Our community has a disproportionate HIV infection rate, and our churches must actively embrace the need to respond from both the public health and pastoral care perspectives," Broadnax says. "We have a responsibility to educate, destigmatize, and eliminate misinformation about everything from how HIV is spread to what it takes to get tested."

From the beginning, the group avoided issues that could be divisive in the faith community, maintaining laser-like focus, instead, on testing.

"If they want to talk about risky behavior, that's great—but it's even more important to discuss testing," Nunn says. "In public health, we sometimes drop interventions into communities rather than working with communities to develop tailored solutions. I would never presume to tell a pastor or imam what to say. They know what makes sense for their congregations."

"There is a very broad spectrum of ways to respond to HIV in our community," Broadnax says. "We can all talk to our young people, give somebody a ride to a clinic, distribute literature, try to reduce stigma, or help demystify testing. The only thing we can't do is nothing."

DO ONE THING. THEN DO MORE.

The concept of fighting HIV geographically is gaining traction on both the policy and grassroots levels. Both the CDC's new High-Impact HIV Prevention strategy and the Obama Administration's National HIV/AIDS Strategy call for allocation of resources to the

most heavily impacted communities. Nationwide, advocates have boots on the ground in New York City, where Harlem United's BLOCKS campaign offers HIV testing block by block and Bronx Knows is promoting testing borough-wide; in San Diego, where Lead the Way is pushing testing via a door-to-door campaign; and in other hard-hit areas.

Nunn has begun to publish on the experience of engaging clergy as vital

years for her and her team—consisting of four paid staff members and about 80 volunteers, supported by a finite pool of about \$300,000 in grant funding—to reach every resident of the five census tracts of zip code 19143. But she has an ambitious, long-term plan.


"It will take about \$1 million to fund it, but our five-year plan is to expand efforts to include testing for other conditions," she says. "Our goal is to place



Billboards and other media tell the story: it's easy and essential to be tested for HIV.

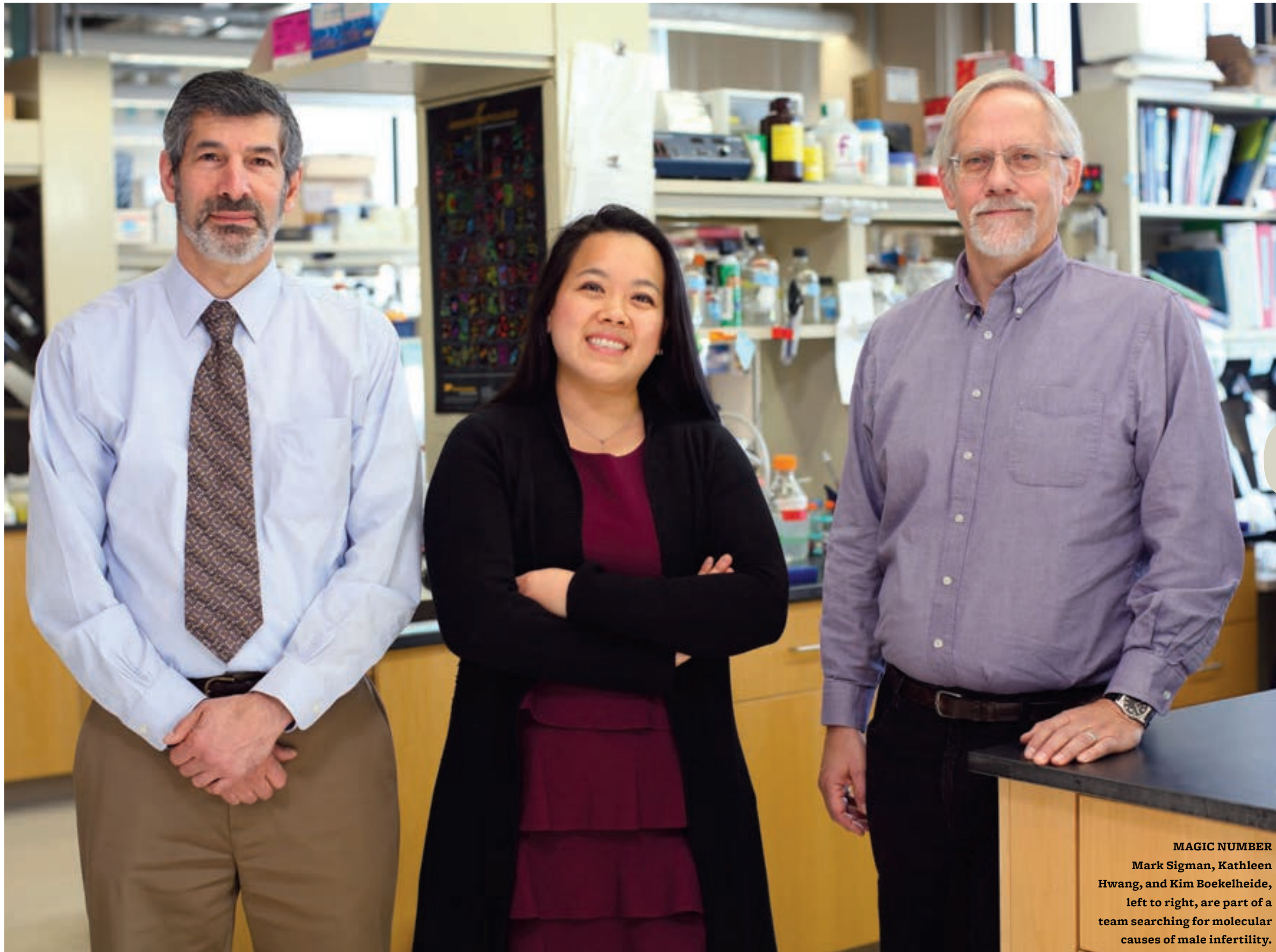
partners in HIV testing and prevention. Her next goal is to apply the model launched in Philadelphia to other cities and to the American South. "We want to build the scientific evidence base that will demonstrate a geographic model focused on dramatically scaling and destigmatizing routine HIV testing and treatment and reducing racial disparities," she says. "I think our model can be replicated and exported to other heavily impacted communities."

Nunn estimates that it will take a few

HIV prevention in the context of a broader effort to improve population health in medically underserved communities." 

 Learn more at www.phillyfaithinaction.org and www.1neThing.com.

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



Basic and clinical researchers team up to find translational solutions for treating male infertility.

THE ORIGIN OF MAN

BY NICK CHARLES

PHOTOGRAPHY BY KAREN PHILIPPI

MAGIC NUMBER
Mark Sigman, Kathleen Hwang, and Kim Boekelheide, left to right, are part of a team searching for molecular causes of male infertility.

In the beginning there is love. Unfortunately, for some couples, their DNA is not in sync with their feelings. When biological complications prevent couples from conceiving, they typically experience the gamut of emotions, from sadness to intense anxiety. At the same time that they cope with their pain, most couples try everything to find a successful resolution.

“We see couples all the time who can’t conceive,” says Mark Sigman, MD, chief of urology at Rhode Island and The Miriam Hospitals and Krishnamurthi Family Professor of Urology. “Once it’s been determined that it’s not a female problem, a semen analysis is ordered. If the semen analysis comes back abnormal, we decide if we can do

anything to reverse the problem and make the man fertile again. If we can't find a cause in order to determine a treatment, the only option is to do in vitro fertilization or intrauterine insemination."

According to Professor of Medical Science Kim Boekelheide, MD, PhD, "About 15 percent of couples are infertile. ... Half of the time it's because of a male factor problem, which means more than 7 percent of men aren't producing sperm that have the capability to fertilize an egg."

The problem is often spermatogenesis—the formation and development of sperm. So in addition to sending patients' semen to the lab for analysis, Sigman recruits his patients to participate in a major study that, researchers hope, will determine the molecular causes of sperm abnormalities that hinder conception.

"Currently the semen analysis is the best diagnostic tool to assess spermatogenesis in men," says Kathleen Hwang, MD, assistant professor of surgery (urology). Yet that analysis may come back normal in men who can't conceive, she adds. Indeed, the measurements in a typical sperm analysis—including count, motility, morphology, semen pH, and volume—are relatively unreliable.

"The semen analysis can tell us that the semen is abnormal," Sigman says, "but it can't tell us why it's abnormal. There could be a lot of different things causing an abnormality. We can't tell by looking at the analysis what's causing it or what we can do about it."

To try to find what underlying molecular characteristics, or biomarkers, of sperm may be impacting male fertility, Sigman and Hwang began collecting semen samples from 200 to 400 patients for a study called the Human Biomarker

"The semen analysis can tell us that the semen is abnormal, but it can't tell us why it's abnormal."

Project. Researchers also consider genetic, lifestyle, and environmental causes as they try to determine why couples can't conceive.

"Collecting samples from our clinical practice for research purposes gives us the opportunity to develop sperm molecular biomarkers that may more accurately reflect fertility," Hwang says. "This will potentially allow us as clinicians to better evaluate and counsel patients for male factor infertility."

SHOW US A SIGN

Boekelheide and Sigman created the Human Biomarker Project, which is funded by the Lifespan health care system and the Krishnamurthi endowment, to understand the molecular traits that may cause male infertility. "Identifying these biomarkers is a priority for anyone working on male infertility research," says Hwang, who came to Brown in 2011 to do research and clinical work.

A biomarker is an indicator of a biological state that is measured to assess a certain condition. In this study, "that state could be decreases in sperm concentration and/or motility that lead to decreased fertility or infertility," says Edward Dere, PhD, a postdoctoral research associate who earned his doctorate in biochemistry and molecular biology from Michigan State University. He joined the research team in 2010.

Dere analyzes the semen samples

that Sigman and Hwang collect from patients for changes in the epigenome, the compounds that "tell" the genome what to do and where and when to do it; and sperm transcriptome, which is the complete set of RNA, including messenger RNA (mRNA) and microRNA (miRNA), in a cell. These factors will serve as more sensitive predictors of male infertility. That's because the RNAs inside the sperm could contribute to its health and fertilization capability. Lifestyle factors, like smoking, alcohol consumption, body mass index, or prescription medication use also may alter the transcriptome and reduce sperm function.

"There are epidemiologic studies that suggest that smokers have reduced fertility," Sigman says, "but we don't have a good way of identifying it. Having a biomarker for the effects of smoking would be very useful." He says epigenetics, or heritable changes in gene expression, are not easily identified by traditional parameters, making the molecular biomarkers invaluable.

It was the opportunity to work with Sigman and Boekelheide on the human aspect of the research that brought Dere to Brown. "I felt that by working with human samples, my research would have a more direct impact than if I only worked with animal models," Dere says. "Because of the collaborative nature of our team, we're able to readily obtain

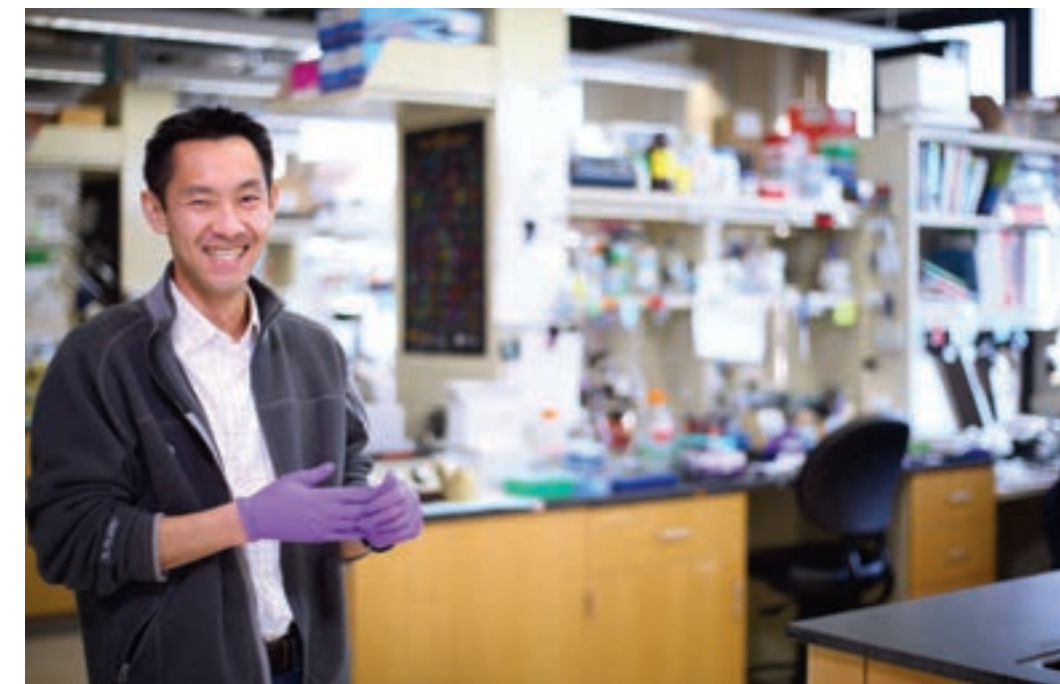
human samples and investigate interesting questions."

Sigman says, "Ed has developed great expertise in these techniques and has really moved our projects forward by determining the best approaches to utilize."

Back in the lab, Dere purifies the sperm in the semen samples by lysing, or rupturing, the somatic cells and washing away the seminal fluid. This ensures that the molecular profiles obtained from the sample are solely from the sperm cells. Semen samples can have sperm counts ranging from a few million to hundreds of millions. After analyzing for DNA methylation (the attachment of methyl groups to the DNA, which affects gene expression) as well as the RNA content, Dere looks at the traditional semen analysis for possible correlations.

"If we find that men with low sperm motility also had consistent changes in their DNA methylation profile, we would have a predictive biomarker," Dere says.

Boekelheide and Dere also focus on sperm mRNA, which is delivered to the oocyte, or egg cell, and may serve an important function in fertilization or embryogenesis. For this purpose the researchers use transcriptomic assays, an analytic procedure that allows for the simultaneous measurement of levels of all the genes in the genome, as well as polymerase chain reaction (PCR)-based arrays, which offer gene expression analysis. These lab techniques allow



Edward Dere is correlating physical traits and genetic markers to tease out predictive DNA profiles.

Dere to focus on a subset of genes that are identified from the sperm transcriptome profile.

"These projects are very high tech," Sigman says. "They involve techniques that couldn't be done a decade ago. Now we're able to look at thousands of genes and changes in gene expression on little computer chips."

The research also involves a great deal of biostatistical analysis. "With the methylation studies, one single experiment on one patient would generate

possibly 480,000 data points," Dere says. "If you multiply that by 400 patients, that's a lot of data points. That's where statistical analysis and computational techniques really come into play."

Sigman doesn't yet know whether biomarkers will replace semen analysis or turn out to be supplemental. "It would give us an understanding of the cause of infertility that we didn't have before," he says. "Ideally, it would allow us to ask the questions: Is there a significant male problem, and if so, what might be causing it?"

The Human Biomarker Project has the potential to address two lines of inquiry: Sigman's research on male infertility and Boekelheide's interest in testicular toxicity, including medications that can harm the testicle—a concern of pharma-

"These projects are very high tech. They involve techniques that couldn't be done a decade ago."

SCAR/TACTICS

A chance discovery may help prevent problematic adhesions that form after surgery.

In addition to her efforts on the Human Biomarker Project, Kathleen Hwang, MD, is working on a project with a seemingly broader scope. The assistant professor of surgery (urology) brought the research initiative to Brown in 2011 from her fellowship in male reproductive medicine and surgery at the Scott Department of Urology at Baylor College of Medicine. The study investigates the role of ghrelin, a peptide that is produced in the stomach, in wound healing and in post-operative inflammatory response. Her findings could help to prevent scarring associated with testicular and abdominal surgery.

"It's a phenomenal translational project, looking at a tremendous clinical problem," says Mark Sigman, MD.

For now, Hwang is using an animal model to try to answer her clinical questions, which are based on her operating-room experience with adhesions, or scars. "Her original impetus to go down that path was because she was working on infertility-related surgery and adhesions that arose there," says Kim Boekelheide, MD, PhD.

Hwang says she "stumbled upon" the project during her fellowship in Houston. "I was looking at ghrelin to see if it would prevent damage or interference with the sperm production process in an undescended testicle (cryptorchidism) model in rodents," she says. "Then I discovered that the mice that were treated with ghrelin, compared to the control treated mice, had almost no post-surgical adhesions.

"Post-surgical adhesions are the bane of the surgeon's existence," Hwang continues. Any time a surgeon opens any kind

of tissue, scars will form; in the abdomen, those adhesions form to the bowels, she says. Patients requiring repeated surgeries may suffer inadvertent injuries to their bowel due to these scars, necessitating further treatment.

"When I stumbled across this," she says, "I thought, 'If we found something that could actually prevent post-operative scarring, that could change the way we operate and how patients can heal.'"

The connection between surgical adhesions and urology (let alone male infertility) wasn't immediately apparent, but Hwang, who estimates that she dedicates 40 percent of her time to this project, ultimately connected the dots.

"One of the things that Mark Sigman and I do as 'fertility people' are vasectomies and vasectomy reversals," Hwang says. "The failure rate with vasectomy reversals is caused with the new anastomosis," or rejoining of the vas deferens. During this part of the surgery, "a scar tends to form very quickly," she

The application of the peptide ghrelin could reduce post-surgical scarring after vasectomy reversal.

says. If this happens, the lumen, which is the inside of the vas deferens or epididymis, the tubular part of the spermatic duct system, can become blocked, preventing the sperm's release from the testes.

Hwang is now investigating how ghrelin affects wound healing and whether an application of ghrelin to the vas deferens during the anastomosis can indeed minimize scar formation. "That would potentially increase the success rates of pregnancy in couples who still can't conceive because of problems with scarring after a vasectomy reversal," she says. "Our goal would be to help couples conceive naturally." —N.C.

ceutical companies. "We're hoping that the basic science experiments could help us identify certain patterns that indicate there's testicular injury," Sigman says. "From there, we might learn what kinds of things cause injuries, including environmental toxicants and medications. Knowing what the risk factors are and if there's anything that we can do about it would help me clinically as I treat patients. Kim's expertise has been a valuable resource for this type of translational research."

Boekelheide leads several research initiatives on testicular damage caused by toxicants, including an animal model involving bisphenol A exposure. BPA, a chemical found in common plastic products, is the subject of a national consortium study to determine the severity of its effects. The team is also gathering preliminary data to submit a grant for a human model subproject to the Human Biomarker Project on how bariatric surgery may affect sperm biomarkers.

BENCH TO BEDSIDE

Sigman came to Brown to study male reproduction and infertility in both a research and clinical setting. After becoming chief of urology in 2009, one of his main goals was to grow the research arm of the division.

Although Sigman and Boekelheide had been collaborating for nearly 20 years, they wanted to develop a more robust research initiative. "Our history goes back a long way," Boekelheide says of his relationship with the veteran clinician and expert in male infertility. "When Mark came to Rhode Island Hospital and Brown University in 1989, as a practicing urologist, he already had a strong

background and interest in research from a urologic perspective."

Sigman first did research in the area of immunologic male infertility during his residency at the University of Virginia. His work led to a project for the FBI's Department of Forensics, where he developed antibodies to detect sperm in

the clinical translational challenges that Sigman faces as a practicing urologist. "We think of ourselves as a model of how to develop the research capacity of Brown and its affiliated hospitals," Sigman says.

The pair believes Brown could replicate that model across other subspe-

"Our goal is to develop a self-sustaining research machine that can continue this translational research."

crime scenes. "That's what got me interested in the field [of male infertility]," Sigman says. "I also wanted to continue doing research along with clinical care. After that, I did a two-year fellowship in male reproductive medicine and surgery at Baylor College of Medicine in Houston, just doing male infertility."


Boekelheide became interested in male infertility research during his residency at Duke University. After graduating with an MD/PhD in anatomic and clinical pathology, he joined Brown's faculty in 1984 to focus on research and teaching.

He and Sigman are combining their strengths, Boekelheide says: "I bring a basic research lab that has focused on animal models of testicular injury and male reproductive health effects using animal models. Mark brings a clinical practice in urology and his interest in male factor infertility."

Since 2000, they have published four papers together on various topics, from basic research in Boekelheide's lab to

cialty areas. "I think the big picture is how we put the pieces together across the various institutions that make up Brown medicine," Boekelheide says. "That has allowed us to do basic to clinical translational research in an effective way."

Through basic research and applied clinical practice, Sigman, Boekelheide, Hwang, Dere, and the other scientists working on the Human Biomarker Project are making strides to help couples start their families. And, incidentally, they may be building a model that the entire University can copy for future, groundbreaking research projects.

"The people involved, both at Lifespan and Brown, have been very supportive and like the concept," Sigman says. "Our goal is to develop a self-sustaining research machine that can continue to pursue this kind of translational research." 

Nick Charles is a national medical science writer and a contributor to Brown Medicine.

THE SIMS

BY KRIS CAMBRA

PHOTOGRAPHY BY SCOTT KINGSLEY

The exam rooms are artificial.
The patients are actors.
But the learning experiences are real.

Decades ago, learning specialists determined that when teaching people to do something where the stakes are high and it's important to do it correctly—say, for instance, flying a plane—it's effective to train them in a simulated environment that mimics the real deal. Since caring for patients is also a pretty high-stakes endeavor, it made sense to design an entire suite in the Alpert Medical School building that simulates an outpatient physician's office.



JUMP RIGHT IN

Each Doctoring group of eight students is assigned to a seminar room and an exam room. Four students can head to the exam room to work with a standardized patient, while four stay with a social-behavioral faculty member to work on interviewing or counseling skills. Director of the Doctoring Course and of Clinical Curriculum Julie S. Taylor, MD, helps Amed Logrono '12 MD'16 don his white coat for the first time.



ARE YOU READY FOR YOUR CLOSE-UP?

Above and below: Gabi DuVernois '11 MD'15 performs an eye exam on her SP. SPs undergo training, but most come with innate talent, as actors from the local theater scene. Alpert Medical School has one of the highest rates of SP-student interaction among medical schools.

“It’s hard for students to engage with ‘fake patients.’ ... The suite makes it more real for them, helps them step into this professional role.”



In each exam room, there’s a tall, reclining table for patients, blood pressure cuffs and otoscopes attached to the wall, and a computer. These rooms are extra wide, allowing a small group of students and mentors to stand comfortably depending on the teaching exercise. There are video cameras that record exchanges between students and the actors who serve as their “patients,” and they provide a live feed to the control room, where all of the rooms can be scanned at once.

All of this is used to hone Alpert medical students’ patient interviewing and physical exam skills. With the guidance of their teachers, students are able to practice what they are learning on the standardized patients (SPs). It’s safe—for the students who aren’t paralyzed by the fear of making a mistake with a real patient, and for those real patients at the mercy of a doctor in training.

The only flaw in the authenticity of the space, says Dana Zink, RN, who oversees the Clinical Skills Suite and recruits, trains, and manages the SPs, is “it’s a lot nicer than the offices where many of our faculty work.”

HUMAN TOUCH

Above: Assistant Professor of Emergency Medicine (Clinical) Michelle Daniel, left, course leader of Doctoring Year 2, helps Erica Alexander '11 MD'15 with the cardiovascular exam.





ALTERNATE VIEW

Above: Social-behavioral science faculty like Lou Pugliese, MEd, are social workers, nurses, ministers, counselors, and more. A longtime Doctoring mentor, Pugliese organizes the assisted-living facility portion of the course, where students interview and follow a resident's progress over the course of the year.

TAP AND SWIPE

Left: Since all students have iPads, the cases can be viewed onscreen, obviating crinkled-paper checklists.



COMMAND CENTER

Above: In the control room, monitors give a thumbnail view of all the exam rooms. If a faculty member or director Dana Zink, RN, needs to observe an interaction, they can focus on one room. Zink says this is a useful tool when she's training new SPs, as they can watch successful encounters. All interactions are recorded and students can review the footage to improve their technique.

SILK PURSE?

Left: No, it's a sow's ear. The suite is also used during the Clinical Skills Clerkship, which teaches third-year students suturing (like Patrick Mulvaney MD'15 is doing here), blood draws, and other procedures to prepare them for their hospital rotations.



MOMENTUM



CAST AND CREW

Left: MFA acting student Nikki Massoud and medical student Minoo Ramanathan, left to right, react to a monologue. Above: Deborah Salem Smith's easy-going style helps the students come together.



All the World's a Stage

Actors and med students explore each other's realities.

Last year, playwright Deborah Salem Smith delved into the world of medicine in her play *Love Alone*, staged by Providence's Trinity Repertory Company.

Professor of Emergency Medicine Jay Baruch (see *Brown Medicine*, Winter 2012), who co-directs the scholarly concentration in medical humanities and bioethics, brought nearly 200 medical students to see the play. The moving drama, which examines the impact of a death caused by medical error on a patient's family and the doctor, sparked lively conversations that Baruch wanted to sustain.

So he asked Smith to design a course. The result was last semester's "(Play)writing and Medicine." The class was made possible by a gift to support the medical humanities from George Bray, MD '53. Smith was the first Bray Visiting Scholar; this semester's scholar, Liz Tobin Tyler, JD, MA, presented a series of lectures on health care and justice.

Smith, the playwright-in-residence at Trinity Rep, teaches acting and directing students in the Brown/Trinity MFA Pro-

gram. But this innovative class brought together seven Alpert medical students and ten MFA actors. "Theater is a surprisingly natural fit for these two communities because theater is about humanity—you get to see real people performing in live time and the realness of them is in your face," she says.

The students read works with medical themes and analyzed how context changes the meaning of a story. For example, how does the language in a medical examiner's report differ from the way a widow might talk about her husband's death? The students had weekly writing assignments; some wrote non-fiction, while others worked on scenes from plays or spoken works.

Minoo Ramanathan '11 MD'16 says students often found ways their professions overlapped when they discussed their writing.

"A lot of medicine is a performance, where you're taking on a professional persona. And with actors, it's all about being in tune with your emotions and

feelings," she says. "It's those moments when you realize maybe our career paths aren't so divergent."

Because the classes were held downtown at the theater, Ramanathan says she welcomed the break from her eat-breathe-sleep medicine life. A turning point in the semester, however, came when the medical students hosted the actors in the anatomy lab. There, on their own turf, the med students were the experts.

That meeting strengthened the mutual respect between the groups, Smith says. "It helped deepen, for the actors, the understanding of how courageous and complex the study of medicine is."

The success of the course was due in large part to Smith's ability to move comfortably between the groups, Ramanathan says. "We united around the writing process. No matter what background you come from, there are rules that make your writing better."

At the end of the semester, Ramanathan and actor Matt Russell co-produced "Operating Theater," a public reading of selected pieces written by students in the course. To watch the performance, visit <http://vimeo.com/55902639>.

—Kris Cambra

FRANK MULLIN

ALUMNI ALBUM

CHECKING IN WITH BROWN MEDICAL ALUMNI



THOSE WERE THE DAYS
It was the fall of 1981, and these Program in Medicine freshmen were about to spend the next seven years together. How many will come back for their 25th Reunion this May?

CLASSNOTES

1975

Donald Derolf '72, family medicine physician and former teaching fellow, instructor, and assistant professor in family medicine at Alpert Medical School, has joined Southcoast Physicians Group in the practice of Drs. Michelle Boyle, John J. Hand, Richard V. Morgera, and Wendy P. Regan. He has begun to see patients

at the Southcoast Family MediCenter in New Bedford, MA.

1977

Steven Rasmussen '74, P'13MD'17 has been appointed chair of the Department of Psychiatry and Human Behavior at Alpert Medical School. Steve had served as interim chair since 2009. He is internationally known as an expert in obsessive-compulsive disorder and pioneered the

use of brain stimulation to treat OCD and affective disorders such as depression.

HOW'VE YOU BEEN?

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

ALUMNIALBUM



Hari Naidu
with Dean
Edward Wing

Dear Fellow Alumni,

Greetings from the Brown Medical School Alumni Association Board of Directors! Several years ago, the Board redefined its mission to focus on three themes: connecting with students, engaging alumni, and advising the School and the dean of medicine and biological sciences. Your Board has been very busy! We now “live” with the students in the new medical school building, seeing and interacting with them throughout the year. Students serve on the Board, and we are an integral part of the White Coat Ceremony, graduation, and various events aimed directly at providing them with as many resources (both tangible and intangible) that a robust alumni body can possibly give. Our students see a real alumni presence.

Board members meet with the dean two to three times each year, and are involved in shaping medical education and guiding the interaction of the School with the University and medical communities. We help guide the long-term vision and goals of the Medical School through service on various prominent committees. As you know, Dean Wing will be stepping down at the end of the academic year after a very productive and impactful tenure. A national search for a new dean is

under way, and your BMAA has a voice on the search committee. We seek a strong individual to take our Medical School to the highest level, so please send us names of worthy candidates if you know them!

Finally, we would like to connect more with you, our fellow alumni. There are so many ways for you to stay connected and influential within the Medical School: serve on the BMAA or a subcommittee; participate in events; host visiting students; help students find research or other experiences at your institution; and provide financial support to ensure our School remains strong and competitive. Your Board has done all this and more, and we’ve seen the benefits of contributing to our alma mater. We would love to engage you in doing the same!

Please let me know if you have ideas on how we can have even more impact or if you want to be more involved.

Sincerely,
Srihari S. Naidu ’93 MD’97
President, BMAA
ssnaidu@winthrop.org

Mary Ellen Davies Fisher’s daughter is a freshman at Brown. **“It’ll be fun to see campus after so long.”**

1981

Norman Ward was named president of the Vermont Medical Society during its 199th annual meeting in October 2012. Norman is medical director of case management at Fletcher Allen Health Care and a physician at its South Burlington Family Practice clinic. He is also

a governor-appointed member of the Clinical Utilization Review Board, which is tasked by the Department of Health Access with examining medical services provided under the state’s Medicaid program in order to ensure adherence to current clinical best practices and identify opportunities for increased

efficiencies. Norman is an associate professor at the University of Vermont College of Medicine.

1989

Mary Ellen Davies Fisher and Don Fisher PhD’88 write that daughter Jessica is a freshman at Brown. “It’ll be fun to see campus after so long,” they write. Contact them at mefish@comcast.net.

David Lyden, PhD, has received the 2012 Biomedical Research Collaboration Award from The Hartwell Foundation. David, an associate professor in the departments of pediatrics and cell and

MATT FRANCIS

EYE ON ALUMNI

Zombies Go Viral The undead are a consuming passion for this alum.

Steven Schlozman MD’94 is the world’s foremost expert on the neurobiology of zombies.

OK, zombies aren’t real. But if they were, Schlozman has the sound medical hypotheses to explain their insatiable hunger for human flesh, why they shamble about with arms extended, and how they can ambulate at all—seeing as they’re dead.

According to Schlozman’s first novel, *The Zombie Autopsies: Secret Notes from the Apocalypse* (Grand Central Publishing, 2011), a new virus causes Ataxic Neurodegenerative Satiety Deficiency Syndrome, turning humans into zombies. Though Schlozman invented ANSDS, his exploration of the brain is accurate, delivering neurobiology lessons alongside page-turning suspense. The book has a cult following and is selling well.

Zombies are everywhere lately—in novels, movies, and the television series *The Walking Dead*. Unlike vampires, their more seductive counterparts in the realm of horror, zombies are unlovable. Their flesh hangs off them in tatters and they’re dumb as dirt. So why the fascination?

Zombie stories are entertaining vehicles for social commentary, Schlozman suggests. George Romero’s *Night of the Living Dead*, which kicked off the genre 45 years ago, has an anti-war message and deals with racism. Its satiric sequel, *Dawn of the Dead*, takes place in a shopping mall, a metaphor for consumerism and greed.

Schlozman wrote *The Zombie Autopsies* with “tongue deeply in cheek,” but it has a sinister tone: Instead of a cartoonish band of shuffling corpses, the enemy is within. The protagonist, infected

by ANSDS, races to understand the disease by dissecting squirming specimens—including a former colleague.

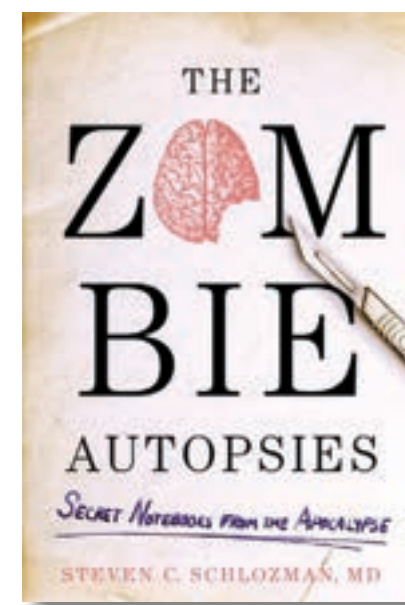
“This is the trope behind zombie novels: How do we determine that someone is as good as dead?” Schlozman says. The theme lends itself, in a campy way, to similar questions raised by post-modern literature like *Waiting for Godot*, he adds. “What are we waiting for? What constitutes living?”

The zombie theme seems especially popular in anxious times. “We have always lived with uncertainty, but perhaps more so since 9/11,” Schlozman says. “We didn’t know who or what to believe and we started seeing everyone as a possible enemy. Increasingly the modern world makes us feel like we are dealing with zombies.”

Schlozman is a prolific writer; he’s working on a sequel to *Zombie Autopsies* and submits articles to *Psychology Today*, blogs for *Boston Magazine*, and maintains StevenSchlozman.net. Though literature and writing are his first loves, by day he works in psychiatry. He is the associate director of training for the Massachusetts General Hospital/McLean Program in Child Psychiatry and the primary child psychiatrist for the organ transplant service. He’s also co-director of medical student education in psychiatry for Harvard Medical School, where he teaches and is in charge of the psychiatry curriculum.

Lately zombies have become light-hearted metaphors for epidemics and other disasters, and Schlozman’s “expertise” is in demand. The CDC referred to ANSDS in a disaster preparation blog; and on a Discovery Channel program, *The Zombie Apocalypse*, Schlozman discusses his made-up virus. Ever the scientist, though, he wants to be clear: the virus, and zombies, are not real!

—Mary Stuart



COURTESY GRAND CENTRAL PUBLISHING

ALUMNIALBUM

developmental biology at Weill Cornell Medical College, shares the award with Jack D. Bui, MD, PhD, of the University of California, San Diego, for their proposal “Overcoming Cancer Metastasis: Exosomes as Metastatic and Anti-Metastatic Factors.” The researchers will use the three-year, \$635,000 award for research on metastasis in childhood cancer.

1993

John Montgomery '82 was appointed vice president and medical officer for the Florida branch of Humana Inc., a nationally established health care company that provides insurance products and health and wellness services. Montgomery accepted this role to lead clinical programs for the commercial lines throughout Florida after working with Humana

royalties on products in order to support NumMedii Inc.'s cutting-edge work turning raw data from journals and labs into an algorithm to analyze the potential of a compound as a drug. Atul also recently participated in a TEDx event called “7 Billion Well: Re-Imagining Global Health,” organized by TEDx San Francisco and University of California, San Francisco.

1997

Joshua Garren '91 AM'96 has joined the staff of Oklahoma Cyberknife, a cancer treatment center using innovative targeted radiation technology. While training at Brown, he worked on the first radiosurgery system in New England. He completed neurosurgery training at New York University.

“To discover that some damage to the **blood vessels in progeria can be slowed or partially reversed** is a tremendous breakthrough.”

as the regional medical director since October 2010. He was also nominated chair-elect of the board for the American Cancer Society's Florida division.

1995

Atul Butte '91 MMS'95, co-founder of NumMedii Inc., recently partnered with drug developer Aptalis Pharma Inc. in the pursuit of developing new treatment options for gastrointestinal disorders and cystic fibrosis. NumMedii Inc., led in conjunction with Atul's wife, Gini Deshpande, utilizes Big Data technology to help pharmaceuticals optimize drug development. Aptalis will provide upfront and milestone monies as well as

1998

Leslie Gordon ScM'91, PhD, associate professor of pediatrics (research) at Alpert Medical School and mother of a child with progeria, is lead author of a study that presents exciting results of the first-ever clinical trial to treat progeria with a drug, farnesyltransferase inhibitor, originally intended to treat cancer. Progeria is a rare rapid-aging disease that leads to fatal atherosclerosis at an average age of 13. “To discover that some aspects of damage to the blood vessels in progeria can not only be slowed but even partially reversed within just two-and-a-half years of treatment is a tremendous breakthrough, because cardiovascular

disease is the ultimate cause of death in children with progeria,” she said. The drug also has potential benefits in inciting weight gain and developing bone strength. This work has brought the field one significant step closer to developing a cure.

Jennifer Lane '95 has joined the staff as a general and bariatric surgeon at Hallmark Health System Center for Weight Management and Weight Loss Surgery, part of Lawrence Memorial Hospital, in Lawrence, KS. Jennifer completed her residency in general surgery at Tripler Army Medical Center in Hawaii and served for several years in the US Army as a general surgeon, including deployments to Afghanistan and Iraq. She recently finished a fellowship in minimally invasive bariatric surgery at Tufts Medical Center, is a fellow of the American College of Surgeons, and is a member of the American Society of Bariatric and Metabolic Surgery and the Association of Women Surgeons.


Adeline Winkes '94 and her family—husband Tim and daughters Katie and Ellie—are thrilled to welcome another member into the world, Thomas Matthias Kunkel.

2002

Robert Meguid '97 completed a cardiothoracic fellowship at the University of Washington in Seattle and has taken a faculty position in cardiothoracic

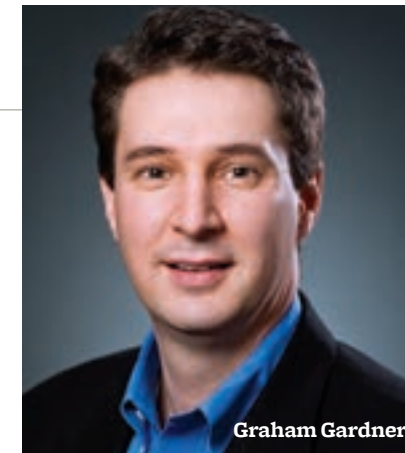
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EYE ON ALUMNI

Nothing Ventured A new platform harnesses Big Data.



Graham Gardner

Graham Gardner '95 MD'99 knew he probably wouldn't stay in medical practice for long. While he had chosen a career in medicine to help make a difference, he recognized that he could have an equal, if not bigger, impact outside of clinical care. He'd watched his father launch a successful biotech company and felt the irresistible allure to “help create things that hadn't been there before.”

After internal medicine residency and cardiology fellowship at Beth Israel Deaconess in Boston, Gardner went to business school at Harvard. He joined Highland Capital Partners after graduation.

“That was a great platform to build companies from,” Gardner says. What's more, he could meld his interests by crafting companies that drove health care forward.

His first success story was Generation Health. Their product created a formulary of genetic tests that insurance companies could use to implement testing for beneficiaries. Gardner was chief medical officer of the company through its acquisition by CVS Caremark.

Then it was back to Highland Capital to develop the next great idea. In 2010, Gardner and colleagues launched Kyruus, a Big Data startup that helps analyze, manage, and engage large networks of physicians. (“Big Data” is a buzz-

word for the tremendous amounts of information that can be collected in data sets.) “We analyze billions of data points from thousands of sources to highlight the relative strengths and weaknesses of every physician,” he says. “We then build applications to help organizations optimize their compliance, network development, and referral management strategies.”

He likens it to the approach to building baseball teams shown in the movie *Moneyball*: “Only when you understand the statistics can you build a team that best coordinates care for patients.”

While he enjoyed medicine, Gardner says he doesn't miss day-to-day practice. “While I was taking care of patients, I couldn't do anything else but that. It was too important not to be the first and last thing I did every day. Outside of medicine, I can develop tools to make health care delivery better.

“I hope I'm still making a difference, just in a different way.”

—Kris Cambra

surgery at the University of Colorado Denver. He and his wife, Cheryl, relocated last July.

2005

Brian M. Kwong '01 and Catherine S. Wong '01 were married August 18, 2012, in Sausalito, CA. The Rev. Janet M. Cooper Nelson, chaplain of Brown University, officiated. Brian is an emergency medicine physician in Oakland, CA, for the Kaiser Permanente Medical Group.

2009

Sarah E. Wakeman '05 and David G. Munson, MD, were married September 8, 2012, in Old Lyme, CT. Sarah is chief resident in the medicine department at Massachusetts General Hospital. David is a staff physician at the Boston Health Care for the Homeless Program.

2010

Andrew M. Brunner and **Katherine D. Thompson** MD'12 were married Sep-

tember 22, 2012, in Cambridge, MA. Andrew is a third-year resident in internal medicine at Massachusetts General Hospital, and Katherine is in her internship year at Boston Medical Center.

2012

Kumar Vasudevan '08 has begun his residency in neurosurgery at Emory Healthcare, part of Emory University.

Katherine D. Thomsson See **Andrew M. Brunner** MD'10.

ALUMNIALBUM

RESIDENTS

1986

Brian Jack, a former faculty member at Brown, was recently appointed chief of family medicine at Boston Medical Center and Boston University School of Medicine. In 1997, he became vice chairman of family medicine at the hospital, where he led Project RED, intended to improve communication about medication and follow-up care to patients being

discharged. Jack is also the director of the Lesotho-Boston Health Alliance, an initiative to improve the health care system in Lesotho, Africa, through partnership with government and health officials in the region.

2003

Matthew Miles has joined Ellis Medical Group as medical director for its new \$10 million care center in Clifton Park, NY. Matthew joined Schenectady-based

Ellis from Glens Falls Hospital, where he was most recently director of the department of emergency medicine.

2004

Elizabeth Tillman joins the practice of the Hospital of Central Connecticut. She does so following her work as the medical director of Hospitalist Practice and Hospice, chairman of Section Inpatient Medicine, and medical director/owner of Hospital Internists of Bristol

OBITUARIES

ALUMNI

ATA K. ERDOGAN '98 MD'02

Ata K. Erdogan, 36, passed away in August 2012 after a prolonged battle with cancer. He graduated from Phillips Academy in 1994 and from Brown's Program in Liberal Medical Education. He completed internal medicine and cardiology training at Northwestern in 2009. He then joined the Bluhm Cardiovascular Institute at Northwestern.

His Brown classmates Saori A. Murakami and David Bae are leading an effort to establish the Ata K. Erdogan Memorial Term Scholarship at Alpert Medical School in his memory. In a letter to their class, they wrote: "Those fortunate enough to have known Ata will always remember his generous spirit, his amazing strength, his infectious smile, and his love for those around him. He was truly a wonderful human being who epitomized perfection as a physician, a friend, a brother, and a son."

He is survived by his parents, Drs. Mehmet and Remziye Erdogan; and a brother, Mete.

Gifts in Ata's memory can be sent to Brown University, Ata K. Erdogan Memorial Term Scholarship, Office of Biomedical Advancement, Box G-ADV, Providence, RI 02912.

JAMES MOTT BLISS, MD RES'07

James (Jake) M. Bliss, 37, died November 10, 2012, of complications from amy-

trophic lateral sclerosis (Lou Gehrig's disease). Jake graduated from Moses Brown School (1993), Yale University (1998), and Tulane University Medical School (2012). After receiving his medical degree, he completed his orthopedic surgery residency at Brown University, a fellowship in orthopedic trauma at Brown, and a fellowship in total joint replacements at the Scripps Clinic in San Diego, CA, finishing his training in 2009. He then joined the medical staff of the Sansum Clinic in Santa Barbara, CA, where he specialized in complex joint replacement surgery.

The son of Clinical Assistant Professor of Orthopaedics Thomas F. Bliss, Jake said he always knew he would be an orthopedic surgeon. His deep love of the field, and of medicine broadly, was unwavering. In an interview with Santa Barbara Street Medicine after his diagnosis, he said of his career: "I could enjoy it for my whole life. I got a tremendous amount of satisfaction from doing what I did. And it was worth all the sacrifices. I am very grateful for the one year I had to practice."

During his career, Jake garnered the respect and admiration of all who had the privilege to know him. A lifelong

"Ata was truly a wonderful human being who epitomized perfection as a physician, a friend, a brother, and a son."

Quaker, Jake was committed to helping those less fortunate. Even before graduating from high school, he established with a friend a summer camp for underprivileged children in Providence. After receiving the diagnosis of ALS, Jake discontinued the practice of surgery, but continued to volunteer with Doctors

Memorial Term Scholarship, Office of Biomedical Advancement, Box G-ADV, Providence, RI 02912.

JAMES MOTT BLISS, MD RES'07

James (Jake) M. Bliss, 37, died November 10, 2012, of complications from amy-



Behind the Music

Alum is one half of a songwriting duo.

Looking for some kids' music you won't be embarrassed to blast in your minivan? Check out *The Colored Pencil Factory*, a collection of family-friendly tunes from Brooklyn-based bluegrass band Astrograss. The 16-song CD features traditional American folk songs ("Shortenin' Bread," "Cluck Old Hen") and new tracks from songwriting team Jordan Shapiro and **Joe Grossman MD'12**.

Grossman, an intern in the Beth Israel Deaconess Medical Center Internal Medicine Residency program (see *Brown Medicine*, Fall 2011), has been writing songs with Shapiro since 1995, when they were freshmen at the University of Michigan.

"For our senior thesis in April 1999, we produced/directed a major multimedia rock opera called *Joe's Garage* ... a theatrical adaptation of the Frank Zappa album of the same name," Shapiro says. After graduation, many of the seniors who worked on the show moved to New York City, where they worked on an original theater piece for two years.

"*Fortune Cookie Dreams*, the multimedia rock opera Joe and I wrote together, premiered at an off-off-Broadway theater in August 2001," Shapiro says. In 2004, after years of writing, rooming, and struggling together, Joe entered the world of medicine.



"[T]hroughout his eight years of schooling in various locations, we have kept on honing our craft together, writing songs for various bands I've been involved in, mainly Astrograss," Shapiro says.

The Shapiro/Grossman songs on *The Colored Pencil Factory* include the whimsical "Freak Out" and the funny "Grave Diagnosis." It's not all fun and games, though. The poignant "Minutes into Flowers" laments the fundamental problem with children: they grow, too quickly.

"*Why is time so slow/while we grow taller and stronger?/Why is time so fast/when we want it to last longer?*"

The CD is available at www.astrograssmusic.com/kids.

—K.C.

COURTESY WALDMANAI

OBITUARIES

Without Walls-Santa Barbara Street Medicine. “I found that I could still be a doctor with the homeless population,” Jake said. “While I was going through the transition of accepting my fate and struggling with life-and-death issues, they really helped me by allowing me to help them.”

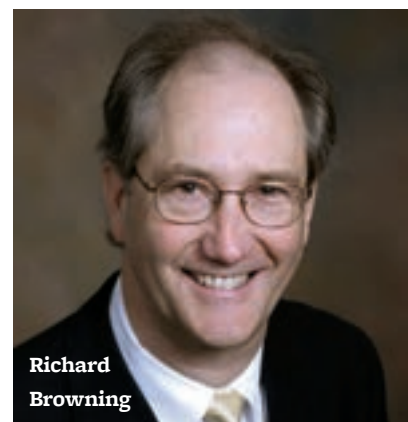
Jake, above all, was known for his many close friends and the love he held for his family. He spent the last year of his life much as he spent the previous 36—committed to having fun, making the most of every moment, and improving the lives of those around him. He leaves his wife, Dr. Laurel A. Bliss, and his daughter, Devon A. Bliss, of Santa Barbara, CA. Jake was born in Rehoboth, MA, the son of Dr. Thomas F. Bliss and the late Josselyn Hallowell Bliss.

Jake is also survived by his brothers and sisters and many nieces and nephews.

The Bliss family asks that those inspired by Jake’s life volunteer a morning to their community in his memory.

RICHARD A. BROWNING ’75 MD’78, PMD’12

Richard A. Browning, 59, passed away on November 13, 2012. He was the former chief of anesthesia at Rhode Island Hospital and The Miriam Hospital and served as clinical professor of anesthesia at Alpert Medical School. Browning joined the Rhode Island Hospital



Department of Anesthesia in 1985 and had served as chief of that department since 1988. He was a member of the board of directors of the American Society of Anesthesiologists, the Rhode Island Society of Anesthesiologists, and the Society for Pediatric Anesthesia, among others, and a fellow of the American Academy of Pediatrics. He completed his internship and residency in pediatrics at Rhode Island Hospital, where he served as chief resident. He also com-

pleted a residency in anesthesia at the Hospital of the University of Pennsylvania in Philadelphia, and a fellowship in anesthesia and critical care medicine at The Children’s Hospital of Philadelphia. Rick was an avid golfer and enjoyed playing platform tennis. He is survived by his wife, Lisa, and their three children, Chris, Karen MD’12, and Lauren.

FACULTY

BRUNO BORENSTEIN, MD

Bruno Borenstein, 70, of Providence and Las Vegas, passed away in August 2012. His career focused on the care of cancer patients, the elderly, and the terminally ill. He was a clinical assistant professor emeritus of medicine at Brown University, chief practitioner of an oncology practice, medical director of several hospice organizations in Rhode Island, and an internist at the VA Hospital in Las Vegas. Bruno was passionate about Jewish history and earned an MA from Hebrew College in Jewish studies. In Las Vegas, he served as presi-

dent of the Holocaust Survivors Group and on the board of directors of Temple Bet Knesset Bamidbar and the Jewish Family Service Agency. Bruno is survived by his wife, Linda, three sons, and seven grandchildren.

WARREN WILLIAM FRANCIS, MD

Warren William Francis, 88, died in October 2012. After graduating from Princeton University and Columbia Uni-

versity College of Physicians and Surgeons, he served on active duty (1950-52) in the United States Naval Reserve aboard the destroyer USS Compton. He came to Rhode Island in 1952 as a surgical resident at Rhode Island Hospital, where he practiced general surgery and vascular surgery until his retirement in 1997. He served as surgeon-in-charge, First Surgical Service, from 1981 to 1996. He was president of the staff of Rhode Island Hospital and chairman of the Executive and Medical Affairs Committees in 1975. In 1983, he became clinical associate professor of surgery in the Brown University Program in Medicine. He was appointed Rhode Island State Police Division Surgeon in 1965 by Governor John H. Chafee, and received the Colonel Everitte St. John Chaffee Award for outstanding service in 1997. He is a past president of the Princeton Alumni Association of Rhode Island. Warren is survived by his wife of 59 years, Constance Anne (Kuhl) Francis, three children, and seven grandchildren.



Left to right: Dominic Wu '12 MD'16, Rachel Dunlap MD'16, Adam Driesman '12 MD'16, and Vickram Tandon MD'16.

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Abeel A. Mangi '93 MD'97 is challenging medical students to support the Brown Medical Annual Fund. **He'll match each and every student gift to the BMAF with \$100!** If 150 student supporters step up, they'll earn \$15,000 for Alpert Medical School this year.

You can track the Student Challenge, with donor totals by class, at http://brown.edu/go/Med_Student_Challenge.

We all know that medical students lead demanding lives, but they are making the Brown Medical Annual Fund a priority—and so can you! Through this challenge, medical students are showing that they know participation, at any level, is key.

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Give online at www.gifts.brown.edu.

Visit <http://bmaf.brown.edu> for more information.

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



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The Warren Alpert Medical School is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education to physicians. For the purpose of enhancing the quality of health and health care, the Office of Continuing Medical Education collaborates with:

- Alpert Medical School faculty
- Affiliated hospital clinicians
- Local, regional, and national health care societies
- Rhode Island Department of Health
- Other agencies interested in planning formal CME activities

Please contact us if you are interested in collaborating with the office to develop a CME-certified activity.

