

# Tufts

## MEDICINE

MAGAZINE OF THE TUFTS UNIVERSITY MEDICAL  
AND SACKLER ALUMNI ASSOCIATION  
SPRING 2014 VOL. 72 NO. 3



# The Art of LISTENING

(carefully) to what our patients have to say

PLUS: A PLAGUE OF WORMS ■ MUSEUM FUN ■ REMEMBERING JANE DESFORGES

## Hoop Dreams

Being the smallest kid in the family is not always so bad. Growing up in suburban California, the daughter of Nigerian emigrants, Timiyin E-Nunu, M.D./M.P.H., '14 (known as "Timi" to her friends), played basketball with her three brothers, at 6 feet, 2 inches; 6 feet, 4 inches and 6 feet, 10 inches tall. E-Nunu, who stands an inch shy of six feet, honed her defensive skills in a dense tangle of fraternal arms and legs. She picked up a bevy of quick, darting moves and subsequently earned a full athletic scholarship to the University of New Mexico, where she played small forward on the school's highly ranked NCAA Division I basketball team.

It was no easy layup. The program demanded a daily minimum of six hours of weightlifting, running, conditioning and full-court practice, making it a challenge to meet academic performance goals. A double major in biology and chemistry, E-Nunu distinguished herself through her tough-minded defense out on the court. "I was the defensive specialist," she says. "I would guard the star of the opposing team."

E-Nunu has done all the backcourt drills. Now she intends to become a surgeon. A frequent landing spot for former athletes, the field of surgery offers some familiar comforts, she explains, from the strong team atmosphere that's intrinsic to the success of any operation to the hierarchy that keeps things organized and clear as a winning shot drained from three-point range. "It kind of feels like home," she says.

Timiyin E-Nunu,  
M.D./M.P.H., '14



# contents

SPRING 2014 VOLUME 72 NO. 3

## *features*

### **12** Local Hero

Marathon shooting victim Dic Donohue was dead when he reached the hospital. Then Heather Coffin Studley, '06, came to the rescue.

### **15** Into the Big Picture

Trained as a geneticist, Liz Kong relishes her new role at the Museum of Science. *by Bruce Morgan*

#### COVER STORY

### **18** Tell Me More

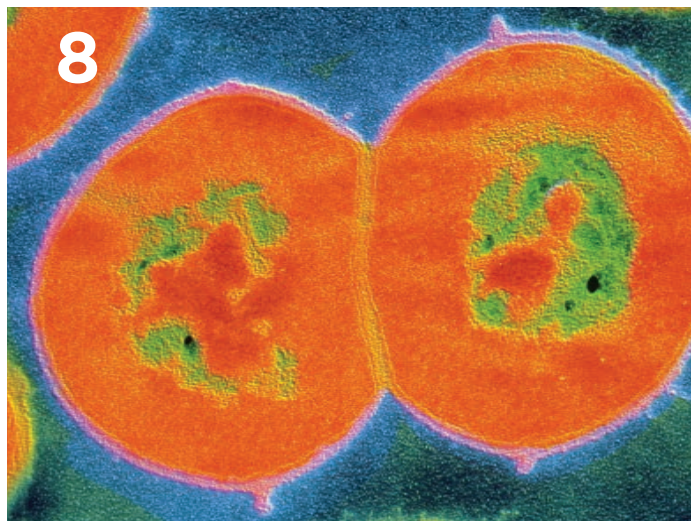
Learning how to interview patients well is so much harder than it looks. *by Bruce Morgan*

### **22** Remembering Jane

Jane Desforges, '45, was a virtuoso physician best known for her superlative patient care. *by Bruce Morgan*

### **26** A Plague of Worms

The schistosome parasite has infected as many as 200 million people around the world. *by Jacqueline Mitchell*



## *departments*

**2** LETTERS

**3** FROM THE DEAN

**4** PULSE

A SCAN OF PEOPLE & EVENTS

**8** RESEARCH

WHERE IDEAS TAKE ROOT

**32** ON CAMPUS

MEDICAL SCHOOL NEWS

**36** ADVANCEMENT

GIVING. GROWTH. GRATITUDE.

**39** ALUMNI NEWS

STAYING CONNECTED

**44** ESSAY

HENRY KLAPHOLZ ON MILITARY SERVICE

Cover illustration by Brian Stauffer

# Tufts

## MEDICINE

VOLUME 72 NO. 3 SPRING 2014

Medical Editor  
John K. Erban, '81

Editor  
Bruce Morgan

Editorial Director  
Karen Bailey

Design Director  
Margot Grisar

Designer  
Betsy Hayes

Contributing Writers  
Julie Flaherty, Henry Klapholz, David Levin,  
Jacqueline Mitchell, Susan Saccoccia

Contributing Editor  
Bob Sprague

Alumni Association President  
Laurence S. Bailen, '93

Vice President  
Thomas R. Hedges, '75

Secretary/Treasurer  
Carole E. Allen, '71

Medical School Dean  
Harris Berman

Executive Council  
Joseph Abate, '62, Mark Aranson, '78,  
Robert Baevsky, '87, Mark R. Belsky, '74,  
Joseph E. Bornstein, '09, Alphonse F.  
Calvanese, '78, Stephen J. Camer, '65,  
Joshua M. Careskey, '77, Gena Ruth  
Carter, '87, Do Wing Chan, '01, Bartley C.  
Cilento Jr., '87, Eric R. Cohen, '86, Paul D.  
D'Ambrosio, '88, Ronald A. DeLellis, '66,  
Edward C. Dow, '85, Ronald W. Dunlap, '73,  
John K. Erban, '81, Jane H. Fay, '84, Charles  
Glassman, '73, Rebecca D. Glassman, '11,  
William H. Goodman, '89, Donna B. Harkness,  
'79, David A. Klein, '93, Kenneth A. Levitsky,  
'86, Joseph J. Levy, '82, Frederic F. Little, '93,  
Kathleen M. Marc, '80, Brendan McCarthy,  
'97, Tejas S. Mehta, '92, Louis Reines, '05,  
Karen Reuter, '74, Laura K. Snyderman, '04,  
Paul J. Sorgi, '81, Elliott W. Strong, '52,  
Gerard A. Sweeney, '67, Louis A. Tramontozzi,  
'07, Jack J. Tsai, '06

*Tufts Medicine* is published three times  
a year by the Tufts University School  
of Medicine, Tufts Medical and Sackler  
Alumni Association and Tufts University  
Office of Publications.

The medical school's website is  
[www.tufts.edu/med](http://www.tufts.edu/med).

© 2014 TRUSTEES OF TUFTS UNIVERSITY  
Read us online at  
[go.tufts.edu/tuftsmedicine](http://go.tufts.edu/tuftsmedicine)



**Tufts Prints Green**

Printed on 25% postconsumer waste  
recycled paper. Please recycle.

## Tufts Alumni



### *A Vision for Tufts*

During a time of expanding horizons for the university, Tufts Alumni is pleased to invite you to meet with Tufts President Anthony P. Monaco to hear about where the institution aspires to be in the next 10 years.

During the first two years of the president's tenure, Tufts Alumni hosted 23 receptions to introduce him to alumni, parents and friends around the world.

All members of the Tufts community are invited to attend any of these special events. As the president's itinerary is developed, you can find event dates and locations at [tuftsalumni.org/president](http://tuftsalumni.org/president).

**TALK TO US** *Tufts Medicine* welcomes letters and suggestions from all its readers. Address your correspondence to Bruce Morgan, Editor, *Tufts Medicine*, Tufts University Office of Publications, 136 Harrison Ave., Boston, MA 02111. You can also email [bruce.morgan@tufts.edu](mailto:bruce.morgan@tufts.edu). Letters are edited for length and clarity.

## Finding a Common Ground



THERE'S NO QUESTION THAT TIMES HAVE CHANGED a great deal in medicine, especially when it comes to prescription drugs. When I started and managed the Matthew Thornton Health Plan in New Hampshire in the early 1970s, we didn't think of including any prescription coverage as part of the plan because drugs were so cheap. The average drug back then cost about \$4, as I recall.

Now, the U.S. pharmaceutical industry does something like \$400 billion in business annually.

Drugs are markedly more expensive. Prescription costs for certain rare medical conditions can run thousands of dollars a month. We've all seen the headlines decrying the latest high prices—that happens frequently. But amid all the criticism, we sometimes forget that people are living longer because of the historic change, and living better, too.

The Center for the Study of Drug Development (CSDD), which Lou Lasagna, then dean of the Sackler School, brought to Tufts in 1984, represents a valuable national resource housed on our campus in a time of dramatic change in U.S. medicine. It is unique in the country as an organization whose role is to study the process of drug development and lend perspective to its continuing evolution.

Ken Kaitin, director of the CSDD, has relayed some of the interesting history behind the center's creation. It seems that back in the 1970s, Lasagna was the first to recognize and document a remarkable phenomenon: U.S. physicians and their patients did not have access to a broad array of critical medicines that were approved and available to patients in the U.K. Because of the different regulatory environments in the two countries, patients in England were getting access to new drugs about eight years sooner than patients in the U.S.

Lasagna, a physician widely known as the father of clinical pharmacology, testified before Congress on the evident disparity, but the “drug lag”—a term he coined—showed just how little was understood about the inner workings of the American pharmaceutical market and the role of regulatory agencies in public health. The CSDD, an independent, academic, nonprofit research group founded by Lou in 1976, while he was on the faculty at the University of Rochester, was the logical answer to the question of how to learn more, inform the public debate and improve health care in the process.

Today, with a team of 13 researchers and three administrative staff, the CSDD has many sides to its operation. It conducts analyses of economic, legal and scientific trends in bioinnovation for peer-reviewed publication. It monitors and reports on the development, regulation and use of medicines. And it explores public policy issues related to drug development.

In addition, by bringing together diverse stakeholders from government, industry, academia and public health, CSDD provides a neutral forum for

valuable discussion of critical topics in bioinnovation. The goal is to generate understanding and increase productivity in bioinnovation.

Getting people around a table and sharing data can pay unexpected dividends. For example, folks from the FDA have told Kaitin more than once that studies conducted here at Tufts have helped the agency understand the impact of their regulations. The CSDD team exerts further influence through frequent appearances at pharmaceutical conferences around the world and public testimony before Congress.

Nothing stays the same, and the drug industry is no exception. Although the industry may have a public reputation as a highly profitable business, and it certainly does continue to be so, to a large degree, significant changes are afoot these days as lucrative patents expire and companies cast around for the next “blockbuster” drug. Many pharmaceutical giants are looking to form new partnerships—both with each other and with universities—in this regard.

We, of course, have our own distinct strategic needs to consider. At a time of reduced NIH funding that is not apt to change over the near term, all medical schools, including our own, are in a position where we need to seek increased financial support for our scientists. I believe a newfound affiliation between academia and pharmaceutical interests can be profitable for both sides.

HARRIS A. BERMAN, M.D.  
DEAN, TUFTS UNIVERSITY  
SCHOOL OF MEDICINE





## Antibiotic Crackdown

**New FDA policies limit drugs' use in food animals, consumer goods**

**T**HE WIDESPREAD USE OF ANTIBIOTICS IN AMERICAN LIFE, A practice long criticized by Stuart Levy, professor of microbiology at Tufts, for its tendency to promote antibiotic resistance, may have reached a turning point. In less than a week in mid-December, the Food and Drug Administration (FDA) introduced new policies to reduce the indiscriminate use of antibiotics in cows and chickens raised for meat while also bringing fresh levels of scrutiny to the claims of antibiotic soap manufacturers that their products are safe and effective.

Levy, who was among the first scientists in the country to identify the problem, in the 1970s, is president of the Alliance for the Prudent Use of Antibiotics and director of the Center for Adaptation Genetics & Drug

Resistance at the medical school. It is estimated that approximately 2 million Americans become sick and about 23,000 die from antibiotic-resistant infections each year.

Both governmental actions represent a dramatic change in thinking on the part of the FDA. Regarding the ruling on livestock regulation, the *New York Times* said, "This is the U.S. agency's first serious attempt in decades to curb what experts have long regarded as the systematic overuse of antibiotics in healthy farm animals, with the drugs typically added directly into their food and water." The proposed changes would ban farmers from using the medicines to promote livestock growth and require licensed veterinarians to supervise their use.

Levy is gratified to see the shift. "I'm kind of happy," he told the *Times*. "For all of us who've been struggling with this issue, this is the biggest step that's been taken in the last 30 years."

Since the 1970s, health officials have warned that the overuse of antibiotics in animals posed a health risk, by leading to the development of infections in humans that were resistant to treatment. Their efforts have mostly been thwarted by the food industry.

Tougher rules on antibacterial soaps were also proposed by the FDA, which said it would more closely examine claims advanced within the field. The safety of chemicals such as triclosan used in the soaps is of particular concern.

Again, Levy spoke out in support of the move: "The FDA is finally making a judgment call here and asking industry to show us that these products are better than soap and water, and the data doesn't substantiate that," he told the Associated Press.

More than soap is involved in the discussion. By implication, the question of safety surrounding antibacterial products could affect the \$1 billion U.S. industry selling everything from toothpaste to kitchen knives.

## A YEAR OF DISTINCTION



**Johanna Seddon**, professor of ophthalmology and director of the Ophthalmic Epidemiology and Genetics Service at Tufts Medical Center, received the 2013 Distinguished Fellow Award from the University of Pittsburgh, where she earned her M.D., and the 2013 Philip S. Hench Distinguished Alumnus Award from the Pittsburgh School of Medicine Alumni

Association, the highest honor that organization bestows on one of its approximately 7,000 members for outstanding achievements.

The recognition did not stop there. Last summer, Seddon received

the Women in Ophthalmology (WIO) award for her leadership in the field and for her contributions as an educator and researcher during the WIO's annual meeting in Snowmass, Colo. While at the conference, Seddon presented a talk on "Understanding the Mechanisms and Etiology of Macular Degeneration—Genetics and Modifiable Factors."

In November, she and her research team published their discoveries of novel rare genetic variants related to macular degeneration in *Nature Genetics*. To date, her team has found half of the known genes related to this vision-threatening disorder, and their discoveries of modifiable risk factors have changed the management of the disease worldwide.

## Unified Global Health Agenda

**T**UFTS UNIVERSITY IS MARSHALING its far-ranging research and policy expertise to address global health challenges on five continents. The new Tufts Center for Global Public Health, based in the medical school's Department of Public Health and Community Medicine, will focus on infectious diseases, noncommunicable diseases and maternal and child health, employing interdisciplinary research and programs designed to address inequities in access to care.

"The new Tufts center reflects our commitment to improving the human condition through education and discovery," says Dean Harris A. Berman, a professor of public health and community medicine. "As the world undergoes demographic, sociocultural, economic and epidemiological transitions, research at the center will seek to stay ahead of the curve."

In partnerships with local collaborators and communities, the center will work to improve health in Africa, Asia, Central and South America, Europe and the United States. Research areas include HIV/AIDS, diarrheal diseases, nutrition, food security and sanitation and hygiene. The new center aligns with the university's recently

approved strategic plan, "Tufts: The Next 10 Years," which calls for deploying Tufts' considerable intellectual capital to help solve the most pressing issues of our times.

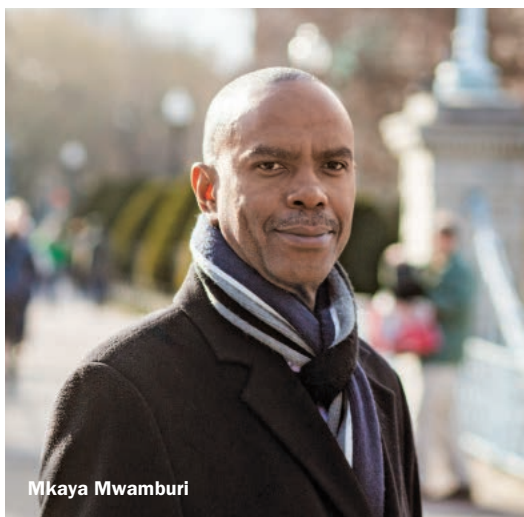
Mkaya Mwamburi, an associate professor of public health and community

medicine to develop solutions that are sustainable over time. Mwamburi was a surgeon in his native South Africa before coming to Tufts to earn his Ph.D. from the Sackler School in 2006. He also earned an M.S. in economics from Tufts in 2013.

Faculty researchers have been pursuing their individual projects largely in isolation, driven by personal interests, Mwamburi told the *Tri-Town Transcript*, based in Boxford, Mass. In contrast, he said, "this center has been getting everyone together, because if we work together, we can get more funding and have a better impact [on global health]." Tufts-based research projects are currently under way in Ghana, Kenya, Ethiopia, Vietnam, Pakistan and India, as well as several South American countries.

The new center will draw on Tufts' unique constellation of schools: Faculty members from

the Cummings School of Veterinary Medicine, the Fletcher School, the Friedman School of Nutrition Science and Policy, the School of Arts and Sciences and the School of Engineering will contribute to the center's efforts.



Mkaya Mwamburi

the Cummings School of Veterinary Medicine, will direct the center. "We are deeply committed to understanding the diverse factors that lead to inequalities between and within populations and high burdens of disease in certain regions," he says. The center will work directly with



## Fast-food Calorie Alert

**T**HE FEDERAL AFFORDABLE CARE ACT NOW REQUIRES RESTAURANT CHAINS with 20 or more locations to post the calorie content for all drink and food items that regularly appear on their menus. The provision is meant to warn customers away from high-calorie offerings and help stem the nation's obesity epidemic.

But according to a recent story in *HealthDay Reporter*, a poll of 2,000 fast-food customers in Philadelphia showed that few people made any use of the information—if they even noticed it. “Forty percent of the sample saw it, and about 10 percent [overall] said they used it and reported to us that they purchased fewer calories,” said study author Brian Ebel, an assistant professor of population health and health policy at the New York University School of Medicine. The study appeared in the November issue of *Obesity*.

Ebel's team interviewed patrons at McDonald's and Burger King outlets and asked them a series of questions, including how often they visited fast-food restaurants and if they had noticed the calorie information posted on the wall. The team conducted the survey both before and after the required posting went into effect in Philadelphia.

“Providing calorie information is not enough,” Alice Lichtenstein, director of the Cardiovascular Nutrition Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging and the Gershoff Professor at the Friedman School, told the *Reporter*. “If we want people to use the information, we need to raise awareness about its availability and, most importantly, educate about its use.”

Lichtenstein suggested that the next logical step would be to study whether an informational campaign would make consumers more aware of the restaurant calorie postings.

## MUDDLED MEDICAL DIRECTIVES

Family members who sign “do-not-hospitalize” orders on behalf of older relatives likely to be moved from a nursing home to a hospital are frequently unclear about what they are asking, according to a recent article in the *New York Times*. Working together with colleagues in Pennsylvania and Ohio, Assistant Professor Sarah Goff, a specialist in internal medicine at the Tufts-affiliated Baystate Medical Center, served as co-author of the small study of 16 health-care proxies for patients with advanced dementia.

The study found that proxies are often confused about how “do-not-hospitalize” orders work. Some proxies believed, mistakenly, that the directives meant medical intervention of any sort would be withheld from the patient.

“Do-not-hospitalize” directives come in two main flavors. The first prohibits a patient from being sent to a hospital under any circumstances.

The second directive is a more general recommendation to avoid the hospital, but with stipulations that an admission may make sense and be approved for the patient under certain conditions.

## Parity for Mental Health

Despite its troubled debut, the Affordable Care Act will attempt to correct a long-term bias against patients suffering from mental illness. The act includes requirements for mental health parity among insurers so that mental illness is treated on the same terms as any other illness. Paul Summergrad, the Dr. Frances S. Arkin Professor and Chair of Psychiatry at Tufts and president-elect of the American Psychiatric Association, knows the history well, and celebrated the change in a recent interview with *USA Today*. Fair coverage is now guaranteed for millions of Americans with mental illness.



## day in the life

By Michael Schecht, '14



“Hold a sec while I answer these pages.”

## BIANCHI NAMED TO INSTITUTE OF MEDICINE

**Diana W. Bianchi**, the Natalie V. Zucker Professor of Pediatrics, Obstetrics and Gynecology at Tufts School of Medicine and founding executive director of the Mother Infant Research Institute at Tufts Medical Center, was inducted into the elite ranks of the Institute of Medicine (IOM) at the organization's 43rd annual meeting in October. She was one of 70 new members elected in 2013.



“It is a tremendous honor to be recognized alongside so many exceptional clinicians and scientists,” said Bianchi, the vice chair for pediatric research at the Floating Hospital for Children. “Medicine and technology are rapidly evolving. I look forward to working with my fellow IOM members to improve pediatric and obstetric clinical care, while simultaneously

addressing the multiple challenges associated with health-care reform.”

Bianchi's translational research focuses on prenatal genomics and seeks to advance noninvasive prenatal DNA diagnosis and use the fetal transcriptome to develop new fetal therapies. A practicing medical geneticist with special expertise in reproductive genetics, she has published more than 250 peer-reviewed articles and is one of four authors of the book *Fetology: Diagnosis and Management of the Fetal Patient*.

She received her medical degree from Stanford University School of Medicine, completed postgraduate training at Boston Children's Hospital and a postdoctoral fellowship at Harvard University.

## MAINE TRACK AS A MODEL

**O**UR LOBSTER-RICH NEIGHBOR TO THE NORTH HAS A DEMOGRAPHIC problem. According to data from the Maine State Planning Office, the state's share of citizens ages 20 to 59 is projected to shrink over the next 15 years, while its population of residents between 60 and 79 continues to grow, the *Bangor Daily News* reports. “When you live in a state where more people are dying than being born, that's not sustainable, and it scares me,” Gov. Paul LePage told the newspaper in an interview at the Blaine House mansion, where a group of students from Bowdoin College gathered in December to kick around some ideas for reversing the trend.

It was a free and open discussion. One 20-year-old student from Madawaska, Maine, said he thought the state should come up with some ways to help young people with their student debt, as well as provide more plentiful internship and training opportunities. “If I had a choice to stay in Maine or go to Massachusetts, I'd choose Maine every time,” he said. “But I can't.”

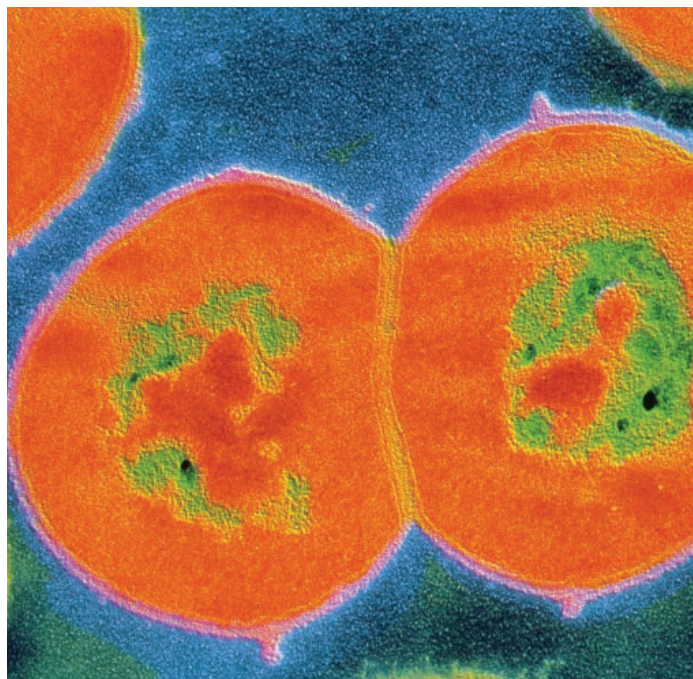


Another student, Zachary Morrison, was quoted in the story saying he'd like to see more programs such as Maine Track, the partnership launched between Tufts Medical School and Maine Medical Center in the fall of 2009 that offers half-tuition deals to qualified Maine natives who plan to establish practices in the state once their training is complete. That rang a bell for LePage, who said he admired the program because of how it kept young people connected to the state; the governor pointed out there might be ways to

expand on the program in disciplines other than medicine.

“If you're going to work in Maine five years, we'll write off X number of college credits,” he suggested, plainly thinking aloud. “So you can literally get the credits for free, but you've got to give back to the state. I really like that model.”

**Gov. Paul LePage, at left in pink shirt, talks with students from Bowdoin College in the State Dining Room last December. The governor had invited the students to discuss how to attract young people to Maine and keep them there.**



**A colony of the *Streptococcus viridans* group of bacteria, the most common bacterial inhabitants of the mouth and throat.**

## MOUTHFUL OF MICROBES

**The delicate balance of beneficial bacteria keeps oral disease at bay by David Levin**

### WE ARE NOT ALONE.

Thousands of species of bacteria—millions of individual critters in all—have colonized almost every space on (and *in*) the human body.

It's a notion that may send you running for the shower, but without these tiny microbes, we'd be in big trouble. Many of these organisms evolved along with humans over hundreds of thousands of years, settling into a symbiotic relationship with our bodies. In other words: They need us to survive, and we need them. Remove certain

bacterial species from your gut, and you'll have trouble digesting food. Remove ones that live in your skin, and you'll lose a valuable weapon for fighting fungal infections.

The inside of our mouths is no different, says Brian Klein, a doctoral candidate in molecular microbiology at the Sackler School of Graduate Biomedical Sciences at Tufts. Klein studies this complex ecosystem, known as the oral microbiome, and says this motley crew of microbes could play an important role in

protecting us from oral disease.

"If you have a healthy ecosystem of bacteria living in your mouth, it may regulate itself in a way that stops any one pathogen from expanding and taking over," he says. "We think oral diseases might pop up when that microbiome gets out of whack. If the balance is upset somehow, one species or another could start to dominate and cause conditions like gingivitis."

It's a new way to look at oral disease—not as an isolated infection, but as a system of moving parts, each of which plays a role in maintaining a healthy balance of microbes inside the mouth.

At the moment, Klein says, the challenge is figuring out what each individual species of bacteria actually *does* in the microbiome—how it interacts with its neighbors, and what role it plays in keeping that ecosystem in balance.

For the past few decades, biologists have focused on understanding a microbe's DNA to determine how it fits into the microbiome. Identify what each gene in a bacterium does, and it's possible to tease out how it lets that bacterium survive and interact with other species.

For some microbes, Klein says, that's not so hard to do. Researchers simply replace a single gene with a dud—one

that doesn't work—and wait to see what happens. The process is a bit like taking a finely tuned sports car apart and rebuilding it with one piece missing. Maybe its absence causes the right wheel to stop spinning, or the transmission to rev out of control, but you'll quickly see what the part does for the car as a whole.

This method, called "site-directed mutagenesis," is a common tool for studying certain bacteria in the lab, and has been used to piece together the role played by the thousands of species that live in the human skin and gut. Microbes in the mouth, however, can be a little more slippery. Klein says that some of the bacteria that reside deep in our gums resist this sort of genetic manipulation with an enzyme called a nuclease, which chops up any incoming bits of DNA. As a result, they're incredibly difficult to study using existing methods.

"They really don't like you trying to mess with their DNA," he says. "It's very hard to insert any new genes into them, and it could take months to make the mutant strain you need in order to test what a specific gene does."

### MUTANT LIBRARY

Instead of trying to mutate a specific gene, Klein and his colleagues are taking a more global approach by building on a method recently developed at Yale University. The researchers start with a pool of millions of microbes, and then add a molecule called a "transposon"

into the mix. “The transposon causes each of the bacteria to mutate one gene and one gene only,” Klein says. “There’s no way to control which gene it targets, so it’ll mutate a random one for each microbe in the pool,” he notes. “Do that enough times, and you’ll mutate all the potential genes in the genome at least once.”

In this way, the researchers can create an extensive “library” of mutated genes that they can browse to learn what each one does. Klein says this technique, which he and his labmates are refining, could lead to new treatments for oral disease.

Many existing drugs, such as antibiotics, take a shotgun approach to treating infection, killing off large numbers of bacteria indiscriminately. As researchers like Klein learn more about the genes that exist within oral microbes, however, it may be possible to take a more focused approach, targeting only the specific types of bacteria that are causing the infection.

While treatments like this may seem promising in theory, it could be years before patients benefit. At the moment, Klein says, scientists still don’t know enough about the complex ways that bacteria interact in the mouth—but as he and other researchers slowly piece together the inner workings of the oral microbiome, they may one day help revolutionize the way dentists treat oral disease.

---

*David Levin is a freelance science writer in Boston.*

## WATCHING FISH SWIM

**The pastime could lead to better artificial limbs and nimbler submarines by Julie Flaherty**

**AS FISH GO**, the lamprey has to be one of the most repulsive. Its eel-like body culminates in a tooth-encrusted sucker mouth straight out of a sci-fi horror film. Yet it turns out the lamprey, the most primitive of vertebrates, can do a pretty neat trick: bounce back from paralysis.

“Clip the spinal cord, stick them back in the water, come back in a couple of weeks or so, and they will often be swimming pretty much indistinguishably from how they did before,” says Eric Tytell, an assistant professor of biology in Tufts’ School of Arts and Sciences.

The lamprey does repair the break to some extent, but the neurons that connect across the breach are shorter and make fewer, smaller synapses than before. And that, to Tytell, is the more interesting part, because it means that it is not just the connection to the brain that is important for swimming, but something going on in the spinal cord itself.

The cord “isn’t a simple cable,” Tytell says, explaining that it does a lot of processing in its own right. In fact, neural circuits in the spinal cord, so-called central pattern generators, are what control locomotion. “In fish, that’s swimming—in you and me, that’s walking,” Tytell says. “It’s the same structure of the circuit, as far as we can tell.” Understanding how lampreys relearn to swim could help in designing better therapies for patients with spinal cord injuries.

The spinal cord work is just a small piece of the research Tytell conducts by doing what many people do only in their dentist’s waiting room: watching fish swim. He does it to answer the fundamental question of how fish manage to “move stably through complex environments.” He has observed knifefish moving in and out of tubes, scared the bejeezus out of African bichir fish to test their escape reflex, and done seminal work

on the fluid dynamics of the American eel. But you can learn other things from fish gazing, such as best practices in underwater propulsion.

The U.S. Navy is always in the market for quieter, more efficient submarines, particularly ones that are nimble enough to get into near-shore areas and search for mines. “It’s debatable whether a fish is better than a propeller for long-distance swimming,” Tytell says. “It’s certainly not debatable that a fish is more maneuverable.” Some of his past experiments have included tuning a submersible’s rubber fins to undulate like those of a fish.

Tytell is also interested in the ecological aspects of how fish deal with their environments, such as how a bluegill sunfish might react when a well-meaning alternative power company installs a hydrokinetic turbine in its stream. “Clearly these are going to introduce turbulence into the water, and we really

“SO IF WE UNDERSTAND A BIT BETTER HOW CHANGING SENSORY INFORMATION CAN CHANGE THE ACTUAL PATTERN OF LOCOMOTION THAT COULD HELP WITH PROSTHETIC DESIGN.” —ERIC TYTELL



don't know how well fish deal with those vortices," he says.

To study things like that, he uses a crystal-clear Plexiglas tank with a constant current for a fish to swim against. When reflective powder is sprinkled in the tank, and a laser is directed in it, a high-speed camera catches the vortices and flows the fish creates as it bends its body and flaps its fins. These flows push back on the fish, creating a complex dance of fluid mechanics and biomechanics.

"There are internal forces and external forces, and the balance of the two is what determines how a fish moves," says Tytell, who has studied both physics and biology and whose bookcase reflects his blend of disciplines, with titles such as *Worlds of Flow* and *Animals in Motion*.

The equations involved are so complex that only recently have computers been powerful enough to allow Tytell, while a postdoctoral researcher at the University of Maryland, to develop a robust computer

simulation of a swimming fish. This lets him tweak variables such as body stiffness to see how they affect speed or acceleration. It is a model for how a moving body interacts with its surroundings, and something that could one day be used in the creation of robotics and



Two varieties of lamprey are visible in this shot. Propulsion systems used by lampreys as they move through the water may hold the key to more maneuverable submarines.

prosthetics. "An awful lot of prosthetics out there right now are entirely passive or have pretty limited ability to adapt to any sort of changes in the environment—going uphill versus going downhill, for instance," he says. "So if we understand a bit better how

changing sensory information can change the actual pattern of locomotion that could help with prosthetic design."

In the meantime, he is gearing up for an experiment on beheaded lampreys. (If you feel bad, think of it as cosmetic surgery.) "You can actually remove the brain entirely, and if you stimulate the circuits in the spinal cord with a drug or electrically, they will swim, they will respond to perturbations, they will do quite a bit of fairly sophisticated stuff," Tytell says.

He points out that in humans, the central processing generator for walking is located in the lumbar spinal cord. "If you can simply activate and then control it at least a little bit—turn left, turn right—then maybe, rather than trying to design some fancy exoskeleton, we could take advantage of what is already there. That is very much in the early days, but it is a possibility."

*Julie Flaherty can be reached at [julie.flaherty@tufts.edu](mailto:julie.flaherty@tufts.edu).*

## THE LINK BETWEEN VITAMIN D AND DIABETES

**Anastassios Pittas, an associate professor and co-director of the Diabetes Center at Tufts Medical Center, is leading a team on a new \$40 million research project that will investigate whether taking vitamin D can help delay the onset of Type 2 diabetes in people who are at high risk for developing the disease.**

**Bess Dawson-Hughes, '75, director of the Bone Metabolism Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts, is the co-investigator. Pittas, also an adjunct professor at the Friedman School at Tufts, and his colleagues will receive the National Institutes of Health grant over five years.**

**The trial, titled D2d, will take place at 20 medical centers in 17 states. About 2,500 people at high risk for diabetes will be recruited to receive either vitamin D supplements or a placebo. Researchers will track them over four years to see whether they develop diabetes. Results of the study are expected in 2018.**

**The D2d study is the first of its kind to specifically examine whether vitamin D can help prevent Type 2 diabetes.**

**Earlier studies by Pittas and others have suggested a strong link between vitamin D and a reduced risk of developing the disease. Other research has hinted that vitamin D may help conditions as varied as depression and cancer, but only its usefulness in maintaining bone health has been proven. Still, the notion that vitamin D could have far-reaching beneficial effects has made it one of the top-selling supplements in the country, with \$425 million in annual sales.**

**Diabetes is the seventh leading cause of mortality in the U.S., responsible for more than 69,000 deaths in 2010, according to the Centers for Disease Control and Prevention. A chronic disease with no known cure, diabetes can also lead to other severe health complications, including stroke, blindness and diseases of the heart, kidney and nervous system.**

# ORIGINS OF LUPUS

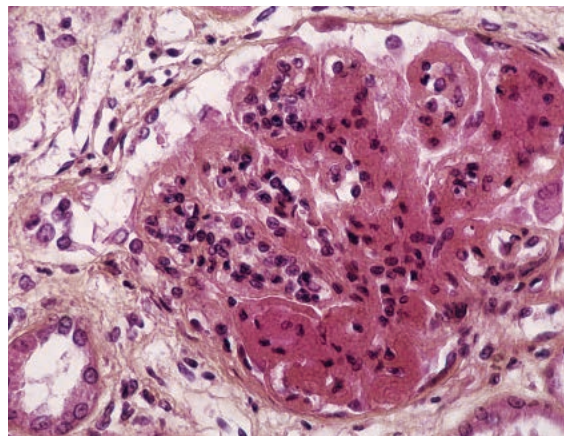
**Sackler student Elisabeth Adkins is examining the genetic underpinnings of the disease**  
by **Jaqueline Mitchell**

**LUPUS IS ONE OF** the most enigmatic of diseases. It can take years to diagnose, marked as it is by a laundry list of seemingly unrelated symptoms: fever, fatigue, rashes, hair loss, sensitivity to light, seizures and even psychosis. Nearly 2 million Americans have some form of lupus, an autoimmune disorder. More than 90 percent of those who suffer from it are women—and there is no cure.

Elisabeth Adkins, a doctoral student at the Sackler School, is trying to decode the genetic underpinnings of the disease, a crucial step in combating it. She's working in the lab of Derry C. Roopenian, a clinical professor at Tufts School of Medicine and a professor at the Jackson Laboratory, an independent genetics research organization based in Bar Harbor, Maine. Adkins is the first Tufts student to take advantage of the mammalian genetics "Jax track," a joint program of the Sackler School and Jackson Laboratory. Launched in 2011, the program offers students in Tufts' genetics program—which emphasizes human disease—in-depth training in mammalian genetics, an increasingly recognized need in biomedical research.

Established as a cancer research center in 1929, the Jackson Lab is famous for its mice. It maintains a "library" of special strains of mice that make it easy

to study certain diseases in humans. The type of mice that Adkins and Roopenian use arose accidentally, through mutation; they begin to exhibit lupus-like symptoms by the time they are four weeks old. It's a lesser-known strain of mice, but a potentially promising one. "We think it's one of the better models," says Adkins, who received a 2013 Gina M. Finzi Memorial Student Summer Fellowship from the Lupus Foundation to support



**"Historically, lupus has been extremely hard to diagnose," says Derry Roopenian, Adkins' mentor in the lab. Shown here: kidney tissue infected with the disease.**

her research. "We see a lot of the same indicators [in these mice] that human lupus patients have."

One such indicator is kidney failure, something that human lupus patients often died of before steroids were used to manage the disease. Adkins' mutant mice die of

kidney failure before they are eight months old. The normal life span of mice is two to three years.

With Roopenian as her mentor, Adkins is studying these doomed mutant mice to figure out the mechanisms behind the onset of disease. The mutation causes the mice to produce too much of a protein called interleukin 21, or IL21. Roopenian's team has known for a while that this protein has something to do with lupus. Normally, it helps the immune system respond to infections. But the scientists found that when it's produced in excess, as it is in their strain of mutant mice, IL21 leads to lupus symptoms.

"It turned out that it wasn't just lupus, but many other

how it's produced and how it functions. Her work has already led to one significant finding.

Adkins found that these cells exist in *healthy* mice, even when they are not undergoing an active immune response. "That was a surprise. No one would have expected that," says Roopenian.

Next, the scientists want to figure out how those cells develop in normal mice, information that could illuminate what exactly goes wrong when lupus occurs. That would not only open the door to new therapies; it could have diagnostic value, too.

"Historically, lupus has been extremely hard to diagnose. A lot of our effort is to understand the mechanisms much better so it will be easier to predict when people are showing early signs of it," says Roopenian.

It was serendipity that put Adkins, who has been interested in science and medicine since high school, on the Jax track in 2011. After studying genetics as an undergraduate at Central Connecticut State University, she knew she wanted pursue a Ph.D., but she wasn't sure if she wanted to focus on genetics or immunity. The mammalian genetics program allowed her to marry her two interests. The Jax track, she says, also gives her access to the breadth of research at Tufts and the depth of genetics expertise at the Jackson Lab.

"It's nice to have the two names together," she says of the new program. "It adds more weight to what I'm doing."

---

*Jaqueline Mitchell can be reached at [jaqueline.mitchell@tufts.edu](mailto:jaqueline.mitchell@tufts.edu).*



Dic Donohue visits  
with Heather Coffin  
Studley, '06



# A LifeRe





THE BOSTON MARATHON BOMBINGS, ON MONDAY, APRIL 15, LAST year were just the start of our local mayhem and bloodshed. Four days later, in the immediate aftermath of the killing of Sean Collier, a young MIT police officer who was shot while sitting in his cruiser at the edge of the campus in Cambridge, Mass., 33-year-old MBTA officer Richard (“Dic”) Donohue got caught up in a wild nighttime shootout between police and the bombing suspects on the streets of nearby Watertown that left him critically wounded.

Donohue was rushed to Mt. Auburn Hospital, where Heather Coffin Studley, ’06, an ER physician on duty, awaited his arrival. She would be instrumental in saving his life. Studley says she was drawn to emergency medicine initially because of how the field contains “a little bit of everything,” but nothing could have prepared her for this.

Studley is the daughter of John Coffin, the American Cancer Society Research Professor of molecular biology at the medical school, and sister of Erica Coffin, ’99, an anesthesiologist in Pittsburgh. The vascular surgeon who was called in that night to operate on Donohue was Frank Vittimberga, ’62, chief of vascular surgery at Mt. Auburn. (A further Tufts connection to this story involves Donohue’s mother, Consuelo Donohue, who has worked as a nursing supervisor at Tufts Medical Center for many years.) Studley lives in her hometown of Scituate, Mass., with her husband, Ralph, who works in financial services, and their two children, Madeline, 4, and Benjamin, 18 months.

Studley talked with *Tufts Medicine* about the night “Dic” Donohue died—and then didn’t.

**For this young doctor, overcoming the odds for her critically wounded patient**

**came naturally** BY BRUCE MORGAN

PHOTOGRAPH BY MARK OSTOW

# gained

**Tell us about that night.**

It started out like a typical overnight shift. The way we do it is there's a doctor who's there in the ER from 6 p.m. to 2 a.m., and there's another who's there from 10 p.m. to 7 a.m. That was me. I was the overnight doctor that day.

We heard from a security guard at the hospital that there had been a shooting over at MIT. We heard it was a robbery, and didn't think too much more about it. We knew they would be taking him to MGH, which is the nearest hospital. Then, about 30 minutes later, someone told us, "There's a shootout going on in Watertown." I looked at the doc I was working with and said, "Oh, no."

Mt. Auburn was not a designated trauma center, but Watertown, where the shooting happened, is maybe a half mile from us, and so I knew there might be someone coming to us if they were seriously wounded. Soon after that we got a call from the dispatcher saying, "We have a police officer coming to you; we have no details." Two or three minutes later the ambulance pulled in and we heard, "He's been hit in the leg." At first we thought, "Oh, that's not so bad." But then pretty soon, looking through the window at the front of the hospital, I could see that the emergency guys were doing CPR on him, and I knew it was more serious.

When Dic first came into the ER, he was dead. He had basically bled to death at the scene of the shooting. He was in full cardiac

**Once we were in the OR and everybody else was there, I stepped back and let them take over.**

**Then came the hardest part. I had to be the one to speak to Dic's wife and mother.**

arrest. He had sustained a single gunshot to the right groin, which had hit his femoral artery and vein. Under those conditions, it would only take two or three minutes before you bled out.

We followed our standard protocol. We put a breathing tube in, and we continued CPR. How much sense did this make? Not a lot. CPR is primarily meant to push blood around, but he had no blood volume, so what good was the CPR? It's hard to know. It must have done something for him, but when we first looked at the groin wound, he wasn't bleeding. He had no blood left.

**Had he flatlined?**

Yes. He had no cardiac activity.

**Had you seen this condition before?**

I have. The difference is that in those other cases the patient didn't live. We knew that the only way Donohue had a chance of living was if he got blood, and quickly. We were able to get a large central line into him and start pumping blood into his system. After three units of blood, we put an ultrasound on his heart—there was still no cardiac activity.

**How long had you been working on him at this point?**

Fifteen or 20 minutes, maybe. There was me, an ER resident and another doctor there, together with about five nurses. And remember, he had been on the ground in Watertown and getting him to the hospital had taken at least five or 10 minutes. So his heart had probably been stopped for half an hour at this point.

**What were his likely odds of survival?**

Well, it's fair to say that everyone in the room was feeling we would be done with the case soon. If he has sufficient blood volume, and we still can't get his heart back, we're done. But then we put three units of blood into him and gave him a dose of epinephrine and, amazingly, his heart started beating again.

**How would you describe the mood in the room when that happened?**

Cautious optimism. Just because we got the heart beating again, the patient still has suffered neurological damage. When he started hemorrhaging from his groin wound, we took that to be a good sign.

The trauma surgeon, Dr. Russell Nauta, arrived about then and said, "He needs to go to the OR."

Meanwhile, we're trying everything to stop the bleeding. I put my hand on the wound to apply pressure, but that didn't stop it. I ended up getting up on the stretcher as it was wheeled to the OR and putting my knee right on the wound. It was all I could think of that would get enough localized force to stop the bleeding. Even after we reached the OR, I climbed back up on the table and kept my knee on the wound. The surgeon was able to clamp the artery from inside Dic's body.

Once we were in the OR and everybody else was there, I stepped back and let them take over. Then came the hardest part. I had to be the one to speak to Dic's wife and mother. They had arrived at the hospital and were of course distraught. They were concerned about Dic's brain function and wanting lots of answers that we couldn't always give right away. I went back and forth between them and the OR and updated them through the night.

It's always the hardest job, talking to families. You try to be as positive as possible but also realistic. You want to give people hope, but not false hope.

**Based on your experience, what were Dic's chances?**

For a patient to survive cardiac arrest from trauma, maybe 5 percent, with 5 percent being very generous. Given the nature of Dic's wound, he was probably in the 1-to-2 percent range for recovery.

**Have you stayed in touch with Dic and his family since that night?**

I've seen them a bunch of times. It's nice to see him up and walking and talking. Plus, he and his wife have a baby who's just a little bit younger than mine.

**Do you see ER medicine any differently now?**

Not really—this is what we're trained to do. The job is humbling every day. **TM**



into the **big** picture

Elizabeth Kong, a geneticist by training, loves getting people excited about science. Now, as director of a brand-new exhibit space at the Museum of Science, she does that every day **BY BRUCE MORGAN**

PHOTOGRAPHS BY JESSICA SCRANTON



g

GOING TO THE NEWLY OPENED HALL OF HUMAN LIFE AT BOSTON'S Museum of Science was educational for me in more than one way. Among other things, I learned that I slouch like a broken-down old man when I walk, and I'm afraid of chickens.

These were starting points for wider explorations, all in the festive spirit of the enterprise that fills 10,000 square feet of space with dozens of clever, widely branching exhibits designed to pique visitors' curiosity about human biology and health and get them—adults and children alike—thinking anew. "Here you can move at your own pace, and then go and learn more," says Elizabeth Kong, Ph.D., '10, a scientist trained in human genetics and the inaugural manager of the exhibit that debuted in mid-November.

In effect, she has moved from the laboratory to Main Street since taking the museum job last year. The transition is a natural one for Kong, who remains messianic about the value of public education regarding all things scientific. For starters, she says, she wants to get people asking more questions about the world they live in. Rather poetically, she calls this deliberate, imaginative process "lifting the needle to the next level."

A tall, slim, naturally effusive figure, Kong escorts a visitor around the new space with a child's delight. The hall was configured only after extensive consultations with some 130 outside scientists, health clinicians and educators. The museum supplied the platform, and then worked with partners and vendors to create engaging interactive exhibits designed to spark curiosity and reflect the latest research. Now it's Kong's job to be the public face of science in all its mystery, fun and enchantment.

She is qualified down to her toenails. Phil Hinds, professor and chair of the Department of Developmental, Molecular and Chemical Biology, who served as Kong's mentor in genetics for six years, remembers how she showed up at his office in 2003 before he, new to the faculty, was unpacked and settled in at Tufts. "How did you find me?" he asked her in surprise. "But that was indicative of the way that Liz approached her science and her life—she identifies things she wants to do, and then goes after them and makes them happen."

Always a good, reliable bench scientist, in Hinds's estimation, Kong carried an extra talent that transcended the demands of the laboratory, where her work

concerned the molecular mechanisms of bone development and cancer. As Hinds puts it, "she was on the high end of thinking about science—always wondering what her project meant and what the next questions were. Liz leans toward thinking about the big picture of science." Mental leaps from small to large and back again, with flashes of excitement all along the way, came naturally to Kong.

When he heard about her job prospect at the Museum of Science, Hinds says he thought immediately, "This is a perfect fit for Liz." He urged her to pursue the opportunity, in part because it captured something he has always judged essential

to a scientist's social role. "As scientists, we need to be teaching the general public, exposing them to scientific thinking. If we don't communicate this information to the public, what good does it do?"

## CHICKENS AND MONKEY COUSINS

On this day, Kong shows me around the hall on its 10th day of operation. We approach an exhibit designed to measure the height of a visitor's arch. "Here, I'll hold your boots," Kong volunteers immediately. Once in my socks, I scan myself in, and at a signal, stride the length of a runway wired to register the pressure of my feet, all while my body is projected in silhouette on a flanking screen. Then I enter some data on a keyboard and learn that my arches score in a normal range, thankfully. But that unexpected lumbering image of me with my head pitched forward and my shoulders hunched—an unflattering low camera angle, perhaps?—will stay with me for a while.

A minute later, when some kids approach Kong to tell her that the exhibit's mechanism is not working right, she flips up a nearby cabinet lid and promptly adjusts some dials on a console to fix it. She



After moving a virtual ball through a maze, Connor Gibbs, 5, investigates his balance.



At left, exhibit director Kong relishes her new role. Below, Madeline Li, 7, discovers how human hands age over time.



rules this roost without a sideways glance.

For a year after completing her doctoral degree, Kong worked at a genetic testing company in Waltham, Mass., performing analyses and advising clients of the chances of their children developing various disorders, among other responsibilities. That was an isolated role, compared with this one. “I know about stem-cell differentiation,” Kong says, “and I love puzzles. But once you’ve solved a puzzle, what’s better than to take it out and share it?” The puzzles lie all around the exhibit hall, waiting to be cracked and shared.

“Do you look scared?” one exhibit wanted to know. I took the bait and sat at a monitor that tracked how much my pupils changed in size—a classic sign of excitement—while images of some common animals—a dog, a cat, a lion, a porcupine, among others—flashed in sequence on a screen in front of me. With each animal, I was asked to move a dial indicating my instinctive personal response between “like” and “dislike.” At the end, a review would show me how well what I said I felt aligned with my pupils’ reflexive assessment; it also compared my responses with

those of others. I thought I liked chickens just fine, but no, the eyes told a different story. Friends, I fear poultry of this sort.

There are more surprises to be found in the Hall of Life than anyone can absorb on a single visit. To my delight, one corner held an exhibit of cotton-top tamarins, monkey cousins, clambering from branch to branch behind plate glass. There was no eye dilation going on here, merely the pleasure of watching animals move. A group of kids were watching with interest when Kong turned and asked them why they

walk a few steps. Do you see what happens? Do you see how you want to raise your arms to keep from falling over? That’s why the tamarins have long tails. It’s for...” “Balance,” a boy said. “That’s right. It’s so they can keep their balance,” Kong responded, as the kids

“Once you’ve solved a puzzle, what’s better than to take it out and share it?” —ELIZABETH KONG

thought the tamarins had such long tails, given that they weren’t using them to grab on to the branches. The kids considered the question for a moment.

“OK,” Kong said. “I want you guys all to line up in a row with me right here.” The kids did so. “Now hold your arms down to your sides, like this [showing them] and try to

said, “hey, that’s cool,” turned their attention to something new and drifted away. Kong lingered for a beat. Anyone could see that she was completely in her element, and altogether happy, lifting the needle bit by bit. **TM**

*Bruce Morgan, the editor of this magazine, can be reached at [bruce.morgan@tufts.edu](mailto:bruce.morgan@tufts.edu).*

# tell me more

Because interviewing patients effectively is such a precious skill in medicine,  
Tufts has redoubled its emphasis on teaching students how to do it right

BY BRUCE MORGAN ILLUSTRATION BY BRIAN STAUFFER

THE PATIENT, A MIDDLE-AGED WOMAN, SAYS THAT 15 YEARS ago she found a small mass in her breast and drove herself to the doctor to have it checked out. The diagnosis was cancer.

Two Tufts medical students in the room proceed to ask the woman a series of routine questions—how she’s doing now, if she has had any further medical issues. It takes John Mazzullo, an assistant clinical professor, veteran of 31 years in the trenches at Tufts Medical Center, and a volunteer instructor in the patient-interview course for first-year students, to pick up on a seemingly minor detail in the story and inquire, “Are you saying you drove alone to see the doctor? Who was your support group when you learned you had cancer?”

It quickly comes out that the woman is divorced and lives alone, her family far removed in California. Her isolation and loneliness had been implicit in her story, lurking there in the background, but unspoken. “That was a pregnant detail. It was really sad to hear, but this information opened up an insight into the patient,” Mazzullo says later. “As doctors, we always need to be concerned about how the person with disease *handles* the disease.”

There’s more than altruism at work here. Research has shown that the more finely tuned a doctor’s appraisal and understanding of a patient, the better the outcomes for that patient. Accordingly, Mazzullo tries to teach his students how to listen with what he calls “a third ear” for the unspoken messages in what their patients have to say.

The process is about leaning forward in your chair, experts say. It’s about eye contact and nodding, giving encouraging responses, drawing the patient out. It’s about paying attention. It’s about expressing empathy—and it’s nothing new. It all goes back to Johns Hopkins Hospital co-founder Sir William Osler’s admonition to doctors in the waning years of the 19th century to “care more particularly for the individual patient than for the special features of the disease.” Francis Weld Peabody famously echoed the theme in his oft-quoted remark to the graduating medical students at Harvard in the fall of 1926: “The secret of the care of the patient is in caring for the patient.”

A generation or two went by at midcentury, and something big got lost in the shuffle. Mazzullo, who graduated from Columbia Medical School in 1969, remembers being handed a brochure and sent up on the wards—without guidance or words of advice—to see his





first patients. “It was terrible,” he says. Nor was this an isolated case. Asked to describe any lessons he might have received at Tufts concerning how to conduct the doctor-patient interview, Leo Shapiro, ’67, a psychiatrist who volunteers as an alumni instructor in the patient-interview course, gives a quick, rueful laugh: “None that I can remember. I just stumbled along and gradually got better at it.”

These days, Tufts is determined not to leave this essential professional skill to chance. During their first week of school, all medical students encounter patients on the wards who have volunteered themselves as interview subjects. They are immersed in a situation that has many students groping for words initially, but connecting with patients gets easier and more rewarding with practice. Instructors are a mix of alumni volunteers, faculty (both active and retired), upper-level students, social workers and nurses.

The potential payoff for the well-done patient interview is huge. Disgruntled patients—those who feel their questions and concerns have been brushed aside or altogether ignored—are common in modern medicine, even in cases where physicians may be highly skilled technically. The failure to connect is about more than hurt feelings. “Inattention to the person of the patient, to the patient’s characteristics and concerns, leads to inadequate clinical data-gathering, non-adherence and poor outcomes,”

a group of experts from seven U.S. and Canadian medical centers wrote in the *Annals of Internal Medicine* in 2001 in an article titled “‘Tell Me About Yourself’: The Patient-Centered Interview.”

“Growing evidence suggests,” the authors note, “that physicians who focus on the patient as well as the disease obtain more accurate and thorough historical data, increase patient adherence and satisfaction and set the stage for more effective patient-physician relationships.” In other words, the more we know about our patients, the better for everyone. The authors of the article go so far as to rank patience and curiosity among the most useful tools a doctor can lift from his or her medical bag—meaning, they explain, “curiosity to ask questions such as ‘Tell me about yourself,’ and patience to wait for the answer.”

#### TRICKS OF THE TRADE

Interviewing a person you’ve never met before is like trying to tap dance or play the cello without tutoring and extensive practice. It’s not something that anyone can do very well by instinct alone.

Ian Murphy, ’17, learned just how hard it can be to do this seemingly easy thing. “I’m an extrovert, and I thought I’d be

good at interviewing people,” says Murphy, who is president of his class. “My first patient was an 85-year-old man with bladder cancer. I found myself showing the man a lot of empathy, but shying away from gathering any medical information. There were questions I was afraid to ask. Afterward, my instructor, Evan Barnathan, ’14, pointed out that I shouldn’t have neglected the medical history side of things. He told me, ‘You need to balance acting as a physician and as a person when you do the interview.’”

Murphy took the advice to heart. “I got better,” he observes. “I transitioned from being a friend to a patient to being a physician and a friend to a patient.” By coincidence, Murphy had two nearly identical patients to interview at the

beginning and end of the course; he thinks of these two cases as “book-ends” for his learning curve. When everything is going well in a patient interview, the relationship in the room is dynamic. Murphy’s growing confidence enabled him to be more direct and at ease during his scheduled interviews, and as he relaxed more into his role, his patients grew more comfortable and began to volunteer additional details about their lives. The results were mutually satisfying and productive.

Nothing about this evolution was accidental. The Tufts course, scheduled on Thursdays from the end of August through the middle of November, is structured to focus first-

year students’ attention through theory, reflection, discussion, practice, presentation and group critique. A given week may concentrate on gathering a meaningful medical or social or sexual history from a new patient, with all the stammering and misdirection and silence that each topic may entail. (On this last point, Daniel Luther, ’14, a small group facilitator for the course, says, “Experiencing the awkward silence, and learning what to do with it, is part of the process.”)

The class approach is multifaceted. First comes an expert’s lecture or demonstration on some aspect of effective interviewing. Then, while organized in groups of four or five students—with two generally acting as designated interviewers, one as a scribe to document what is said and others as intent observers—the group moves with their instructor to conduct a pair of interviews that have been arranged for them. Later, students critique the interviews they’ve just seen and take turns presenting the day’s cases to each other in nutshell form. Finally, the instructors meet for an hour to review any issues that may have arisen during the day’s far-flung excursions.

Some volunteer patients are in one of the Tufts-affiliated hospitals, such as Tufts Medical Center or St. Elizabeth’s or the Lahey Clinic; other subjects, not necessarily sick or debilitated,

“I try to teach them about being caring and practicing medicine from the heart as well as from the head.”

—LEO SHAPIRO, ’67

reside in a network of Jewish Community Housing for the Elderly (JCHE) sites in the Boston area. Here, students get to see patients in their home environments. Reflecting on her experience in the course, Anita Mathews, '17, was touched by the JCHE residents' willingness to tolerate a bevy of wide-eyed students popping into their rooms. "As first-year medical students we didn't have much to offer them," she points out, "but they were kind enough to let us practice and sharpen our skills."

Mathews acquired more than expertise. She says that while improving her own interview techniques, she gained a deeper appreciation—a newfound measure of sympathy, really—for the patients' plight. "I realized how frustrating it can be to be a patient," she observes. "As a doctor, you go in and you're formulating plans for how to deal with the case, but as a patient, you have probably been waiting; you may be in discomfort, and you don't know what to expect."

Language barriers can often hinder a good connection, as Amy Lee, '02, knows well. She is a part-time faculty member who has helped teach students about the role of the interpreter in the patient-interview course since 2005. "One thing we do in our course is prepare doctors to care for a more diverse population, and that's important," she says. "Our students think it's going to be easy [to deal with language and culture barriers], and then they go try to do it."

Lee notes that many JCHE residents claim Russian or Chinese as their native tongue and have a limited command of English—a harbinger, to some degree, of the students' likely future patient populations. "When doctors have language barriers, they tend to cut things short," she notes, "and that means they're missing out on key information. We know that patients with language barriers have poor health outcomes. There are many factors, of course, but this is one of the biggest."

Making the effort to reach such patients is all the more important. Lee stresses eye contact with the patient—"That's critical," she says—and keeping the terms of the language used directed toward the patient. It's better to ask, "How are *you* today?" than to employ the cooler, more abstract phrasing, "What do you think the problem is?" Proximity to the patient matters a great deal, too. A triangular seating arrangement is best, says Lee, thereby allowing both the physician and the interpreter to keep their eyes fixed on the patient, fostering a kindred mood.

All this lavishing of attention on an individual patient may sound impractical to a doctor pressed for time. But many experts contend that if done right, the process doesn't have to take long. The authors of the *Annals of Internal Medicine* article write that a properly trained physician can obtain "a useful sketch" of a new patient in less than a minute. "In fact," they add, "studies show that contrary to intuition, permitting patients to state all of their concerns without interruption does not add substantially to the length of the interview."

To the welter of complications that can hinder good, trusting relationships between doctor and patient—language,

gender, age, race, economic status, to name a few—limited mental acuity may seem especially tough to overcome. But the psychiatrist Shapiro, who has worked with mentally disabled patients for many years, says that's really not the way it is, except in extreme cases. He routinely takes students to visit his patients at Tufts Medical Center and shows them just how similar the process of interaction can and should be. (All interviewed patients give their approval beforehand.)

"These patients are really not that different from anybody else," he says. "They are not incoherent or demented, and they can usually give a pretty good account of their condition. These are just people who may have had some difficulties." Shapiro works to get his students more comfortable with the patients' feelings—and their own. At the start, he says, students commonly worry about upsetting the patients and being too intrusive with their questions. Gradually, he gets them to shed their anxiety. Students are taught to ask, "Have you been suicidal?" or "Have you been hearing voices?" or "What's it like having a mental illness?"

Shapiro, who has been volunteering in the Tufts patient-interview program for nearly two decades, and even co-taught it with his son Max Shapiro, '09, during his son's last year of medical school, says he enjoys sharing "whatever knowledge I've accumulated over the years" with the doctors-to-be. "I try to teach them about being caring and practicing medicine from the heart as well as from the head," he stresses. After all, Shapiro adds with a laugh, "these students are the same people who may one day be caring for me."

Instructors generally play the role of quiet observers in the room, perhaps jotting a few notes while students conduct their interviews. Then, at interview's end, they may step forward and highlight a detail or two that the beginners have overlooked. Anita Mathews, '17, remembers her instructor, John Mazzullo, listening to one such case. "We talked to this one woman patient for 20 minutes or so," she relates. "Then, at the end, Dr. Mazzullo elicited that she was adopted—a major fact in the woman's medical history that we had missed.

"With another patient, he determined, after we had concluded our interview, that the man had been homeless. Dr. Mazzullo told us to ask more direct questions. You don't have to lose your composure, he said; there are ways to ask difficult questions in a sensitive way. He would tell us, 'No one gave me this guidance when I was a young doctor.' I got the sense that he was trying to pour into us this knowledge that he had fought for."

Year by year, it seems, the gift must be reclaimed. **TM**

---

*Bruce Morgan, the editor of this magazine, can be reached at [bruce.morgan@tufts.edu](mailto:bruce.morgan@tufts.edu).*

IF YOU ARE A TUFTS MEDICAL SCHOOL GRADUATE LIVING NEAR BOSTON WHO WOULD LIKE TO VOLUNTEER AS AN INSTRUCTOR IN THE PATIENT-INTERVIEW COURSE, PLEASE CONTACT SCOTT EPSTEIN, '84, DEAN OF EDUCATIONAL AFFAIRS, AT 617.636.2191 OR [SCOTT.EPSTEIN@TUFTS.EDU](mailto:SCOTT.EPSTEIN@TUFTS.EDU). MORE VOLUNTEERS ARE ALWAYS WELCOME.



Desforbes works with a research assistant in the hematology clinic.



# Remembering Jane

A virtuoso physician, teacher and hematologist, Jane Desforbes, '45, cared for patients in a way that has students and colleagues, decades later, still marveling at her example



HE WAS MANY THINGS. ONE OF FIVE WOMEN STUDYING with 98 men in the class of 1945, she brushed off any notion of sexism (“I had such good friends, it never rose as a problem,” she told a reporter years ago) and blazed her own trail. She was an extraordinary teacher, garnering teaching awards from her students at the medical school for 13 straight years. She was a top-notch editor. She was erudite; she was commonsensical. She lovingly held her patients’ hands and told them they could cry. She was a world expert in hematology—specifically anemia, sickle-cell disease and Hodgkin’s lymphoma. She admired mental rigor, disdaining frills. She maintained a magnificent backyard rose garden. Athletic from childhood, she loved driving and handled her car with such aplomb on Boston’s streets and European roads that her daughter says admiringly, “She could have driven at the Indy 500.”

What’s not to like? Jane F. Desforges, ’45, professor emerita, who died last September, laid down a stringent new standard in everything she did and left a glowing legend behind. Unfortunately, I never got the chance to meet her. Desforges retired in 1995; I arrived at Tufts in 1998. Talking with those who knew Desforges in her prime, I got the sense of having narrowly missed a titanic force of nature. People were still shaking their heads in wonder at the figure she cut, 30 or 40 years after the fact.

Desforges was the daughter of Joseph Fay, a 1908 graduate of Tufts Medical School who was a general practitioner in Melrose, Mass. His example left its mark. After majoring in chemistry at Wellesley College, Desforges followed her father’s path into medical school at Tufts. “I didn’t have any grand visions of saving the world,” she confessed later. But she came in for an early stroke of good fortune nonetheless. Students were grouped alphabetically by last name, and so Fay and Gerard Desforges, ’45, were frequently matched, including for

a first-year anatomy class where the pair carried on a flirtation of sorts.

Subsequently, during a dance held at Boston’s Statler Hotel, “I kept trying to get his attention,” Desforges later told her daughter, Janie Desforges. Something clicked. The pair wed in 1948 and were married for 63 years, until Gerard’s death in 2011. “It was a match made in heaven,” says Janie.

From 1950 on, the couple shared a home on Lake Avenue in Melrose, occupying the same house where Desforges had grown up. It was a storybook kind of life. He was a thoracic surgeon; she a hematologist. Their home’s backyard sloped down to a pond, and here, on the hillside, they taught their daughter how to ski. Both husband and wife were avid gardeners, cultivating vegetables and roses. Neighborhood children were always welcomed onto the property, “where we spent countless hours collecting chestnuts from the gigantic trees. [Desforges] and her husband invited us to sled down the slopes right out onto the pond,” Ellen Peterson, a neighbor, wrote in an online condolence

book at the time of Jane’s funeral, before adding wistfully, “Seeing the two of them walking hand-in-hand to Mass or around the pond is one of my favorite memories.”

Professionally, meanwhile, Jane Desforges didn’t miss a beat. After her two-year residency at Boston City Hospital (BCH) following graduation, she had ventured out to Salt Lake City to work with the noted hematologist Maxwell Wintrobe and hone her research skills. She returned to Boston to get married and held a variety of jobs at BCH, rising steadily over the next 25 years from research fellow in hematology to director of laboratories and physician-in-charge of the Tufts hematology laboratory, then housed at BCH.

Robert Schwartz, a hematologist who had been at Tufts since the 1950s, first working under legendary hematologist William Dameshek and later serving as chief of hematology/oncology from 1978 to 1990, had grown aware of Desforges during her tenure at BCH. He had heard her speak at conferences around the country and knew of her eminence in the field. Schwartz’s first direct contact with Desforges came in the form of a rejection letter he got from the *New England Journal of Medicine*, where she was an associate editor from 1960 to 1993 (and where Schwartz would later serve as deputy editor).

“I decided to call and find out why my paper had been rejected,” Schwartz relates. “Jane answered the phone and told me it was because they already had a paper showing the same thing. I countered this by saying, ‘Well, wouldn’t it be good to have a second paper on the topic?’ She said, ‘Yes, that’s a good idea. We’ll do it.’ That was her

**BY BRUCE MORGAN**

all the way: no-nonsense, no agonizing over decisions. It was like: 'Just give me the facts. I'll tell you what to do.'

The two had good chemistry from the start. By the time Desforges saw her job at BCH eliminated as part of a general cutback in 1972, she was widely respected for her leadership and acumen. Schwartz asked a colleague if he had seen the news of her availability in the *Boston Globe*. When the colleague said yes, he had, Schwartz couldn't restrain his excitement at the possibilities. "I'm going to go stand on the front steps of Boston City Hospital," he exulted, "and wait for her to come out."

#### WHITTLED DOWN AND LEAN

The direct, emphatic approach that Schwartz used to entice Desforges to come to Tufts—because, of course, she did say yes to his entreaties—suited her to a T. She never liked dithering, or doing things at a slant. "What you see is what you get with Jane," her husband and classmate told the *Tufts Medical Alumni Bulletin* (this magazine's predecessor) for a profile written in 1989. "She's pretty uncomplicated and absolutely honest."

Lisa Watts, the author of that profile, got the chance to observe Desforges in action. "The doctor who inspires such awe and praise stands, perhaps surprisingly, at less



*"My students would say I emphasize logic, common sense and focusing. I stress not doing 20 different tasks at once. If we're not parsimonious, then we're not thinking."*

—JANE F. DESFORGES, IN A 1989 INTERVIEW

than five-and-a-half feet tall," she wrote. "At 67, she is as small-boned and thin as ever, but she is not fragile. On rounds, leading the house staff from the third floor of Proger to the sixth, she's the first one out the door to the stairs and up three flights, leaving students 40 years her junior short of breath."

"My mother," confirms Janie Desforges, "had unbelievable energy." As a high school student in Melrose she played field hockey, basketball and softball, captaining her teams. In college she pursued field hockey and fencing. Then she took up medicine and kept her motor revved in that dominion, too. From all accounts she had an alert, tenacious quality to her life.

Janie remembers one time, when she was a graduate student, visiting her parents at home in Melrose; suddenly she realized she had a flight to catch and not much time to

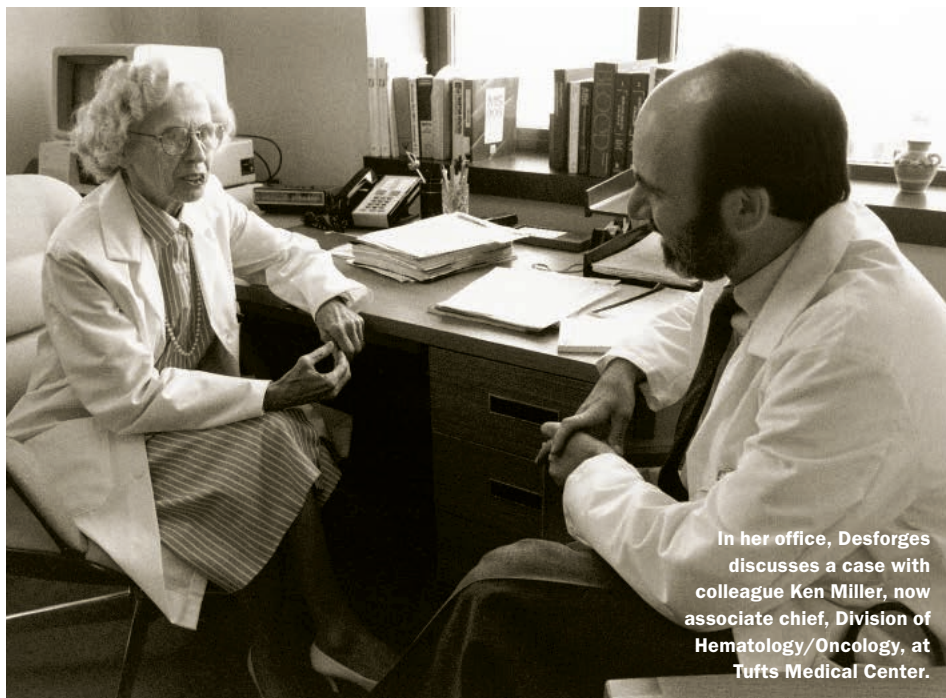
spare. She and her mom scrambled into the car and raced toward Logan Airport, her mom at the wheel, slicing through the back streets, utterly composed and confident. "I remember thinking, I don't know a boy who can drive like this," says Janie.

Desforges' mental traits reflected her athleticism. They, too, were whittled down and lean. "My students would say I emphasize logic, common sense and focusing," Desforges told Watts in 1989. "I stress not doing 20 different tasks at once. If we're not parsimonious, then we're not thinking." Schwartz, who worked for a while beside Desforges at the *New England Journal of Medicine*, recalls the degree to which the two of them enforced an old-school Yankee ethic in their editing style, saying, "Jane and I disliked adjectives and adverbs in scientific articles. We crossed them out wherever they appeared in a manuscript. There is no point in writing, 'Our results are very interesting. . . .' That's a judgment best left to the reader."

The doctor's reticence concealed a detailed and profound understanding of her field. Schwartz, a world-famous scientist in his own right who served as Desforges' boss in the Department of Hematology/Oncology at Tufts for more than 20 years, says simply, "She knew more hematology than anyone I ever met. She was a walking encyclopedia of hematology, but she never paraded it around."

Desforges' knowledge shone at the clinical conferences that the pair held for fellows each week. As a rule, Schwartz would introduce a case, and then turn to his colleague and say, "Jane, what's your opinion of this case?"

"I would let her lead the discussion," he admits. "I mean, I was pretty good—I don't deny that—but she was superb. Students loved to see the way the mind of a master clinician works."



In her office, Desforges discusses a case with colleague Ken Miller, now associate chief, Division of Hematology/Oncology, at Tufts Medical Center.

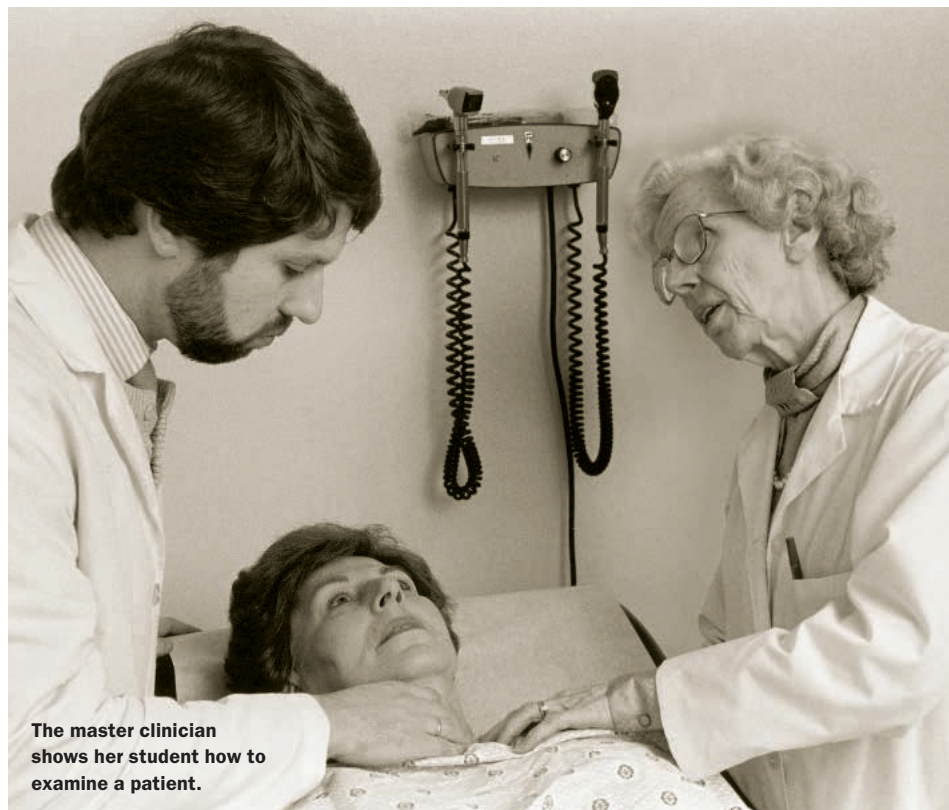


“We were lambs to slaughter, so to speak” John Erban, ’81, says jokingly, remembering those days. “But you always left more educated than when you went in.” Erban, medical editor of this magazine, professor of medicine and a breast cancer specialist at Tufts Medical Center, got extensive exposure to Desforges during his time as a medical student, when he worked with her in the lab over two summers, and later, when he trained under her as a fellow in hematology. Often he was lucky enough to be standing “at her elbow” as she saw patients. “She was an extraordinarily principled and ethical physician. I learned a tremendous amount from her about how to be a physician,” he says. Schwartz estimates that Desforges trained as many as 250 hematologists over her career.

Desforges was a complex package, and different people took away different things from her example. For Christine Peterson, ’76, (Ellen Peterson’s sister), who grew up on the same Melrose block with Desforges, the fact that her neighbor was a woman with a professional life and a family life and a community life rang like chimes. “That was her most important function in my life, being a role model,” says Peterson, who works as an obstetrician/gynecologist in student health services at the University of Virginia. “You have to remember the thinking in the 1970s that said women can’t go to medical school and also have a family. She was proof that you could do it.”

For David Schenkein, who first met Desforges as an intern and fellow in the early 1980s—and who is now CEO of a Boston-area biotech company doing research on cancer therapeutics, as well as an adjunct clinical professor at Tufts—it was her uncommon balance of smarts and common sense that impressed him.

Desforges and he saw many patients together. Often, he relates, he would argue for one approach to a patient’s condition, based on the technical merits; she would respond with a simpler alternative. “I can think of a dozen or more cases where I suggested one thing and she said no,” Schenkein relates. “She was the epitome of [that realm] where medicine is more than just a science, it’s an art form. And she was an artist in how she did it.” In 1988 Desforges was the first woman to receive



**The master clinician shows her student how to examine a patient.**

the American College of Physicians’ distinguished teaching award, which was named in her honor in 2007. Schenkein keeps a photo of Desforges on his desk for inspiration and says there is not a day that he doesn’t think about her example.

#### HOW TO EAT LUNCH

At home the great doctor could be subdued in her habits. Janie Desforges describes her mother perusing medical manuscripts in the evening, a giant stack of rejected submissions off to one side, perfectly content to be spending time alone. “She was very interior,” Janie observes. “She didn’t go to parties and chat over guacamole—that didn’t really interest her. She wanted to talk with *you*.” Desforges’ ability to connect with her patients came from that quiet inner place.

Schwartz recalls her empathic style. “She might have a patient with acute leukemia,” he suggests. “She would go to that patient and explain the disease, describe the treatment and offer hope before asking, ‘Do you have any questions?’ Then, before she went home at the end of the day, she would go back to that person and say, ‘I just want to be sure you understand everything we talked about.’ Very few doctors do that,” he says.

“She was a somewhat reserved person,” Schenkein confirms. “You’d never go out for beers with her, but she had an uncanny

connection to her patients at a very human level, and made them feel comfortable in a context of often life-threatening disorders. She would touch their hands and talk about the patient, and know that that patient had a brother who had been in the hospital, and remember what occupation that brother had.”

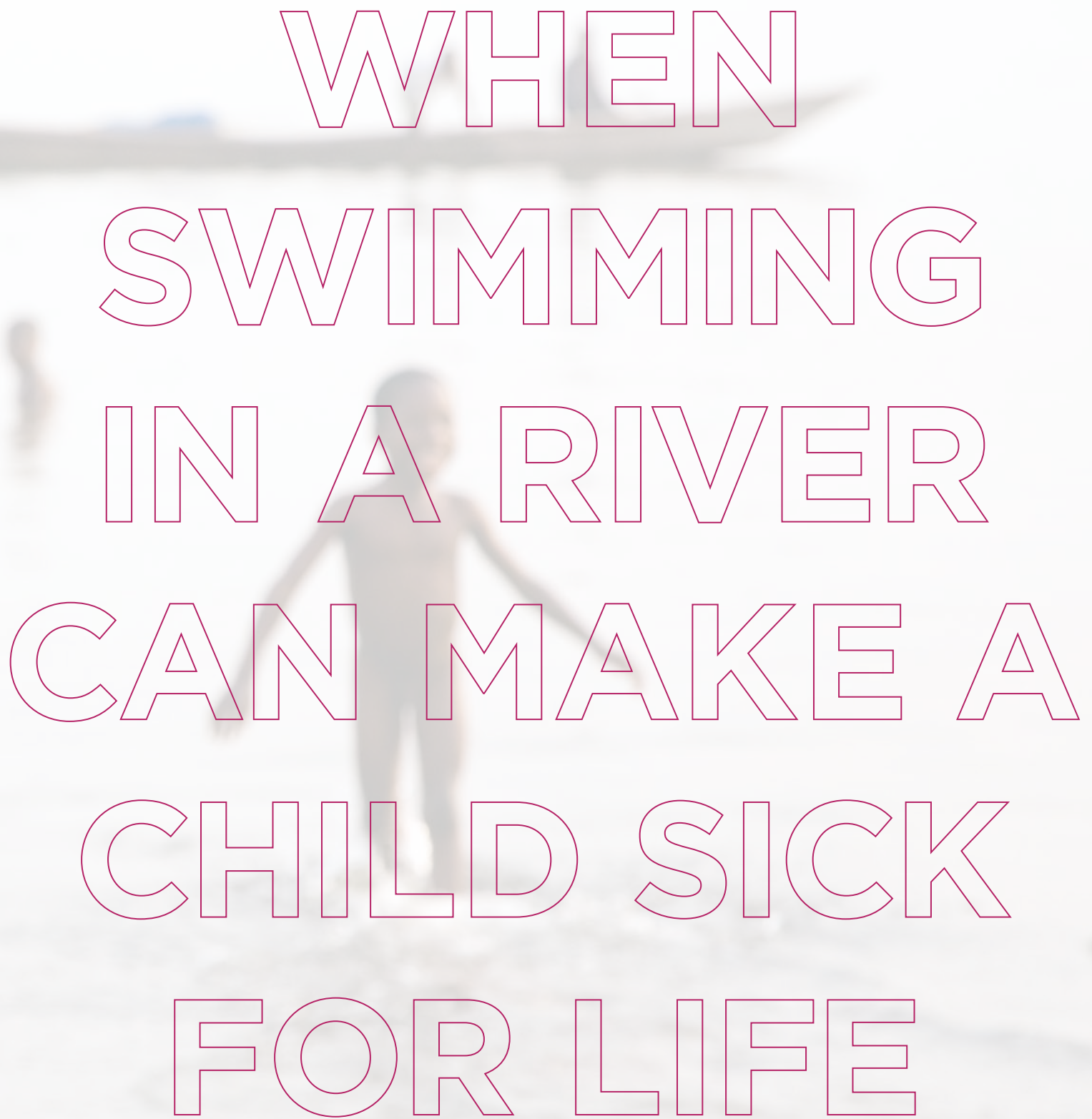
Associate Professor Rachel Buchsbaum, who trained in hematology/oncology under Desforges in the late 1980s, saw the same thing. “She was someone who was this great person of national and international reputation, but she remembered all the details of her patients’ lives. She could tell you that Mr. So-and-So was very proud of his tomato plants.” Desforges would routinely sit down and eat lunch with her students, Buchsbaum says, at a time when no other faculty members she knew made such efforts.

Jane Desforges died on September 7, 2013, at age 91. She lived her life humbly and unassumingly to the end. Janie recounts how, after the funeral, she went through the house, rounding up her mother’s artifacts, and in one room found “all these accolades leaning up against the wall. They were all framed, but I had never seen them before. My mother had never bothered to put them up on the wall.” **TM**

*Bruce Morgan, the editor of this magazine, can be reached at [bruce.morgan@tufts.edu](mailto:bruce.morgan@tufts.edu).*







# WHEN SWIMMING IN A RIVER CAN MAKE A CHILD SICK FOR LIFE

**At a handful of labs in the world, including several at Tufts, the hunt is on for a cure for a debilitating infection that afflicts 200 million people**

**BY JACQUELINE MITCHELL**



**T**HIS SOUNDS LIKE THE PLOT LINE OF a horror/sci-fi movie: A freshwater parasite slips through the skin and into the bloodstream. Once inside, the invader lives and breeds undetected for a decade or more, feasting on nutrients in the blood and fueling a debilitating and sometimes life-threatening illness in millions of people around the world. Except this is the true biological tale of the schistosome, a parasitic worm that has infected an estimated 200 million people. Sometimes called blood flukes, schistosome worms have been around—and infecting people—for a long time: Scientists have found evidence of them in Egyptian mummies. In 2011, more than 28 million people around the globe, the vast majority of them in Africa, were treated for schistosomiasis, the disease caused by the worms, according to the World Health Organization (WHO).

Also known as snail fever, schistosomiasis is a disease of poverty, second only to malaria in terms of its toll on human health, according to WHO. The lack of clean drinking water and adequate sanitation creates ideal conditions for the parasite, which is carried by freshwater snails, to infect the body when the skin comes into contact with infested water.

More than 200,000 people die from schistosomiasis each year, prompting the U.S. Centers for Disease Control and Prevention to call the infection the world's most deadly neglected tropical disease.

It is not known exactly how the parasite, part of a class of worms known as helminths, breaches the skin, or how it navigates through the body. An even bigger mystery is how the adult worms are able to live for so long inside their human hosts—five, 10 or even 15 years—without the immune system killing off the invaders.

"They're quite big, these worms," says parasitologist Patrick J. Skelly, who runs the Cummings School of Veterinary



Patrick Skelly holds up a vial of schistosome worms. "They're quite big," he notes.

Medicine's Molecular Helminthology Laboratory with Charles B. Shoemaker. He removes a small vial from his desk drawer and holds it up to the light. Perhaps a dozen whitish worms are clearly visible, the size and shape of this capital letter G. Yet, Skelly notes, "We don't see the host's immune system attacking them."

Normally, the body is pretty good at noticing when it's being attacked. Immune cells act like sentinels, patrolling the bloodstream. When they encounter suspicious foreign cells, the body mounts a full-blown immune response to ward off the attackers. But with schistosomiasis, the body responds not to the worm itself but to the parasite's eggs, which leads to symptoms of disease, including gut pain, chronic diarrhea and anemia.

So how do adult schistosome worms manage to slip by the body's defense system without raising an alarm?

An individual worm can live as long as 15 years in the human bloodstream, the "harsh-est immune environment in the body," says Akram Da'darah, a research assistant professor in the Molecular Helminthology Laboratory. "Over thousands, possibly millions of years, they've evolved a way to mask themselves inside their hosts."

Exposing the adult worms' cloak of invisibility is the Tufts research team's target, Skelly says. "How can they be so stealthy?

How come there are no blood clots or immune cells around them? What are they doing to turn these things off?"

The answers to such questions could lead to new drugs or vaccines to treat or even prevent schistosomiasis.

#### A MODERN PLAGUE

Nearly 780 million people worldwide—nearly a tenth of all inhabitants of the planet—are at risk for developing schistosomiasis. More than 90 percent of those infected live in Africa, though WHO reports the disease is also found in Asia, Latin America and the Caribbean. Because the parasites' eggs exit their human hosts via urine and waste, people without access to clean water and sanitation are almost guaranteed to contract schistosomiasis at some point in their lives.

Ten percent of those infected each year, about 20 million people, will develop acute schistosomiasis, which can cause renal failure, bladder cancer or enlarged organs.

But even the less-severe effects of the infection have a dire impact on people's lives. Schistosomiasis' vague but debilitating symptoms lead to stunted growth in children. Researchers also have found an association between the infection and poor school performance in children in Mali and between short-term memory and reaction

time in schoolchildren in Tanzania, where more than half of the African nation's 43 million residents carry the parasite. In infected adults, schistosomiasis reduces fertility and can make it difficult to perform physical labor. Both factors contribute to declines in household income, mainly in agricultural and fishing communities where the disease is endemic.

"Schistosomiasis is the leading gynecological affliction in girls and women in sub-Saharan Africa," says Peter Hotez, founding dean of the National School of Tropical Medicine at Baylor College of Medicine. "It actually causes poverty because of its long-term impact on child development and worker productivity."

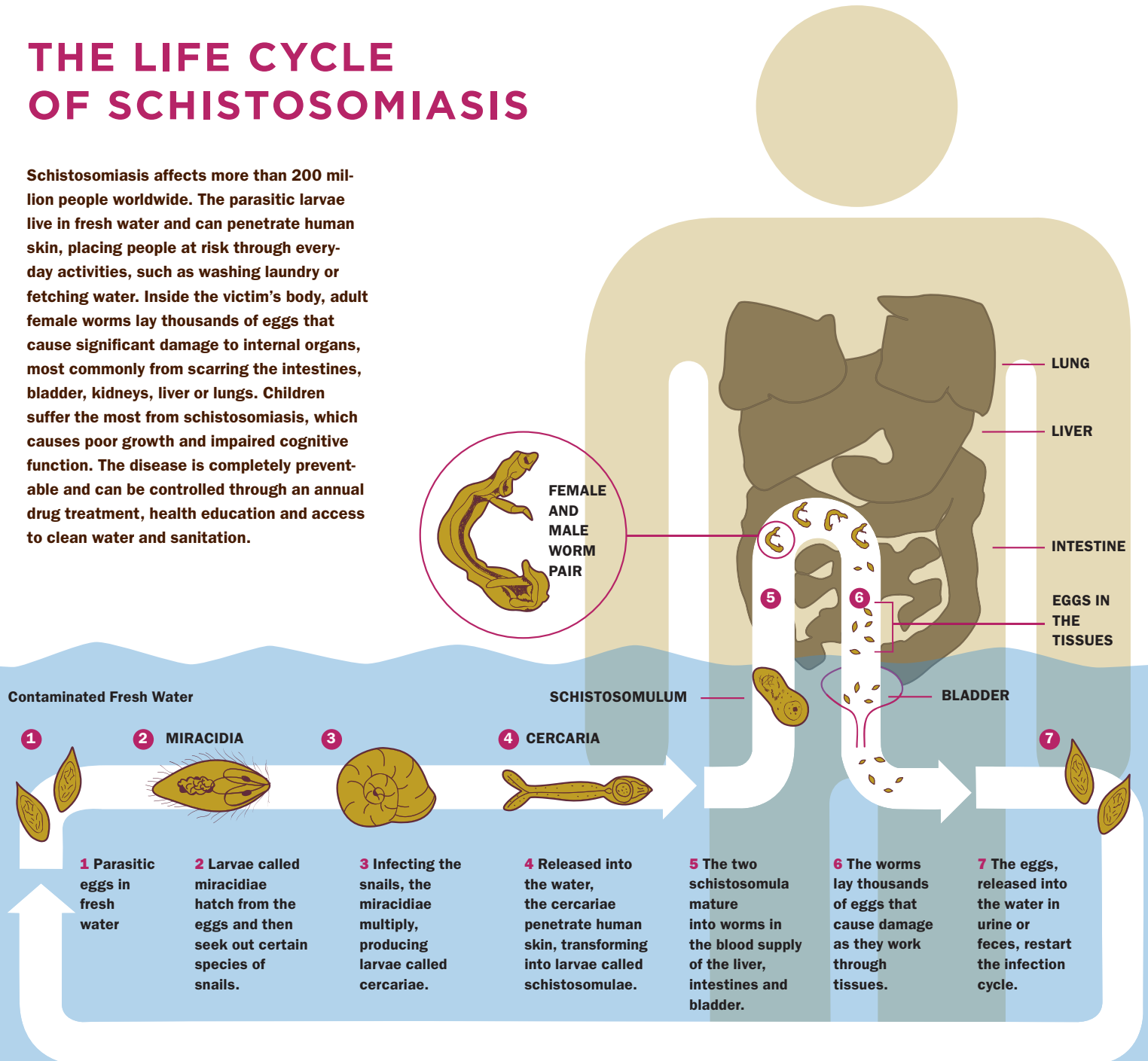
In addition, there's growing evidence

that schistosomiasis significantly increases a person's risk for contracting the virus that causes AIDS.

The laboratories at Tufts and Baylor are two of just a half-dozen or so in the world working on new drugs and vaccines to treat and prevent the infection, says Hotez, who is also president of the Sabin Vaccine Institute, the global nonprofit dedicated to developing

## THE LIFE CYCLE OF SCHISTOSOMIASIS

Schistosomiasis affects more than 200 million people worldwide. The parasitic larvae live in fresh water and can penetrate human skin, placing people at risk through everyday activities, such as washing laundry or fetching water. Inside the victim's body, adult female worms lay thousands of eggs that cause significant damage to internal organs, most commonly from scarring the intestines, bladder, kidneys, liver or lungs. Children suffer the most from schistosomiasis, which causes poor growth and impaired cognitive function. The disease is completely preventable and can be controlled through an annual drug treatment, health education and access to clean water and sanitation.



new vaccines—and increasing access to existing ones—to improve living conditions in the world’s poorest countries.

Based on findings out of Johns Hopkins University, Hotez suspects the prevalence of schistosomiasis among Africans is too conservative, maybe by half. “This is the most important disease you’ve never heard of,” he says.

### THE WORM GUY

“If you want to study life, you should probably study parasites,” says Skelly, who is known as the “Worm Guy” among his colleagues. “There are far more parasitic creatures than nonparasitic creatures,” he notes. “The more you learn about them, the more you are aghast. They are just unbelievable.”

For example, it takes mere minutes for a schistosome worm to invade the body. Once inside, the parasite travels through the bloodstream to the blood vessels of the liver, where the worm matures and finds a mate. A few weeks later, the pair migrates to their final

of and how it interacts with blood components—to figure out how the adults thrive unnoticed inside their hosts for so long.

Lacking a traditional mouth and digestive system, schistosomes absorb the sugar glucose from human blood through their own skin, using specific glucose-transporting molecules as their eating utensils. It’s such a crucial function that Skelly and Shoemaker figured the glucose transporters, which act like tiny revolving doors, must be among the worms’ least furtive skin proteins. “They have to put [glucose transporters] out to make contact with the blood,” Skelly says. “They can’t hide them. If you want to get the sugar, you have to stick those things out there.” If the scientists can isolate and generate a sufficient quantity of the glucose transporter or another schistosome surface molecule, it could form the basis for developing a vaccine. In theory, introducing a single such schistosome protein into the body as a vaccine could train the immune system to react to the foreign

technique to alter production of the enzyme, the worm could no longer infect the host.

“It had been known for many years that [the enzyme] was probably there, but no one was able to identify it,” says Da’darah. “We were able to isolate it.”

Now the search is on to find a way to disable that enzyme. Da’darah has screened nearly 2,000 known chemicals to see whether one might be the magic bullet. So far, he has 12 promising candidates. If any of them can interfere with the enzyme enough to compromise the worm’s ability to infect its host, it could lead to a new drug to treat the disease.

Currently, there’s only one drug, praziquantel, that cures schistosomiasis, killing the adult worms in the human host’s bloodstream. It’s a great remedy if you’re an American who got infected during a trip to Africa. But if you live there, you’re likely to become reinfected the next time you come into contact with water infested with the parasite-producing snails.

Humanitarian aid programs routinely use praziquantel to treat schoolchildren in high-infection countries, such as Nigeria and Tanzania. An annual dose eliminates the infection, and there’s evidence that such treatment reverses some of the growth-stunting and cognitive impairment linked to chronic schistosomiasis.

“We’re doing better with mass drug administration,” says Baylor’s Hotez. “But I’ve argued that approach alone will not lead to the elimination of schistosomiasis.” And, he notes, there have been unsubstantiated reports from the field (there’s no funding to find out for sure) that the drug may not work as well as it once did, much like prolonged use of antimalarial drugs leads to resistant strains of the parasite that causes that disease.

“We would never think about trying to conquer AIDS or malaria with a single medication,” Hotez says. “We desperately need to intensify our efforts to control schistosomiasis, as a disease in its own right and as a backdoor strategy for preventing HIV/AIDS. For that, we’re going to need a vaccine.” **TM**

*Jacqueline Mitchell is a senior health sciences writer in Tufts’ Office of Publications.*

NEARLY 780 MILLION  
PEOPLE WORLDWIDE  
ARE AT RISK FOR  
DEVELOPING  
SCHISTOSOMIASIS.

destination, the blood vessels around either the gut or the bladder, where the female lays her eggs—several hundred in a single day. The eggs bore through the blood vessel walls and wind up in the colon or bladder, from which they exit the body as waste. The eggs hatch in fresh water, where they infect the snails and begin the infection cycle anew.

Skelly notes that he’s less a schistosome parasite expert and more an authority on the worms’ skin. “That’s what’s touching the blood, of course.”

And it is the worm skin that the Tufts researchers are studying—what it is made

substance. Then, should a real worm appear, the body would be programmed to recognize and attack it.

Skelly and Da’darah are also looking for other chinks in the schistosomes’ armor: skin proteins that might make vulnerable targets for new drugs. In 2003, the pair pioneered a technique called RNA interference, by which they were able to switch off the parasite’s genes. Recently, they discovered a gene containing the blueprint for a certain skin protein, an enzyme called a non-neuronal acetylcholinesterase. When the scientists used the RNA interference





## A RIVER RUNS THROUGH IT

### Clean water is as important as new drugs for controlling schistosomiasis

For a schistosome worm, a ramshorn snail makes a mighty nice incubator. The worm's eggs hatch in fresh water, where the tiny newborn parasites infect the snails and emerge like tiny pollywogs, with bulbous heads and long tails. The "tadpoles" go on to infect people who come into contact with schistosome-infested water.

One way to interrupt the parasite's life cycle—and thus control the disease schistosomiasis that has infected 200 million people—would be to get rid of the snails, but that would be costly over time and might poison other aquatic animals. Another option is to prevent people from coming into contact with snail-infested water in the first place, says Karen C. Kosinski, an assistant professor of public health and community medicine at Tufts School of Medicine.

Kosinski has been studying schistosomiasis in Ghana—a West African nation where it's estimated that nearly two-thirds of people are infected—since she began her doctoral work in civil and environmental engineering at Tufts in 2006. (She received her Ph.D. in 2011.)

Kosinski and her Tufts colleagues—David M. Gute and John Durant from the School of Engineering, Miguel J. Stadecker from the Sackler School of Graduate Biomedical Sciences and Jeffrey Griffiths from the medical school—visited Ghana in 2007 to work with officials there to rein in schistosomiasis. As they ate lunch near an outdoor fountain close to the Akosombo Dam on the Volta River, Kosinski, Stadecker and Bill Fusco, a graduate student, had a thought: If the kids had another source of water in which to play instead of the river, would schistosomiasis decline?

"It would be great if everybody had access to drugs, but they don't," says Kosinski, who notes that even a 67-cent dose of praziquantel, the only drug that can cure the parasitic infection, costs more than many Ghanaians can afford. In many parts of Ghana, she adds, the drug is not available.

When the team screened school-age children in the town of Adasawase for the disease, it found that 60 percent of the boys and 40 percent of girls were infected. The children, who often played in the Tini River, complained of painful urination. "These kids didn't want to drink any water, because they didn't want to have to pee later," says Kosinski.

After coordinating with local officials, Kosinski led an interdisciplinary team from Tufts, Worcester Polytechnic Institute and Noguchi Memorial Institute for Medical Research at the University of Ghana to build a concrete pool where the children could play and cool off. Johnny Crocker, E07, designed the pool so it would be filled with rainwater and be inexpensive to maintain. It opened in 2009.

Just a year later, schistosomiasis infection rates among the children had dropped to below 4 percent. The team's findings were published in *PLOS Neglected Tropical Diseases* in 2011.

"Just because it's cost-effective doesn't mean it's sustainable," says Kosinski, who notes the community still wasn't able to pay to maintain the pool, which is now closed. She and her team continue to work with community members in Adasawase to find a way to reopen the pool and keep it that way. —J.M.

## Inside Obamacare

One of the architects of the Affordable Care Act talks about its lesser-known benefits by **Jacqueline Mitchell**

**S**INCE IT BECAME LAW IN 2010, THE PATIENT PROTECTION AND Affordable Care Act (ACA) has been one of the most hotly debated pieces of legislation in recent years. It continues to be controversial as it is implemented. For more than 15 years, Harry P. Selker, dean of the Tufts University Clinical and Translational Science Institute (CTSI) and professor of medicine, worked closely on the issue with policymakers, including with the offices of the late Sen. Edward M. Kennedy (D-Mass.), Sen. Max Baucus (D-Mont.) and Rep. Henry Waxman (D-Calif.).

Selker is a national leader in translational science, which aims to bring high-impact, cost-effective health care out of the lab and to the patient—the so-called “bench to bedside.” But translational science shouldn’t stop there, says Selker. Good research, he says, makes for good public policy.

Selker and June Wasser, instructor of medicine and former Tufts CTSI executive director, are the editors of a new book, *The Affordable Care Act As a National Experiment: Health Policy Innovations and Lessons* (Springer), in which leading health-policy experts examine the history, objectives and impact of the law that has become known as Obamacare.

Selker took a moment recently to talk with us about how the law will improve America’s health-care system.

### **Tufts Medicine: What changes will consumers feel immediately?**

**Harry Selker:** The first thing we’re going to notice is that millions more Americans will be able to get health-care insurance—ultimately 23 million.



“The challenge going forward is to be sure that care is integrated, effective, cost-effective and humane and that we as a nation can afford it,” says Harry Selker.

We as a nation, I think, have an obligation to provide health care as a basic need of life for our citizens. It’s a profoundly important responsibility in support of health, welfare and fulfillment of potential.

As part of this expansion of coverage, there are other key changes that most people already know about. People with pre-existing medical conditions now will be able to get coverage, and insurance can’t be dropped as soon as a person gets sick, so that long nightmare is over. And for those covered by Medicare, Part D prescription drug coverage is enhanced so the “doughnut hole” in payment coverage now is filled. This means that more people will be able to afford their medication because less will be required out of pocket.

### **What are some of the lesser-known elements of the new law?**

**A:** Other parts of the law pertain to payment for medical care. The ACA has increased reimbursement for primary-care physicians, which is crucial. Right now there aren’t enough primary-care physicians, in part because they aren’t paid adequately. The financial incentives are greatly skewed toward the performance of procedures and the specialists who perform them. Thus, young physicians with large debt loads from medical school feel they cannot afford to go into primary care. The ACA attempts to change this.

There are also important components of the ACA that crack down on insurance fraud and abuse, increase transparency in the flow of insurance funds and require that at least 80 percent of insurance dollars be used for patient care.

Ultimately, by these and other measures, the ACA will change the way medicine is practiced. It will help change from care that is based on fee-for-service to a model of coordinated payment that should support care based on what is best for the patient and most efficient—a needed change that has been recognized for decades.

Another expansion of coverage is that the

ACA has provisions that will allow people who are disabled to get help at home so they can stay there. It's much more humane.

**Does the ACA do research on the improvement of health-care delivery?**

**A:** Embedded in the ACA is the creation of two research centers: the Patient-Centered Outcomes Research Institute and the Innovation Center at the Center for Medicare and Medicaid Services (CMS).

The newly created CMS Innovation Center was allocated \$10 billion to spend over 10 years on projects to find ways to make health-care delivery more attractive, effective and efficient. For example, if Medicare paid for more home health-care services and attention to home conditions, might it avert illness or injuries that would lead to hospitalizations?

A novel and crucial aspect of the role of the CMS Innovation Center is that as its research provides ways to deliver care better, these findings can be directly implemented to improve national health-care policy. The law allows the Secretary of Health and Human Services to implement the new policies immediately, rather than waiting for congressional action—or inaction—as has been the case for Medicare policy changes in the past.

**What will the patient-centered outcomes institute do?**

**A:** Those of us involved in writing the legislation creating the Patient-Centered Outcomes Research Institute (PCORI) saw it as a way to support research that will inform patients, doctors and the public about the comparative effectiveness of various treatments. It was framed to provide information that will help people make good decisions.

The trade-offs made in creating PCORI illustrate some of the “sausage making” that characterizes writing legislation. In assessing the financial impact of the ACA—which was a critical aspect of the overall legislation, as there were limits to how much it would be allowed to cost—the nonpartisan Congressional Budget Office identified PCORI as one of the parts of the ACA that would save money. By conducting comparisons between treatments, then the least expensive one could be chosen.

The challenge going forward is to be sure that care is integrated, effective, cost-effective and humane and that we as a nation can afford it. There will be more changes down the road. If what we did here in Massachusetts was health-care reform 1.0, the ACA is health-care reform 2.0. We still have a lot more to do.

## NEUROSCIENCE ADDITIONS



The Department of Neuroscience has added two new researchers to its ranks, **Thomas Biederer**, an associate professor, and **Dong Kong**, an assistant professor.



Biederer completed his Ph.D. at the Humboldt University of Berlin and did

postdoctoral research before taking a faculty position at Yale University. His research interests focus on the roles of SynCAMs and other synapse-organizing molecules in synapse development and plasticity.

Kong completed his Ph.D. at Nanjing University in China before proceeding to Harvard Medical School and Beth Israel Deaconess Medical Center. His research uses multidisciplinary approaches to investigate neurocircuits in the hypothalamus-controlling mechanism.

## To Be of Service

**T**en first-year medical students have been selected for the inaugural class of the Service Scholars Pathway Program, the medical school's new initiative to train students to work in underserved urban areas and equip them with the tools to help patients and communities overcome barriers to health.

“Many students go to medical school because they want to change the world, but interested students don't always gain the experiences or skills they need to specialize in serving the underserved,” says Randy Wertheimer, the Jaharis Family Chair in Family Medicine, who developed and oversees the program. “The Service Scholars Program will give these medical students the tools and the ability to

go out and make a difference by helping those most in need.”

The Service Scholars will receive specialized training in community medicine and will work with Boston-area communities over the course of their medical education to develop a better understanding of the needs, challenges and opportunities facing underserved populations. Students will also learn from one-on-one and group mentoring with physicians practicing in underserved settings. A longitudinal project devoted to community-based research, intervention or advocacy will enhance their development.

Generous gifts from the Bingham Trust and an anonymous donor will fund curriculum development and scholarships for the program.



# Diversity Council Issues Final Report

**T**HE UNIVERSITY COUNCIL ON Diversity's final report, released in December, outlines specific measures to achieve greater diversity among the student body, faculty and staff and to ensure that Tufts promotes and embraces a culture that is welcoming to all.

Among the report's recommendations are hiring a chief diversity officer, increasing financial aid to attract and retain talented students who traditionally have not considered Tufts, examining curricula and other programs to ensure they support diversity and inclusion, and articulating more clearly how central these values are to Tufts' mission and vision.

The report stresses that fostering diversity and inclusion is the shared responsibility of the entire university community. "The council believes that Tufts is well positioned to be an institutional leader and live up to its values in these areas," the report states.

"Diversity drives excellence in our academic mission," says President Anthony Monaco, who established the Council on Diversity in early 2012 and underscored the importance of the initiative by chairing the group. "Having faculty, staff and students who come from different backgrounds and have different perspectives enriches everyone in our community."

A diverse campus environment, he notes, is equally essential to the success of Tufts graduates, who will live and work in an increasingly multicultural society.

The council, made up of faculty, staff and undergraduate and graduate students, consulted extensively with the wider Tufts community during its 18-month review. Joanne Berger-Sweeney, dean of the School of Arts and Sciences, served as council vice chair.

The group's work helped shape the university's strategic plan, Tufts: The Next 10 Years, which the Board of Trustees approved in November. One of the plan's four major themes seeks to engage and celebrate commonalities and differences within the Tufts community, and the council's recommendations will help

advance those shared values, Monaco says.

The members of the council worked from a broad definition of diversity that encompasses many aspects of personal and group identity, among them race, ethnicity, socioeconomic status, religion, gender, cultural background and sexual identity.

Through focus groups and community engagement, surveys and quantitative research, three council working groups examined particular areas of the university experience—undergraduate students, graduate and professional stu-

the university's last major fundraising campaign, Tufts still provides less financial aid than many of its peers. Related to affordability is the need to expand the so-called pipeline programs, reaching out to students who traditionally have not applied here. For instance, the School of Medicine recently started a program with the University of Massachusetts, Boston, to attract students who might not otherwise consider careers in medicine or biomedical research. The council's report calls for more such efforts.



**"Having faculty, staff and students who come from different backgrounds and have different perspectives enriches everyone in our community," says Tufts President Anthony Monaco.**

dents, and faculty and staff. Joyce Sackey, dean of multicultural affairs and global health at the School of Medicine, chaired the Graduate and Professional Student Experience Working Group.

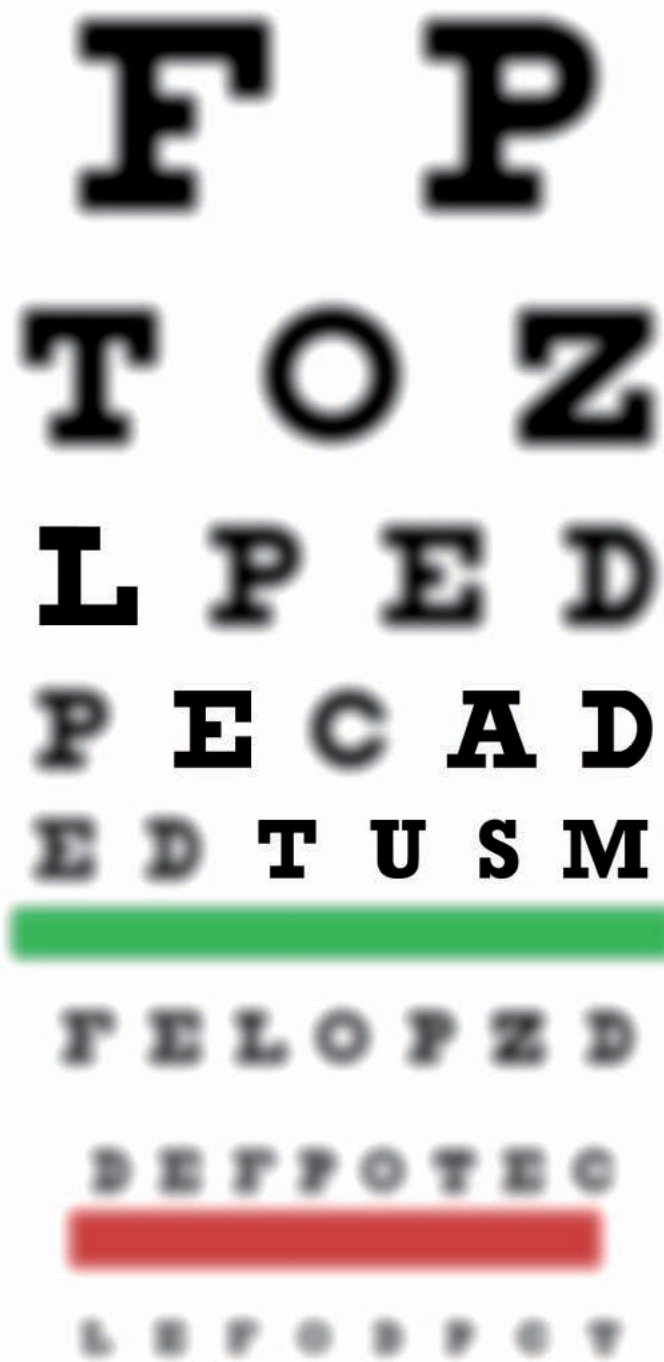
## THE CASE FOR FINANCIAL AID

Recognizing that the cost of a Tufts education has a bearing on the university's ability to attract students from minority and other underrepresented groups, the council urges continued fund-raising for scholarships and fellowships.

Despite the strong efforts made during

Because faculty members play a key role in mentoring students, the council says the diversity of the faculty should more closely mirror that of the student body. "Study after study shows that providing a supportive and welcoming environment for students helps them achieve, and not having that kind of environment impairs their full achievement," says Berger-Sweeney.

"At Tufts, diversity and excellence must be inextricably linked," Monaco says. "Only then can we achieve our collective potential as a community." To read the full report, go to [president.tufts.edu/strategic-initiatives/diversity](http://president.tufts.edu/strategic-initiatives/diversity).



**Great  
vision  
requires  
great  
leadership.**

**Join a leadership giving society.**

When you support the Fund for Tufts Medicine at these levels you give TUSM the opportunity to bring a great vision into focus. Your generosity supports first-rate training for the next generation of scientists, health practitioners, and clinicians, and inspires others to follow your lead.

- Trustees' Circle** \$50,000
- President's Circle** \$25,000
- Society of Tufts Fellows** \$10,000
- Founders' Society** \$5,000
- Stearns Society** \$2,500
- Millennium Club** \$1,000
- Dean's Inner Circle** \$100 (times years since graduation)

[giving.tufts.edu/med2](http://giving.tufts.edu/med2)



# Carrying It Forward

These four alums provide support and guidance for the next generation of caregivers by **Susan Saccoccia**

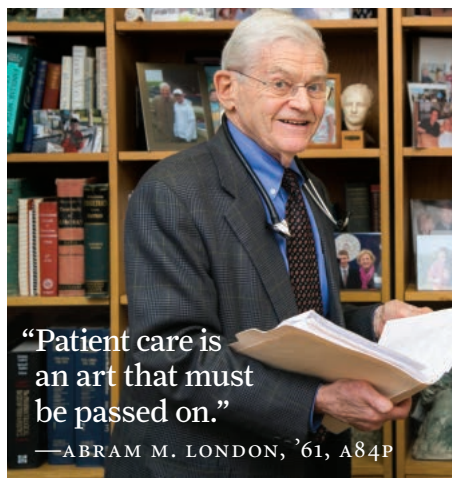
**A**T COMMENCEMENT EACH YEAR, NEW GRADUATES OF TUFTS SCHOOL OF MEDICINE are poised for leadership in their professions and beyond. They carry both skills and values into the world, but the process doesn't necessarily end there. As mentors, donors and teachers, the four alumni profiled here have used their diverse talents to enhance the education of medical students. They've found it's a gratifying way to extend and deepen the value of everything precious they've picked up along the way.

## COMPASSIONATE CARE

Lessons in giving back came early to Abram M. London, '61, A84P, a primary-care physician with a concierge practice in Chestnut Hill, a Boston suburb. "My parents were first-generation Americans who felt they owed this country something," says London. "America provided a welcoming homeland to our family who were fleeing anti-Semitism. We were taught to give back."

As a medical student, London absorbed another life-changing lesson: that medicine is about compassion as well as science. "I was very fortunate to learn from doctors who constantly reminded us we were treating human beings, not machines," he says. "Each one was a great physician and an incredible human being."

London brings these early lessons together through the Abram M. London Fund for Compassionate Care. Established in 1981, the endowed fund helps Tufts



"Patient care is an art that must be passed on."

—ABRAM M. LONDON, '61, A84P

medical students become more compassionate and effective caregivers.

Supported by the fund, the Department of Psychiatry created a program in which third-year students meet weekly with a staff psychiatrist and internist to reflect on the quality of their interactions with patients.

London helped craft a brochure to invite his patients to join him in funding the program. "We can't turn students loose and hope they learn on their own how to interact well with patients," he says. "Patient care is an art that must be passed on."

## MENTORING AND NETWORKING

Jack Tsai, '06, appreciates the abiding relationships students forge during medical school. This shapes his contributions to the education of future doctors. Serving on the Executive Council of the Tufts Medical Alumni Association, he organizes events that connect alumni with each other and the school.

An associate director at Sanofi Oncology, a global pharmaceutical company with offices in Cambridge, Mass., Tsai also volunteers as a teacher and mentor to medical students.

"Medical school can be overwhelming," he says. "You're exposed to so much information and so many classes and tests. You can lose sight of interests that make you happy beyond medical school. I want to fix that."

Tsai regards the School of Medicine's community-service program as an opportunity for students to rekindle passions and better balance their lives. "Committing 50

hours over four years, students develop substantial projects," he says. "They remember what else is important to them. One student's project benefited blind residents of a village in Ghana. Others found ways to apply their skills in photography and dance."

And as a volunteer teacher in Tufts' Problem-Based Learning (PBL) program, Tsai meets for two hours every week with six first-year medical students, coaching them as they work through clinical case scenarios.

"I get to work with some of the smartest



"I get to work with some of the smartest students on Earth."

—JACK TSAI, '06

students on Earth who are so enthusiastic for medicine," he says. "They have to synthesize a lot of information and think clinically to diagnose and treat the patient. Each student brings different strengths to the process. As they come to appreciate each others' different approaches and personalities, they learn to work as a team and trust one another."

## TEACHING APPRENTICES

Right from the start of their first year, Tufts medical students begin working with patients through the Competency-based Apprenticeship in Primary Care (CAP) program.

"I love providing students with their first clinical exposure," says Lynn Porter,





**“We learn from each other.”**

—LYNN PORTER, '90

'90, a volunteer CAP mentor who runs Porter Pediatrics, a private practice in Boston's South End.

“Material they've studied becomes real experience. For example, when opening the airways of a child with an asthma attack, I told my students his oxygen would drop,” says Porter, who has won many teaching awards. “After observing it happen, one student said, ‘Now, I get it.’ Such moments are magic.”

Porter values CAP for accelerating students' transition from classroom to clinic. “My first two years focused on hard science. We only entered clinical settings in the third and fourth years,” she says. “CAP gets students into clinical environments sooner. Here, they become part of my team.”

Porter guides students as they learn to take a meaningful patient history, examine a child and put the information together into a diagnosis. “They also contribute knowledge,” says Porter, whose students counsel teenage patients on obesity and safe sex. “It's a give and take. We learn from each other.”

“I see students evolve into caregivers,” she says. “By the time they start third-year rotations, they're ready to go.”

## GIVING BACK

R. Paul St. Amand, A48, M52, continues to find inspiration in the speech he heard at his Tufts Medical School commencement more than 60 years ago.

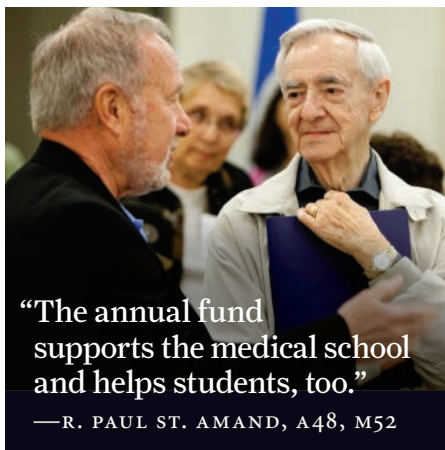
The speaker was Leonard Carmichael, A21, H37, the son of a physician who served as president of Tufts University from 1938 to 1952. “He began by saying that while he was speaking to all of us, he was addressing the

medical school graduates in particular,” says St. Amand. “He told us, ‘We have taught you a noble trade, but we have not given you an education. Now we have given you the means to do so. Go forth and educate yourselves.’”

“I felt he was telling us that we were given the means to lead and give back,” St. Amand says. “I've reflected on his address over and over again.”

Describing himself as a lifelong learner and teacher, St. Amand maintains a private practice in Marina del Rey, Calif., and conducts research in the treatment of fibromyalgia, a condition that affects him and three of his daughters. He is also an associate clinical professor of medicine in the Department of Endocrinology at Harbor-UCLA Medical Center, where he has been teaching for 58 years.

In 1983, St. Amand donated \$25,000 to name a study and conference room in the Hirsh Health Sciences Library in the Arthur M. Sackler Center for Medical Education. In 2013, he and his wife established the Janell and Paul St. Amand, A48, M52, Scholarship Fund, with a \$100,000 gift that was doubled by a match from the ongoing Financial Aid Initiative.



**“The annual fund supports the medical school and helps students, too.”**

—R. PAUL ST. AMAND, A48, M52

He is also a faithful contributor to the school's annual fund for more than two decades, making a yearly gift of \$10,000 to the fund since 2002, when he celebrated his 50th reunion. “Although it's satisfying to tag one's name to a physical structure during a capital campaign,” he says, “each year, the school has salaries to pay and supplies to buy. The annual fund supports the medical school and helps students, too.”

## HOW YOU CAN HELP

**To learn more about establishing a scholarship through the Financial Aid Initiative or for information about displaying brochures about Tufts University School of Medicine in your practice, please contact Rebecca Scott, senior director of development and alumni relations, at 617.636.2777 or [rebecca.scott@tufts.edu](mailto:rebecca.scott@tufts.edu).**

**For information about teaching in the Problem-Based Learning program or the CAP program as well as other volunteer opportunities at the medical school, go to [medicine.tufts.edu/alumni](http://medicine.tufts.edu/alumni). Another way to lend a hand at Tufts School of Medicine is to help teach the patient interviewing course. To learn more, see “Tell Me More,” page 18.**

**Tufts' Leadership Giving Societies recognize alumni, parents and friends who contribute at a leadership level to the Fund for Tufts Medicine in a single fiscal year. Societies exist at the \$1,000, \$2,500, \$5,000, \$10,000, \$25,000 and \$50,000 levels. Last year, more than 600 members had a significant impact on the school by joining a Leadership Giving Society.**

**Building on this tradition, the Dean's Inner Circle has been established to keep pace with current initiatives and needs across the medical school and to sustain excellence in medical education. The Dean's Inner Circle honors all alumni who contribute \$100 or more for each year since their graduation.**

TO LEARN MORE ABOUT HOW YOU CAN SUPPORT TUFTS SCHOOL OF MEDICINE, VISIT [MEDICINE.TUFTS.EDU/GIVING](http://MEDICINE.TUFTS.EDU/GIVING).

# Springboard for Discovery

**T**HE QUESTION OF HOW HEALTHY cells turn into cancerous ones has daunted researchers for decades. Then a group of Tufts biologists was able to shed light on how breast cancers develop by stepping outside of scientific convention. Charlotte Kuperwasser's lab at Tufts School of Medicine collaborated with MIT's Whitehead Institute to arrive at a new theory about cell plasticity, the ability of some cells to morph into different types of cells.

Kuperwasser and her colleagues tested a theory that came out of quantitative modeling conducted at the Whitehead Institute. The partnership uncovered a link between cellular plasticity and a genetic mutation in mice, possibly a key factor in how breast cancers develop.

"Working with other disciplines expands the possibilities of research," says

Kuperwasser, an associate professor in the Department of Developmental, Molecular and Chemical Biology whose research seeks to understand the various stages of breast cancer development. Her lab has a long history of collaboration with experts in other fields. "Our group's strengths are in the biological sciences and animal modeling, molecular biology and some biochemistry. But when it comes to things like quantitative biology, mathematical modeling or synthetic chemistry, we look to others for that expertise," she notes.



**Charlotte Kuperwasser**

Now a substantial gift from the Raymond and Beverly Sackler Foundation will help further advance research that bridges different scientific fields. The funding will support research in the Raymond and Beverly Sackler Laboratory for the Convergence of Biomedical, Physical and Engineering

Sciences at Tufts. The laboratory, which Kuperwasser directs, conducts research that bridges the life, physical and engineering sciences.

The Raymond and Beverly Sackler Foundation has funded similar convergence programs at 12 U.S. universities, Cambridge University in the U.K. and Tel Aviv University in Israel.

"At a time when funding from traditional sources is so restricted, this gift will be a springboard to continue this kind of collaboration," says Kuperwasser.

Kuperwasser believes interdisciplinary research has vast potential. Not only could future collaborations generate new hypotheses on the origins of cancer, they also could expand the potential for personalized medicine, producing therapies tailored to how specific types of cancer originate. "This gift is an exciting conduit," she says. "It allows us to expand our creative borders."

**TRAVEL WITH US FROM OUR SHORES AND BEYOND**

From Antarctica to Africa, from Burma to the Black Sea, and from Iceland to Italy, our lineup features classic and traditional to undiscovered and emerging destinations, showcasing our world's natural beauty and cultural diversity.

Join us!

Contact Usha Sellers, Ed.D., Director, at [usha.sellers@tufts.edu](mailto:usha.sellers@tufts.edu) or 617-627-5323 for our catalog or specific brochure, or visit our website for itineraries.

Visit our website to see the exciting lineup of 2014 destinations!

**TUFTS TRAVEL-LEARN**  
visit: [www.tuftstravellearn.org](http://www.tuftstravellearn.org)

# Our Support Makes a Difference



AS I WRITE THIS COLUMN, SNOW IS FALLING AT THE START OF our first major snowstorm in Boston this season. Other big changes are afoot as well. We had our annual holiday meeting of the Tufts Medical Alumni Association Executive Council. (Thank you to Jody and Eli Dow, '53, for so graciously opening their home to all of us.) At this meeting we heard from current Tufts medical students about activities and projects funded by the Tufts Medical Alumni Association (TMAA).

One program that stands out for me is the Health Impact Partnership, which pairs our medical students with Boston high school students. Tufts students teach leadership and advocacy skills to local youth through the lens of public health and medicine. This has been a very successful program for both sides of the partnership. In yet another program, the TMAA has helped support students at an urban high school by providing preparticipation health screenings for student athletes and offering educational and mentoring events.

Your alumni association has also supported students working with Boston Health Care for the Homeless. Tufts students not only help provide clinical care to patients on the street but also research ways to reduce visits to emergency departments by homeless patients.

The Tufts Medical Alumni Association is focusing on support for student scholarships and continued support for student activities. We need your help in all of these endeavors.

I encourage you to renew your membership—or join for the first time. You can do so online by visiting [giving.tufts.edu/med](http://giving.tufts.edu/med). Designate your membership contribution to the School of Medicine (option=Medical) and then select the “Alumni Association” option.

As always, students are looking for alumni mentors. Please join the Tufts Career Advisory Network at [tufts.can.org](http://tufts.can.org).

If you would like more information about the TMAA-funded student activities mentioned in this column or have any other questions, please feel free to contact me.

LAURENCE S. BAILEN, '93  
PRESIDENT, TUFTS MEDICAL  
ALUMNI ASSOCIATION  
[laurence.bailen@tufts.edu](mailto:laurence.bailen@tufts.edu)



Make YOUR  
plans today!

.....  
MAY 2-4, 2014

[medicine-alumni@tufts.edu](mailto:medicine-alumni@tufts.edu) | 617.636.6770  
[medicine.tufts.edu/alumni](http://medicine.tufts.edu/alumni)

**REUNION**  
TUFTS MEDICINE : 2014



**55 Arthur Cohen**, A49, of Keene, N.H., was honored in November at an event in Keene that recognized him as a doctor who had made a significant difference in the care of the local community over many years. Now retired, Cohen was the first urologist to practice in Cheshire County, N.H., and was affiliated with Cheshire Medical Center/ Dartmouth Hitchcock Keene from 1961 to 1990.

**62 Michael Nevins**, who is retired and living in Piermont, N.Y., has written *Still More Meanderings in Medical History*, the third of a trilogy of collected essays, 60 in all. Nevins is president of the Medical History Society of New Jersey.

**63 William Boyle** of Hanover, N.H., has been honored by the New Hampshire Pediatric Society as the Retired Pediatrician of the Year. "A pediatrician at Dartmouth-Hitchcock Medical Center since 1970," the award reads, "he has combined the roles of community and academic pediatrician to an extent rarely seen in today's era of increasingly narrow specialization." A professor of pediatrics and of community and family medicine at the Geisel School of Medicine at Dartmouth, he chairs the Boyle Community Pediatrics Program, which a grateful patient endowed in his name.

**68 Beverly Fauman** of Ann Arbor, Mich., has retired as a clinical associate professor

of psychiatry at the University of Michigan. She plans to continue teaching as an "active emerita."

**70 Harvey Nisenbaum** of Wynnewood, Pa., E65, chair of the Department of Medical Imaging at Penn Presbyterian Medical Center in Philadelphia, is president-elect of the World Federation for Ultrasound in Medicine and Biology, a global organization with more than 50,000 members in more than 50 countries.

**72 William Hammond** of Sammamish, Wash., has joined the oncology program at the University of Washington's Northwest Hospital & Medical Center campus. A nationally recognized oncologist with more

than 35 years' in practice, he will be responsible for developing the Seattle Cancer Care Alliance practice of general hematology and medical oncology as well as establishing a clinical training program for fellows and residents at Northwest Hospital.

**73 David Rothenberger** of St. Paul, Minn., was named to head the University of Minnesota's Department of Surgery in October 2013. An internationally recognized leader in surgery, a member of the American Surgical Association and many other professional societies, he is founder and co-director of the Emerging Physician Leaders Program at the Minnesota medical school.



Join 100,000 of your fellow alumni. It's fast and free!

VISIT:  
[alumniconnections.com/tufts](http://alumniconnections.com/tufts)

**BENEFITS:**

- ☀️ **Online Directory:**  
Find friends, network, & update your info.
- ☀️ **Career Advisory Network:**  
Give advice. Get advice.
- ☀️ **Class Notes:**  
Get all the gossip & share your news.
- ☀️ **And much more!**

**Tufts**online  
 community

**78 Mario Motta** of Gloucester, Mass., cardiologist and stargazer, spoke on the health effects of light pollution at the Charles E. Schmidt College of Medicine in Boca Raton, Fla., in early February. He focused his talk on the negative effects of artificial night lighting on people, plants and wildlife. "As an amateur astronomer and telescope maker, I knew of the adverse effect that light pollution has on being able to study the skies," he says. "I began researching other harmful effects of light pollution, including the disruption of circadian biological rhythms or sleep, as well as the impact of headlamps, nighttime lighting schemes and glare on driving safety." Motta is in practice at North Shore Medical Center and an associate professor of medicine at Tufts.

**80 Barry Herman** of Radnor, Pa., recently accepted a position as medical affairs director at Shire Pharmaceuticals in Wayne, Pa., where he is responsible for neuroscience strategy for in-line product investigational uses.

**87 Audrey Duva-Frissora** of Wenham, Mass., has been named director of women's imaging for the Hoffman Breast Center and Department of Radiology at Mt. Auburn Hospital in Cambridge, Mass. She was previously section head of breast imaging at Beverly Hospital in Beverly, Mass.

**90 Edward Conklin**, A86, of Seattle, Wash., is the founder of Carena Inc., a company that uses technology, and house calls when needed, to redefine and improve medical care for its thousands of patients in California, Illinois, Missouri

and the state of Washington. Microsoft has been among the company's enthusiastic corporate clients. When not engaged in business, Conklin has a family medicine practice in Seattle.

**99 Curtis Cetrulo Jr.** of Hingham, Mass., led a team of surgeons that successfully performed the first hand transplant at Massachusetts General Hospital in October 2012. The 15-hour surgery on 43-year-old Joe Kinan, a victim of the 2003 Rhode Island nightclub fire that killed 100 people and left Kinan with burns over 40 percent of his body, was the first of its kind at MGH. With the help of extensive physical therapy, Kinan is recovering well.

**02 Henry Lin** of Sacramento, Calif., a plastic and reconstructive surgeon, married Marian Lee, a real estate developer, in Malibu, Calif., in September 2013. Lin is chief of the plastic surgery department at the Kaiser Permanente South Sacramento Medical Center.

**03 Eugene Bak** of Duarte, Calif., and his wife, Rebecah, announced the birth of a son, Joel, in December 2013. Bak is an anesthesiologist.

**Rishi Manchanda, J97, MPH03**, recently published a TED book, *The Upstream Doctors: Medical Innovators Track Sickness to Its Source*. "We all think we know what good medicine looks like: smart doctors, stethoscopes, imaging machines, high-tech tests and the best prescriptions and procedures money can buy," reads the review. "But that picture is vastly incomplete." It's available on Kindle.

## In Memoriam

**Vahey Pahigian, '43**, of Providence, R.I., a general surgeon, died on October 17, 2013, at age 95. Born in Lowell, Mass., he attended the University of Rhode Island before coming to Tufts. He was a U.S. Army veteran and served as a field hospital surgeon in the Third Army Corps during World War II. Until his retirement in 2013, he ran his own private practice. He was a pioneer in breast cancer surgery and a giant in women's health issues in Rhode Island, as well as a heroic figure to the state's Armenian community. "He told me he wanted to stay in the profession forever, because he never wanted to stop caring for, treating and advising his patients," a friend remembered. "That kept him going until he could no longer walk." He is survived by his children, Beth and Craig.

**Melvin Shoul, '47**, of Newton, Mass., died on September 30, 2013, at age 91. A graduate of Harvard University, he served in World War II in the Chemical Warfare Battalion and in the Korean War in the U.S. Army Corps as a "MASH" surgeon from 1952 to 1954. He was a beloved general surgeon to generations of Boston families at Faulkner Hospital, Beth Israel Hospital and St. Elizabeth's Hospital. He retired in 1994. He is survived by two sons, two grandchildren and a great-grandchild.

**Francis Hinnendael, '48**, of Edina, Minn., formerly of Reading, Mass., died in October 2013, at age 91. He was born in the small town of

Luxemburg, Wis. After graduating from Dartmouth College and Tufts School of Medicine, he practiced family medicine for 40 years in Reading and Winchester, Mass. He was widely respected for his compassion, kindness, wit, wisdom and intellect. He is survived by five children and a multitude of grandchildren and great-grandchildren.

**Albert Gosselin, '53**, of Jewett City, Conn., died on December 1, 2013, at age 90. Born in Plainfield, Conn., he received his undergraduate degree from Brown University and served in the U.S. Navy in World War II. He began practicing family medicine in Jewett City in 1955. He was on the medical staff at William W. Backus Hospital in Norwich, Conn., throughout his career. He also served as director of health for the neighboring towns of Lisbon, Preston, Griswold and Voluntown and as school physician in each of those communities. Gosselin was active in civic and political affairs throughout the region. He is survived by five children, 15 grandchildren and 20 great-grandchildren.

**William Guillette, A49, M53**, of Coventry, Conn., died on November 21, 2013, at the age of 86. He was born in Attleboro, Mass., and attended Tufts University before being called into service in the U.S. Army; he was stationed in northern France from 1944 to 1945. After his discharge, he had a medical practice in Plainville, Mass., before moving with his growing

family to West Hartford, Conn., where he worked as a medical director for the Aetna Insurance Co. for many years. Following retirement, he settled in rural Coventry and devoted himself to his grandchildren and traveling. He is survived by his wife of 59 years, Barbara Jean, and eight children, 15 grandchildren and three great-grandchildren.

**Robert L. Farrelly, '56**, of Mashpee, Mass., died on October 6, 2013, at age 82. Born in Providence, R.I., he was the first in his family to attend college. It was while he was a student at Providence College that he acquired his love of books. After graduating from Tufts Medical School, he entered the U.S. Army Medical Corps, where he rose to the rank of captain. In 1959 he established a family medicine practice in Cumberland, R.I., where he happily delivered thousands of babies. He taught at Brown University Medical School. Farrelly was a physician, a teacher and a champion for charitable causes who valued family above all else. He is survived by his wife, Mariann, five children and 11 grandchildren.

**James Garrison Jr., '58**, of Seattle, Wash., died on September 12, 2013. He was an obstetrician/gynecologist who delivered 6,000 babies and distinguished himself in the U.S. military. He graduated with honors from West Virginia State University in 1950 and served in the U.S. Army before entering medical school. After graduation, he was a medical officer in the U.S. Army, posted to Fort Lewis, Wash.; Munich, Germany; and Fort Riley, Kan. He resigned his commission in 1967, upon the death of his beloved wife,

Nellie, but continued in the Army Reserves, retiring at the rank of colonel. While in the reserves, Garrison was the first black officer to command the 50th General Hospital of the U.S. Army Reserves at Fort Lawton, Wash. He earned the Legion of Merit Medal and the Army Reserve Forces Medal, among other honors. Garrison was the first black physician hired by the Group Health Cooperative, a practice serving greater Seattle, in 1969, and over the next 20 years, he rose to the position of chief of obstetrics and gynecology. He was a clinical professor of ob/gyn at the University of Washington and also served on the Washington State Medical Board. He is survived by two daughters, Diane and Alicia, two sons, Michael and David, and five grandchildren.

**Lawrence Brown, '59**, of Walpole, Mass., a pediatrician who practiced for many years in Norwood, Mass., died on January 22, 2014, at age 80. Born and raised in Dedham, Mass., he served in the U.S. Navy, was a longtime member

of the Norwood Elks and was a charter member of the Walpole Country Club. He is survived by seven children and 17 grandchildren.

**John McCormick, A58, M62**, of Danville, Pa., died on January 5, 2014, at age 77. A graduate of Boston Latin School and Tufts University, where he graduated magna cum laude with a degree in psychology, he spent his career at Geisinger Medical Center in Danville and was emeritus director of gastroenterology there following his retirement in 1996. McCormick enjoyed the outdoors, cross-country skiing, camping, scuba diving and travel with his family. He is survived by his wife, Louise Veltman, BSOT62, a daughter, Kristina; a son, Randall; and a granddaughter, Samantha.

**Stephen Conway, '73**, of Seekonk, Mass., died on November 18, 2013, at age 66. Prior to his retirement in 2003, he was a self-employed ophthalmologist for 25 years. He was a clinical professor at Brown University's Alpert School of

Medicine, where he was proud of having won a teaching award. He loved music and playing the piano, as well as golfing and vacationing with his family. He is survived by Lorraine, his wife of 40 years, two sons, two daughters and two granddaughters.

**Maxim Daamen, '74**, of Providence, R.I., a native of the Netherlands who moved with his family to Vermont at age 12, died on September 29, 2013, at age 65. Recognized by Rhode Island Magazine as one of the state's top three psychiatrists in recent years, he was a clinical associate professor of psychiatry and human behavior in the Alpert School of Medicine at Brown University and former associate dean of the college. He earned his undergraduate degree at MIT before entering medical school. Daamen was known for his professional erudition, empathy and diagnostic acumen.

**Todd Pritz, '79**, of Des Peres, Mo., died on January 15, 2014, at age 63. Born in North Canton, Ohio, he was a graduate of Heidelberg College in Tiffin, Ohio. Pritz was an internist and ER physician who later became a specialist in critical care medicine. He was known for his compassion for his patients and their families, his soft-spoken, calm demeanor and his strong moral principles. He is survived by his wife, Jeannette.

**William Callahan, A82, M86**, of Accra, Ghana, a psychiatrist and well-known speaker on drug therapy, died on December 12, 2013, in a hiking accident in Cape Town, South Africa. He was 53 and had been in Cape Town to attend the celebration of the life of Nelson Mandela. Rescue workers say that he fell to his

## Tufts MEDICINE

### Now We're Online, Too

Come visit *Tufts Medicine* anytime:

[go.tufts.edu/tuftsmedicine](http://go.tufts.edu/tuftsmedicine)

You'll not only find all the stories that appear in the print publication, but a live news feed from the university news site *Tufts Now*.

It's a great way to stay connected with Tufts 24/7



death while enjoying a late-day hike in Table Mountain National Park. Callahan was a U.S. State Department regional medical officer in psychiatry, based in Ghana. After graduating from Tufts Medical School, he was commissioned as an officer in the U.S. Air Force. As a flight surgeon assigned to a Special Operations Team, he served in Operation Desert Shield and Desert Storm and was honorably discharged as a captain. He then established a private psychiatric practice in Southern California, where he was finally able to express himself openly as a gay man. In 2012, he closed his practice and joined the State Department and had responsibility for 13 countries in West Africa. The overseas work combined his loves of meeting new people, travel and medicine. He was a Distinguished Fellow of the American Psychiatric Association (APA) and held various positions in both the California Psychiatric Society and the APA.

**Lauren Vicky Farber, '98**, of Wellesley, Mass., a pediatrician, died at home on November 18, 2013, at age 47 following a long illness. Born in Boston, she attended Columbia University. For the past 12 years, she was a partner with the Holliston (Mass.) Pediatric Group. In recent years she was an active supporter of the National Brain Tumor Society and lobbied government agencies for enhanced funding of brain cancer research. She is survived by her husband, John, and her children, Zachary and Rebecca.

## FACULTY

**Richard Blacher**, of Waban, Mass., a psychiatrist at Tufts Medical Center for many years, died on January 16, 2014. He

was nationally known for his contributions in the psychiatric care and counseling of patients with cardiac disorders, and



was an integral part of the Tufts heart transplant program. He attended medical school at the University of Rochester. He authored and edited many books and articles, including "The Psychological Experience of Surgery." He served as a corpsman in World War II and as a physician in Japan during the Korean War. He is survived by his daughter, Lisa; his stepchildren, Rick, David and Amy; his grandchildren, Josh, Carol and James; and his great-grandchildren, Henry and Isaac.

**Collingwood Karmody** of Cape Cod, Mass., and Hilton Head Island, S.C., a surgeon and professor at Tufts for some 30 years, died on November 15, 2013, at age 84. He was born in Trinidad and Tobago and studied medicine at University College Dublin, in Ireland. He arrived at Tufts in 1969; he was named professor emeritus several years ago. Karmody was an internationally known otolaryngologist who was recognized for his research in the pathophysiology of otitis media, congenital abnormalities of the head and neck and the histopathology of deafness. He authored the *Textbook of Otolaryngology* and more than 140 scientific papers. He is survived by his wife, Patricia, three children and five grandchildren.

**William F. Maloney** of Portland, Ore., former professor and dean of the medical school from 1966 to 1974, died on October 10, 2013, at age 94.

He was born in Minneapolis and earned his undergraduate degree at the University of Minnesota. While dean, he oversaw the establishment of the Columbia Point community health project, the first such program in the nation. Prior to his arriving at Tufts, he was a professor and the youngest assistant dean at the University of Minnesota medical school, where he had earned his M.D. In the early 1950s, he served as a consultant to the Seoul National University Medical School, helping to rebuild the training programs after the Korean War. He later was dean at the Medical College of Virginia in Richmond. He also was a lecturer at Northwestern University School of Medicine while serving as associate executive director of the Association of American Medical Colleges (AAMC) in Evanston, Ill. As a teacher, administrator, advisor, mentor, author and national speaker, Maloney earned numerous awards and honors and stayed professionally active into his 90s. He is survived by his wife and four children.

**Theodore Munsat** of Waltham, Mass, professor emeritus of neurology and a world-renowned neurologist, died on November 22, 2013, at age 83. He was a former chair of the neurology department at Tufts Medical Center. Munsat attended the University of Michigan before earning his M.D. from the University of Vermont in 1957. Following residency training at Columbia Presbyterian Medical Center in New York and two years of service in the U.S. Navy, he accepted a position at UCLA Medical Center, where he became a pioneer in developing

the histochemistry of skeletal muscle. In 1970 he served as professor of neurology and director of the University of Southern California Muscle Disorders Clinic. In 1976 he became chair of the neurology department at Tufts-New England Medical Center (as it was then called), a post he held until 1982, when he left to pursue his research into amyotrophic lateral sclerosis (ALS) and other areas. Munsat was president of the American Academy of Neurology from 1989 to 1991 and published more than 200 scientific papers over the course of his career. He was also a passionate outdoorsman who enjoyed sailing, skiing and camping. He raised sheep, built furniture, made his own maple syrup and apple cider and grew vegetables. He is survived by his wife, Carla; daughter, Amy; and son, Peter, as well as six grandchildren.

**Lewis Weintraub** of Wayland, Mass., professor of hematology from 1965 to 1972, died on August 18, 2013, at age 79. He was chief of hematology at Boston Medical Center for more than 25 years. He grew up in Brooklyn, N.Y., and attended Dartmouth College before enrolling at Harvard Medical School. He had served as a captain in the Army Medical Corps, as assistant chief of hematology at Walter Reed General Hospital in Washington, D.C., and as a researcher at Walter Reed Army Institute of Research. Weintraub was known for putting his patients at ease; he would often make house calls to treat his neighbors when they came down with something. He is survived by his wife, Joan, a son, Daniel, and a grandchild.

## Military service is too often left out of the patient's medical profile

# The Unasked Question By Henry Klapholz, M.D.



I NEVER LEFT THE COUNTRY, nor was I ever anywhere near a battlefield. But I did serve as a major in the U.S. Army when I was assigned to Walter Reed General Hospital in Washington, D.C., for two years in the mid-1970s following my residency, as part of the Berry Plan that enlisted

doctors into the U.S. Armed Forces. Entering the Army, I didn't know what to expect. But I got a small taste of military life then, and came away wholly impressed with the respectful culture that permeated the ranks of men and women in uniform.

With my personal background, I was all ears when I heard about a bold new program launched by President Obama at the end of 2011 to deliver better medical care to our veterans. In order to make good on the initiative, the White House reached out to the Association of American Medical Colleges (AAMC) and asked that organization to promote the program, called Joining Forces, through the nation's medical schools. I volunteered to head up the Tufts branch of the campaign.

Military service is largely invisible within our medical practices because we doctors rarely inquire about it in the normal course of events. You can imagine my dismay when I realized that I myself had never asked a single patient, in more than 40 years of practice, if they or anyone in their immediate family had ever been in the military and exposed to combat. It is simply the unasked question.

As a lifelong educator of medical students and residents, I have taught students how to take an appropriate history to identify individuals at particular risk for illness. I had always taught that we must ask patients about smoking, domestic violence and occupational exposures, among other things. There were so many items we needed to ask about in order to give us, as physicians, the chance for more careful and detailed follow-up.

Asking about military service is critical, because although about 1 in 10 adults in the U.S. has served in the military, only 28 percent of veterans receive any portion

of their health care from the Veterans Administration. This means that many of these men and women are showing up to see us "regular" doctors instead. When we fail to explore their backgrounds in detail, they are inevitably short-changed on effective diagnosis and treatment. For their part, veterans often do not mention their time in uniform out of a sense of modesty.

The silence on both sides of the relationship can do real harm. Every day we are learning more about the lasting medical consequences of battlefield trauma, including psychological damage. Such aftereffects can include major depression, substance abuse, sleep disorders, mood swings, jumpiness and memory and concentration problems. Many of these symptoms occur under the broad diagnosis of post-traumatic stress disorder, or PTSD. Female veterans may suffer a form of PTSD brought on by sexual harassment and trauma that occurred during their service.

We doctors can do a much better job addressing the needs of these veterans. Here at Tufts I have found plenty in our existing systems that needs fixing. Early on, I learned that almost none of the electronic medical records in use at Tufts-affiliated hospitals and clinics contained the key question—"Have you or anyone else in your immediate family ever served in the military?" We are in the process of addressing that lapse.

In addition, our medical school is committed to teaching every student and resident to include an inquiry about military service when taking a patient history. We want to make that inquiry routine. Our next step will be to work with colleagues at other medical schools, through the auspices of the AAMC, to help bring about the change on a national level.

We owe it to the millions of men and women who have stepped up to protect our freedoms. Think of it this way: As a nation we ask these people to serve, and there's a risk that comes with that service. The least we physicians can do is everything possible to serve them in return.

---

*Klapholz is dean for clinical affairs at Tufts University School of Medicine.*

# Make a Difference for the Next Generation



Create your legacy by establishing a gift that benefits both you  
and Tufts University School of Medicine.

**CHARITABLE GIFT ANNUITIES** provide a way for you to support future medical leaders and may offer you the following benefits in return:

- Fixed payments for life to you and/or a loved one
- Partially tax-free income
- An immediate charitable deduction
- Capital gains tax savings

  
*The*  
**CHARLES TUFTS**  
*Society*

For more information, please contact our  
gift planning office at 888.748.8387

[giftplanning@tufts.edu](mailto:giftplanning@tufts.edu)

[www.tufts.edu/giftplanning](http://www.tufts.edu/giftplanning)

[www.facebook.com/CharlesTuftsSociety](http://www.facebook.com/CharlesTuftsSociety)

#### CHARITABLE GIFT ANNUITY RATES\*

AGE	RATE
60	4.4%
65	4.7%
70	5.1%
75	5.8%
80	6.8%
85	7.8%
90+	9.0%

To calculate your own rate, visit  
<http://giving.tufts.edu/giftcalculator>

\* Rates are based on one income recipient. They are effective as of January 1, 2014, and are subject to change. You may qualify for a higher rate if you choose to defer the income to a later date.





## BRIGHT SPIRITS

Marathon shooting victim Dic Donohue had some bad luck and then some good luck. Heather Coffin Studley, '06, an ER specialist at Mt. Auburn Hospital, was a big part of the story. Our feature begins on page 12.