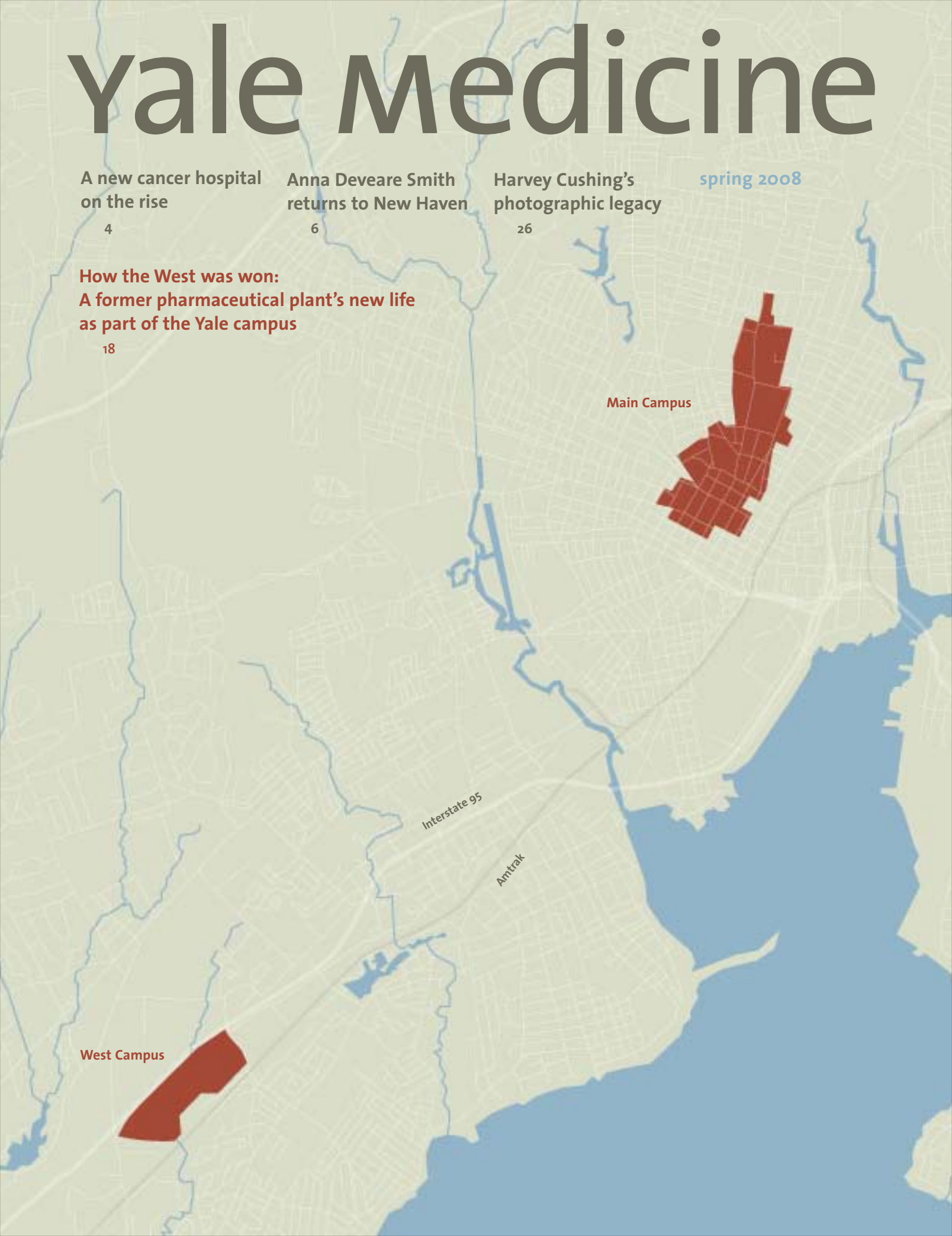
Yale Medicine

spring 2008



COVER
Yale's new West Campus, a 10- to 15-minute drive from downtown New Haven, offers the university still unknown possibilities for growth and expansion.

Cartography by Anandaroop Roy

BACKGROUND
Among the many buildings on the 136-acre West Campus are a warehouse that could store the collections from the university's libraries, museums and galleries.

Photographs by Matthew Garrett

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yalemedicine.yale.edu
On our website, readers can submit class notes or a change of address, check the alumni events calendar, arrange for a lifelong Yale e-mail alias through the virtual Yale Station and search our electronic archive.

HOW TO REACH US

Yale Medicine welcomes news and commentary. Please send letters (350 words or less) and news items to *Yale Medicine*, 300 George Street, Suite 773, New Haven, CT 06511, or via e-mail to ymm@yale.edu, and include a telephone number. Submissions may be edited for length, style and content.

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Why primary care draws fewer physicians

Two physicians lamented the decline of primary care in *Yale Medicine* ["Taking the E-ROAD," Autumn 2007]. Having been a primary care doctor for over 30 years, I felt compelled to respond.

Robert P. Gerety, M.D. '52, correctly pointed out that the practice model of primary care began its decline as long ago as 1968. Clearly, primary care never found a comfortable fit within the medical hierarchy despite the continuous public outcry for over 50 years for more general practitioners. American medicine is research-oriented; because primary care is practice-oriented, it has received second-class status and will remain there until the focus of American medicine changes.

But there are many other reasons why primary care is attracting fewer practitioners than ever. Over the past few decades health insurers have overburdened primary care doctors with administrative hassles that consume an inordinate amount of time. Unfortunately, the doctors are not paid for the extra time they put in on administrative work. Some studies estimate that administration consumes about 20 percent of their time. Being underpaid by insurers forces primary care doctors to see large numbers of patients in order to survive. The large number and broad spectrum of patients and diseases greatly increases the physicians' risks of making errors and intensifies their exposure to malpractice suits.

Although Gerety believes that house calls disappeared because people stopped asking for them, I think that doctors stopped making them because they were overburdened in their offices and because the complexity of modern medicine made house calls a source of medical liability. Clearly, medicine had become too complex for the family doctor to "do it all."

The answer? A new model of primary care is needed—one that takes into account the realities of modern medical practice. The scope of the family doctor has to be redefined. Also, the medical malpractice system needs reforming. It's too adversarial. Finally, health insurers have to be regulated. Their philosophy of profits before patients has completely transformed medicine from a profession into a business; as a result demoralization among doctors is widespread.

Family doctors can make a comeback, but their return will take work on many fronts.

Edward J. Volpintesta, M.D.
Bethel, Conn.

Uganda story rekindles memories

As I skimmed the article in *Yale Medicine* ["On the Wards in Uganda," Winter 2008], I felt goose bumps. I had the most fortunate opportunity to work in Mulago Hospital for three months in 2005. I was at the Infectious Diseases Institute (IDI) next door and worked with several colleagues who were at Mulago in IT and nursing. I was sent as part of a global health fellowship with Pfizer to develop a sustainable model for facility management at the IDI. I am now the associate director of facilities for the School of Medicine and find that Yale has a program in Uganda as well. Many of the issues you speak about and pictures in the article bring back vivid memories for me; I truly miss being so close to the patients who need help so desperately. I have many lifelong friends in Kampala and such surrounding communities as Nakasera, Mukono and Jinja. I brought my wife and three daughters with me—they will never be the same.

Gary Mandelburg
Associate Director, YSM Facilities

Yale should set standards for collaborations

Being familiar with the inspiring story of the heroic doctors and nurses from Yale who risked their lives—and in some instances gave their lives—40 years ago fighting the Lassa fever outbreak in the eponymous village near Jos, Nigeria, I was disappointed by your article titled "On the Wards in Uganda," Winter 2008. Despite your disclaimer early on that the travel of Yale doctors, residents and medical students to a hospital in Uganda was not an "exercise in medical tourism," the subsequent narrative left me feeling that most of the program's benefit fell to the U.S. participants. Much as I sincerely applaud the members of the Yale team for the humanitarian work they accomplished and for the considerable medical service they rendered, it is a pity that the senior physicians did not engage in serious scholarly collaboration with their Ugandan colleagues—by which I mean research and teaching. There is no reason why the United States' partners in international biomedical collaborations between health science centers in this country and their hosts at teaching hospitals in sub-Saharan Africa can't keep several balls in the air at a time: teaching, research, service and humanitarian work. A first-line medical school such as Yale, which I happen to hold in high regard, should be setting the standards for international collaborations.

Robert H. Glew, PH.D.
Emeritus Professor of Biochemistry and Molecular Biology,
School of Medicine,
University of New Mexico
Albuquerque, N.M.

In the fall of 2006 Bayer HealthCare announced that it was closing its plant in West Haven and Orange and putting the 137-acre property on the market. By the following June the university had announced that it would buy the property for a multitude of uses still to be determined. One thing, however, was clear. With almost half a million square feet of pristine lab space at the site, the School of Medicine would have room to expand and advance its programs in medical and biomedical research.

After closing on the property last year, Provost Andrew Hamilton, PH.D., said that the university wanted to avoid turning the space into an attic or basement that would collect the stuff no one knew where to store. In his report ["How the West was won"] on page 18, Contributing Editor Marc Wortman describes how the deal came about and what is guiding the thinking of the university's top officers as they consider the best uses for the property.

On the topic of dusty basement catchalls, a storage room underneath Harkness Dormitory has for decades been home to a treasure trove of whole human brain specimens, X-rays, patient records and photographs that document the career of Harvey Cushing, M.D., the pioneering neurosurgeon. Dennis D. Spencer, M.D., HS '77, chair and the Harvey and Kate Cushing Professor of Neurosurgery, has been working to preserve the collection and make it accessible to a broader audience. Spencer recently published a book with colleagues at the medical school based on this collection. An excerpt from the book and some of the stunning photographs in the collection begin on page 26.

By happenstance, this issue's *Capsule* also includes medical images of historical interest. When medical missionary Peter Parker, an 1834 graduate of the Divinity School and what was then the Medical Institution of Yale College, opened a hospital in Guangzhou, China, he engaged a local Western-trained artist to paint preoperative portraits of his patients to document their disorders. *Capsule* tells the story of Parker and artist Lam Qua and their collaboration.

Finally, in our third feature we report on a visit from Hillary Rodham Clinton, J.D. '73, who is seeking the Democratic Party's nomination for president. On the day before the Super Tuesday primaries in February, Clinton made a campaign stop at the Child Study Center, where she had championed the rights of children and families as a law student.

John Curtis
Managing Editor

SECOND OPINION BY SIDNEY HARRIS

YALE MEDICINE
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TERRY DAGRADI

Yale-New Haven Hospital CEO Marna Borgstrom, left, and medical school Dean Robert Alpern, right, recognized the support of Joel and Joan Smilow toward the construction of a new cancer hospital, which is expected to transform the care of cancer patients.

Yale alumnus funds new cancer hospital

Former chair of Playtex provides transformational gift to support comprehensive care facility.

Since his graduation from Yale College in 1954, Joel E. Smilow has made donations to his alma mater that have endowed a head football coach position; the renovation and expansion of the Lapham Field House, now called the Smilow Field Center; and five other coaching positions. He also played a key role in the implementation of his class' $120 million gift to Yale, the largest class gift in the university's history. For his fundraising efforts, including stewardship of the university's "... and for Yale" capital campaign in the 1990s, he received the university's highest honor, the Yale Medal, in 1993.

On October 31, before some 200 guests gathered in the East Pavilion of Yale-New Haven Hospital (YNHH), Smilow, the former CEO, chair and president of Playtex, was thanked for his transformational gift supporting a new $467 million cancer hospital, now under construction. When it opens in 2009, the comprehensive patient care facility will be known as the Smilow Cancer Hospital.

"We are building one of the finest patient-focused cancer care facilities in the country," said Marna P. Borgstrom, M.P.H. '79, president and CEO of YNHH. "We are very grateful for Joel and Joan Smilow's overwhelmingly generous gift to the cancer hospital, and for sharing our vision of creating a place of hope and compassion for cancer patients."

The new hospital will integrate all oncology patient services at YNHH and the School of Medicine in one building specifically designed to deliver multidisciplinary cancer care, and will feature specialized facilities for faculty physicians and community-based providers to care for patients. The 14-story facility will add nearly 500,000 square feet of new space and 112 inpatient beds, along with expanded outpatient treatment facilities, operating rooms and infusion suites; a specialized women's cancer center focused on breast cancer and gynecologic oncology; and a dedicated floor each for diagnostic and therapeutic radiology.

President Richard C. Levin also expressed gratitude for the Smilows' donation. "This generous gift will have a lasting impact on the lives of countless patients who will benefit from the state-of-the-art clinical care," he said. "We are deeply thankful for Joel and Joan's dedicated support."

According to Robert J. Alpern, M.D., dean of the School of Medicine and Ensign Professor of Medicine, the new cancer hospital will transform cancer care at Yale for both doctors and patients. "Medical school faculty members will be able to offer the latest cutting-edge therapies, integrating improved care—which will be much more comfortable for our patients—with clinical research," Alpern said. "Joel and Joan Smilow are assuring the future of a very important aspect of patient care at Yale."

"Great facilities," Smilow said, "help you attract and motivate outstanding people and make it easier for them to interrelate with one another. That's where the longer-term payoff comes. The immediate benefits—providing a better place for healing and helping tens of thousands of victims of cancer—are obvious. We can only dream about the day when the building isn't needed because we've found a cure for cancer."

—*Michael Fitzsousa*

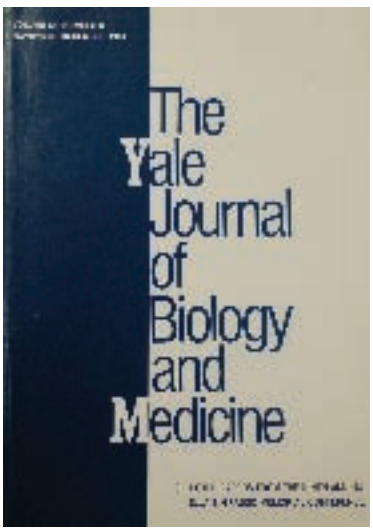
After hard times, a student-run journal rides high again as an online publication

When Milton C. Winternitz, M.D., dean of the medical school from 1920 to 1935, conceived of the Yale system of medical education, a key element was a student-run journal that would serve not only as a place for students to publish their original research, but as a learning tool as well.

The Yale Journal of Biology and Medicine (YJBM) made its debut in October 1928. It has been published continuously ever since and remains the longest-running medical journal edited and published by students.

Despite its pedigree, the future of the YJBM in recent years was uncertain. Faced with financial insecurity and the departure of its longtime faculty advisor and the editorial coordinator, publication of the quarterly journal had slowed to a crawl by the summer of 2006.

But thanks to the efforts of student editors determined to turn the journal around, as well as support from faculty, administrators and alumni, the YJBM is back on track and arguably stronger than ever, with a new editorial coordinator, Karen E. Olson, and a new website. As of last summer, the journal was available on PubMed Central, the National Institutes of Health's digital archive of biomedical and life sciences journal literature.



"The journal is part of the history of the Yale medical school," said Jeffrey R. Bender, M.D., HS '83, the Robert I. Levy Professor of Preventive Cardiology and the journal's faculty advisor. "It's carved into the fabric of the school, one of the pieces that makes the Yale medical school unique."

Bender credits the two editors who served during the current academic year, doctoral candidates Janice Friend (molecular, cellular and developmental biology) and Kristin Patrick (microbiology), with putting the journal back on a solid footing. Their immediate predecessors, medical student Adam Licurse and graduate student Richard Wing, also led the journal through a difficult transition. Their efforts have included aggressively soliciting high-quality papers and instituting a well-organized structure for reviewing manuscripts and responding to contributors. Former Deputy Dean for Education Herbert S. Chase, M.D., made the journal's transition to stability one of his final projects before departing in 2006, and his successor, Richard Belitsky, M.D., has continued to provide financial support.

Bender said the YJBM ties in with the school's educational mission. "It's a chance for students to learn about peer review, which is a huge part of science, and about editing and scientific writing. It's a superb form of early training."

Patrick, who took over as co-editor in chief in April 2007, said she and an editorial team of roughly 10 have worked to broaden the submission pool and seek out the best work. "Our standards have risen significantly," she said. "Good quality-controlled experiments and well-written papers are our long-term goal."

Friend, who is interested in a career in scientific publishing, said her work with YJBM has been invaluable. "I've learned a great deal about what makes a good or successful article, how to effectively solicit articles, what does and does not work in delegating tasks, and tactful communication with authors."

To keep the journal headed in the right direction, board members are exploring ways to promote and advertise it. They've also started recruiting new medical and graduate students to staff the journal. "The goal is to become self-perpetuating, so we don't face the kind of problems we had before," Patrick said.

—*Jennifer Kaylin*

For more information about the YJBM*, or for guidelines for authors or article request forms, visit yjbm.yale.edu.*

T. CHARLES ERICKSON

Actress and playwright Anna Deveare Smith opened her most recent work, *Let Me Down Easy*, at New Haven's Long Wharf Theatre in January. The work includes her portrayals of several members of the medical school faculty.

Actress-writer returns to New Haven with a drama about the resilience of the human body

About eight years ago, Asghar Rastegar, M.D., deputy chair of internal medicine and professor of internal medicine (nephrology), was deeply influenced by someone he credits with making him a better doctor. That person isn't an older, more seasoned clinician or a brilliant, innovative scientist, but an actress and writer—Anna Deavere Smith.

"She finds meaning in the most common response," Rastegar said. "She hears things nobody else could." While physicians typically bring the science of medicine to the healing process, Rastegar said, Smith's compassionate portrayals shine the light on patients' humanity.

In January, Smith opened her latest work, *Let Me Down Easy*, at New Haven's Long Wharf Theatre. It is her second work with strong Yale connections.

Her first came about after Rastegar and Ralph I. Horwitz, M.D., FW '77, then chair of the Department of Internal Medicine, saw one of Smith's performances in 2000. They concluded that medical students and residents would become better doctors if they could observe the way she interacts with people to gather her material. They invited Smith to the medical school as a visiting professor, and after some dogged persuasion, she agreed. Arriving in the summer of 2000, Smith interviewed physicians, nurses, patients and their families. The result was *Rounding It Out*, a 90-minute exploration of the ways in which doctors and patients view and communicate with one another. Her work, which included portrayals of such faculty as Rastegar, Margaret J. Bia, M.D., FW '78, professor of medicine, and Forrester A. Lee, M.D. '79, HS '83, assistant dean of multicultural affairs, was performed twice at the medical school to packed houses.

Since then, Smith has broadened and expanded *Rounding It Out* into a full-blown theatrical production with a broader focus on the resilience and fragility of the human body. That work—*Let Me Down Easy*—includes material from *Rounding It Out* and portrayals of survivors of the Rwandan genocide, cancer survivor Lance Armstrong, a supermodel, AIDS victims in South Africa and a New Orleans physician who assured her hospitalized patients after Hurricane Katrina that rescuers would come for them even as her own doubts increased.

Smith also portrayed one of Rastegar's longtime patients. "I treated her for six years," Rastegar said during a discussion after one of Smith's performances. "What Anna got out of her in a few hours she had never shared with me."

"I usually don't like being interviewed, but I don't remember her prompting or asking me anything," said Lee, who also joined in that discussion. "That is her special talent. I totally enjoyed the experience."

The recipient of a MacArthur Fellowship in 1996, Smith is credited with creating a new form of theater. She depicts a range of characters in her one-woman shows, using her subjects' own words and minimal props to offer multiple points of view. Her plays have explored such issues as the racial tensions between blacks and Jews in the Brooklyn neighborhood of Crown Heights in 1991 and the Los Angeles riots in the wake of the Rodney King police brutality trial in 1992. Smith's exceptional ability to inhabit the people she is portraying once prompted *The New York Times* to call her "the ultimate impressionist: she does people's souls."

—*Jennifer Kaylin*

A new Yale initiative promotes health issues as a tool of diplomacy

In the summer of 2006, Youssra Marjoua experienced, as she puts it, an "aha" moment. Marjoua, a third-year medical student who was researching maternal health in Nigeria, saw how the field intersected with such issues as poverty, housing, education and women's empowerment. "No one global health challenge is an entity in and of itself," she said. "You can't talk about these things without including the whole."

That epiphany has led Marjoua to focus on a new concept that is gaining currency in public health circles: health diplomacy—the idea that the networks and cooperation developed around health promotion and disease eradication could be leveraged to address problems traditionally considered outside the realm of public health, such as preventing or ameliorating conflicts and war.

Marjoua is one of about a dozen medical and public health students who, under the direction of Kaveh Khoshnood, M.P.H. '89, PH.D. '95, assistant professor of epidemiology and public health, have formed the Health Diplomacy Initiative at Yale (HDI). Its aim is to promote dialogue within and beyond the Yale community on the value of having health considerations play a more prominent role in international relations and foreign policy. Khoshnood has received $10,000 from the MacMillan Center for International and Area Studies to host four health diplomacy seminars during this academic year.

Leading organizations and journals are taking the notion of health diplomacy seriously. The World Health Organization devoted its March 2007 bulletin to the subject of health and foreign policy, and such medical journals as *The Lancet* and *JAMA: The Journal of the American Medical Association* have editorialized in support of health diplomacy. The Aspen Institute devoted a session to global

OTTO STEININGER

health diplomacy in a health forum last year, and the University of California, San Francisco, is planning to include health diplomacy in its Global Health Sciences program.

The AIDS epidemic, said Khoshnood, is the landmark event that showed that health threats don't recognize borders and can destabilize the political, economic and social structures of countries. "AIDS shook up segments of the government that would otherwise be uninterested in health issues," Khoshnood said.

Along with SARS and avian flu, the AIDS epidemic provides an opening for public health professionals to become significant players in international diplomacy. "We're seen as being in the 'caring' profession," Khoshnood said. "We come in with all these positive feelings and without any particular political agenda. Why can't we use this standing as a force for good?"

Marjoua sees health diplomacy as a "novel and great idea." She's hoping HDI will explore ways in which health can be used to shape diplomatic decision making for the better. "I'm interested in how the rise in health policy in foreign policy discussions can transform foreign policy."

Khoshnood shares her enthusiasm. The only downside he foresees is that health diplomacy could be co-opted by governments to advance political agendas. "I hate to think that health would be used that way," he said. But so far, he believes that the potential benefits are worth the risk.

—*J.K.*

et cetera . . .

YALE JOINS IN HPV VACCINE STUDY

The School of Public Health and the Connecticut Department of Public Health are studying the effects of a vaccine against the leading cause of cervical cancer—the sexually transmitted human papillomavirus (HPV).

Although the body's immune system clears most HPV infections, some cause precancerous lesions and cervical cancer. In the United States, 6.2 million new infections are diagnosed each year.

The vaccine Gardasil, marketed by Merck, is licensed for females 9 to 26 years old and targets strains of the virus that are thought to cause 70 percent of cervical cancers and strains that cause 90 percent of genital warts. The Yale office of the Connecticut Emerging Infections Program will survey pathology laboratories and health care providers to determine whether new diagnoses of precancerous lesions have declined since the introduction of the vaccine.

Linda M. Niccolai, PH.D., assistant professor of epidemiology, is the director of the project.

—John Curtis

AWARD FOR DOONESBURY CARTOONIST

The travails of the "Doonesbury" character B.D. as he readjusts to civilian life after losing a leg in Iraq won the comic strip's creator, Garry Trudeau, the annual Mental Health Research Advocacy Award from the Department of Psychiatry in April. The award recognizes contributions that advance research designed to improve the lives of people with mental illness. The department cited Trudeau's "humorous but moving" accounts of soldiers returning from Iraq and Afghanistan.

"Trudeau provides millions of Americans with a gut-level appreciation of the impact of post-traumatic stress disorder on soldiers and their families as well as the real opportunities for obtaining help with the readjustment process," said John Krystal, M.D., professor of clinical pharmacology and deputy chair for research in psychiatry. "He is helping to raise awareness about the importance of PTSD as a national challenge, where investment in treatment and research could have an important and lasting impact."

—John Dillon

Yale team implants new prosthetic ankle

A tailor-made prosthetic joint restores function while reducing side effects and amputation risk.

The ankle's position in the hierarchy of artificial joints corresponds roughly to its location at the bottom of the human body; however, a new Yale team—armed with prostheses that better mimic the ankle's structure—aims to raise its stature.

The development of a prosthetic hip in the early 1960s set the modern standard for arthroplasty, followed by advances in other manmade joints. "We know a ton about the knee. We know a ton about the hip," said John S. Reach Jr., M.D., assistant professor of orthopaedics and the new director of the reconstituted Yale Foot and Ankle Service. "The foot, in medicine, hasn't been looked at much at all. It just hasn't gotten enough respect. The hand is sexier. A hip is easy to put in; it's a ball and socket," Reach said. "An ankle is pretty complex. It's small. It's fussy."

Prosthetic ankles have "lagged behind, but not for lack of trying," Reach said. They have come a long way from 19th-century efforts to fashion a ball and stem from elephant tusks. The first modern synthetic ankle, developed in the 1970s, was "a basic hinge," but doctors learned quickly that the human body isn't that simple. The latest generation of prosthetic ankles more closely follows the joint's anatomy. "Now they look more like what God gave you," Reach said.

The components of the new implant could easily be mistaken for parts that hold a dishwasher together. The implant—made of titanium, chromium and plastic—replaces the top of the talus and base of the tibia. Because the prosthesis is modular, each part is tailored to the patient. In November, Reach performed Connecticut's first total ankle replacement with the new device, called the Inbone, on a 38-year-old man whose life was upended in a bizarre auto accident one Sunday in 1994.

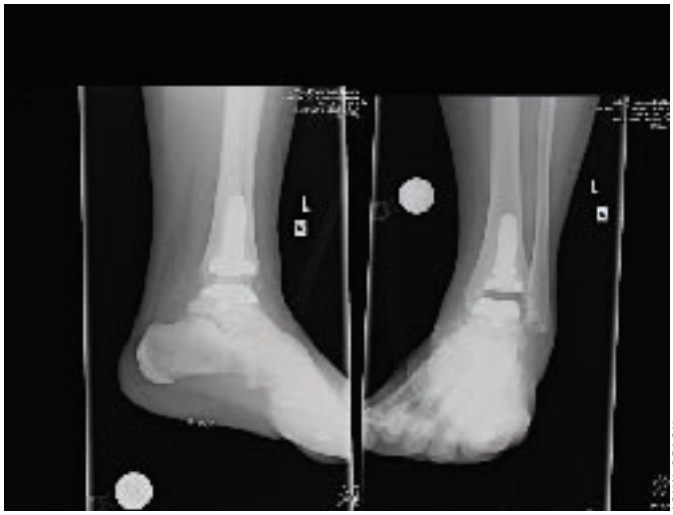
The patient, Damian Diaz, who lives in the Fair Haven neighborhood in New Haven, lost an eye, a shoulder and his lower left leg in the crash when the wheel came off the axle and burst through the floorboard. He had had 30 surgeries, and though he felt lucky to be alive, the pain in his right ankle limited his walking to no more than a few steps at a time. "My bone was disappearing," Diaz said. "I could not live with the hurt every day."

Diaz was a good candidate for total ankle replacement. Trauma patients often develop severe arthritis in the ankle, and though it's less common than hip or knee arthritis, Reach expects the incidence of post-traumatic arthritis to rise—partly because advances in medicine and safety enable younger people to survive these traumas. Airbags protect the upper body, but "people are left with horribly mangled feet," he said. "When you have pain in the joints, it's bad. It's bone against bone."

The first lines of treatment for ankle arthritis are painkillers and braces. Another established option is fusing the ankle bones, but that can leave patients with a permanent limp. It can also lead to further arthritis and, perhaps, amputation. A recent review of the literature found that 1 percent of patients who had a total ankle replacement needed an amputation, compared to 5 percent of the fusion patients. Reach expects 85 percent of the new prosthetic ankles to last at least eight years.

Diaz said that so far he's happy with the prosthetic ankle. "I'm waiting to get used to it, but I'm walking," he said. "It doesn't hurt anymore."

—John Dillon



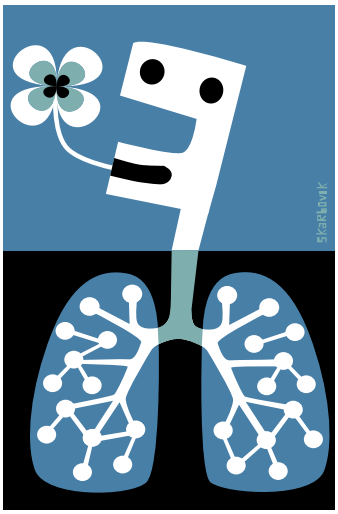
JOHN REACH

Yale physicians performed the first total ankle replacement in Connecticut in November, using a new implant made of titanium, chromium and plastic that is tailored to the patient.

Scientists report link between high levels of a protein and severe asthma

Late last year two Yale researchers reported a link between severe asthma and a certain protein, YKL-40, which appeared in elevated levels in patients who used rescue inhalers and oral corticosteroids most frequently and required hospitalization for severe attacks.

Now, in findings published in the *New England Journal of Medicine* in April, Geoffrey L. Chupp, M.D., associate professor of medicine (pulmonary and critical care), and Jack A. Elias, M.D., Waldemar Von Zedtwitz Professor and chair of the Department of Internal Medicine, with colleagues at the University of Chicago and the University of Wisconsin-Madison, describe a single nucleotide polymorphism (SNP)—a one-letter change in the genetic code—that correlates with asthma and its severity. The SNP is located in the chitinase 3-like 1 gene (CHI3L1), the gene that encodes YKL-40.



"The first study demonstrated that YKL-40 was increased and that levels in the blood correlated with levels in the lungs. ... But it was possible that it was just a bystander and not part of the asthmatic pathway," said Chupp. "This study strongly suggests that YKL-40 plays a significant role in the development of asthma."

YKL-40 belongs to the family of chitinases and chitinase-like proteins. Chitinases bind to, chew up and digest chitin, a tough natural polymer found in the cell walls of fungi and the bodies and eggs of parasitic worms. Chitinase-like proteins, however, can't digest chitin. YKL-40 and its role in asthma came to light several years ago when Elias and his colleagues found that chitinase and chitinase-like proteins were overexpressed in the lungs of mice with asthma-like diseases. The surprise discovery supported the idea that asthma is an antiparasitic response in a setting where parasites cannot be detected.

Unpublished studies suggest that YKL-40 controls inflammation in the asthmatic airway. "When YKL-40 is there, it keeps inflammatory cells alive longer, and when it is not, they die quickly," said Elias.

In the future, YKL-40 could help doctors treat asthma by serving as a biomarker, notifying them of patients who are likely to have severe asthma. Pharmaceutical companies might also develop a drug that targets YKL-40 and use serum measurements of YKL-40 to help predict who will respond to these new therapies. "Ultimately," said Chupp, "blocking the effects of YKL-40 may prove to be a novel and effective way to treat asthma."

—Hannah Hoag

podcast

A podcast of Geoffrey Chupp speaking on this subject can be found on the Yale page on iTunes U. Visit itunes.yale.edu or launch iTunes, then select Yale from the offerings under iTunes U. The podcast is included under "Yale Health & Medicine."

et cetera ...

TECHNIQUE PROMOTES NEW BONE

A novel technique—removing bone marrow and injecting a hormone—promotes rapid formation of new bone in rats, Yale researchers reported in February in the journal *Tissue Engineering*.

"This could radically change the way patients are currently treated for weakened or fractured hips, vertebrae and acute traumatic long-bone fractures," said senior author Agnès M. Vignery, D.D.S., PH.D., associate professor of orthopaedics and rehabilitation. Existing therapy, which involves surgery and artificial materials, often leads to unsatisfactory outcomes.

Researchers removed bone marrow from thigh bones in mice and then gave them daily injections of bone anabolic agents like parathyroid hormone (PTH). The procedure creates new bone tissue that appears structurally and biologically normal, and endows the targeted bone with improved biomechanical properties at a rate that can't be achieved by injecting hormones alone, Vignery said.

—J.D.

COLON SCREENING QUESTIONED

Colorectal cancer screenings for the severely ill may do more harm than good, according to a Yale study published in the *Archives of Internal Medicine* in November.

This finding resulted from a new method of evaluating medical tests that gauges "payoff time"—how long it takes for a test's benefits to outweigh complications and side effects. Researchers led by R. Scott Braithwaite, M.D., assistant professor of medicine, studied 50-year-old men with HIV and 60-year-old women with severe congestive heart failure.

The payoff time for the screenings was up to five years for the men and 2.9 years for the women. But patients with severe congestive heart failure were less likely to benefit—they have a life expectancy of less than 2.9 years. Patients with HIV, however, have a life expectancy of more than five years.

"This issue is becoming increasingly important as pay-for-performance and physician 'report cards' encourage clinicians to offer screening to everyone, regardless of individual benefit," said Braithwaite.

—John Curtis

Building the case against a rogue gene

Three labs, including one at Yale, independently target a gene implicated in autism.

Researchers know that defects in brain development are to blame for autism, but pinpointing the likely genetic culprits has remained an elusive goal. To put it in mobster terms, there is no single "Tony Soprano gene" corrupting brain development. Instead, scientists believe that multiple "small-time thug genes" gang up to undermine the developing brain. Because the individual effects of these crooked genes may be subtle, it has been hard to get the goods on them.

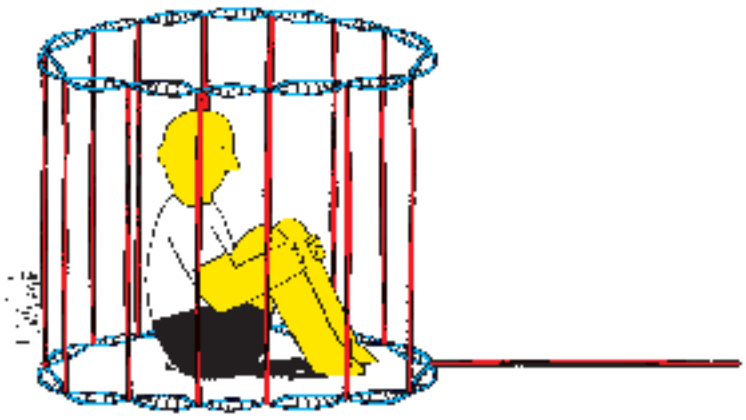
To help crack the case, Matthew W. State, M.D., PH.D. '01, the Irving B. Harris Associate Professor of Child Psychiatry in the Child Study Center and of genetics and director of the Program on Neurogenetics, sought to flush out autism-associated genes by focusing on clues from certain affected individuals. Children with autism—or any of a spectrum of related disorders—have difficulty communicating and interacting with others, exhibit stereotyped behaviors and often suffer from mental retardation and seizures. A small percentage of these children also have a visible chromosomal abnormality. In one such patient State found that the abnormality disrupted the Contactin Associated Protein-Like 2 (CNTNAP2) gene, which encodes a protein that helps brain signals pass from one neuron to another. Based on prior work by himself and others linking contactin proteins to autism spectrum disorders, mental retardation and seizures, State grew suspicious of CNTNAP2.

With the help of colleagues in clinical medicine, neurobiology, biochemistry and genetics, State has collected a body of evidence that strongly incriminates CNTNAP2 as one of perhaps many autism accomplices. First, CNTNAP2 is present at the scene of the crime, including all layers of the cerebral cortex within the temporal lobe and within the limbic system, a brain circuit involved in social behavior. Second, CNTNAP2 is found with its binding partner, contactin 2, at synaptic plasma membranes—the gates of communication between neurons. The third and strongest line of evidence against CNTNAP2 is that sequencing of the gene from 635 autistic patients and 942 controls turned up 13 rare, unique changes to the encoded protein that were found only in autistic individuals. Eight of these mutations are predicted to disrupt the proper functioning of CNTNAP2. One particular mutation was identified in four autistic children in three unrelated families, but not in more than 4,000 chromosomes from controls. "This is strong but not definitive evidence linking this gene with autism," according to State.

Unbeknownst to each other and to State, two other medical research laboratories—the labs of Daniel H. Geschwind, M.D., PH.D., at the University of California, Los Angeles (UCLA), and of Aravinda Chakravarti, PH.D., at Johns Hopkins University—also fingered CNTNAP2 as causative of autism. Both Geschwind and Chakravarti independently homed in on CNTNAP2 after surveying the genomes of hundreds of individuals and identifying a particular chunk of genetic material that appeared to surface in families with autism. State and Geschwind, longtime friends who met as residents at UCLA, learned of the other's discovery while catching up during one of their regular phone conversations. Soon after, Geschwind caught wind of Chakravarti's work through the research grapevine. When the three scientists compared notes, they decided to co-publish their findings to build the strongest case possible against CNTNAP2. "There's a reason we're all landing on this gene," said State. All three papers were published in the January issue of the *American Journal of Human Genetics*.

State thinks that identification of CNTNAP2 may give him the traction he needs to begin to understand the complex biology of autism. "Our hope is that our continued work on understanding the biology of CNTNAP2 will lead to real opportunities for novel approaches to treatment," said State.

—Kara A. Nyberg



In the olfactory bulb, new neural stem cells learn to listen before they speak

Like a newborn learning from its parents, a neuron born of neural stem cells in the adult brain must take its cues from its elders if it hopes to mature and survive, according to new research headed by Charles A. Greer, PH.D., professor of neurosurgery and neurobiology.

In findings published in the September 12, 2007, issue of *The Journal of Neuroscience*, Greer and Mary C. Whitman, an M.D./PH.D. candidate in his lab, tracked the development of new neurons in a region of the brain called the olfactory bulb, which receives information about odors from the nose. It is one of the few regions in the adult brain that allows new neurons to be generated and integrated into existing neural circuits.

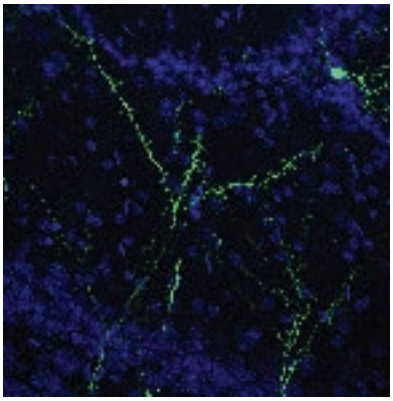
However, such assimilation is not easy. New brain cells destined for the olfactory bulb have to migrate vast distances from their birthplace, and half of these newborn neurons die between 15 and 45 days after being generated, presumably because they fail to integrate within the neural circuitry.

Greer and Whitman found that although the long, spindly arms of new neurons are present 10 days after being generated, they don't form the connections that let them talk to other olfactory bulb neurons until three weeks after birth. Even then, it takes six to eight weeks for the cells to mature and achieve complete integration.

"New neurons are essentially taught to listen before they're allowed to talk," said Greer. He and Whitman found that fibers extending from older neurons located in higher centers of the brain first connect to short arms projecting from the base of new neurons about 10 days after generation. Whitman and Greer believe that these early synapses provide a conduit through which elder brain cells control the development, and ultimately the survival, of new neurons within existing brain circuitry. This ensures that the new lines of communication don't garble pre-existing lines.

According to Greer, these findings have important implications for using adult neural stem cells to replace brain cells lost by trauma or neurodegeneration, such as in Parkinson's disease. "To use stem cells in a transplant strategy, we're going to have to understand the kinds of synapses new brain cells make as well as the kinds of synapses they receive from existing circuits. Our goal is to prevent these cells from being potentially disruptive by getting into the wrong synaptic circuit or by acting in a precocious way," he said.

—*K.A.N.*



CHARLES GREER AND MARY WHITMAN

Neurobiologist Charles Greer and his team found that newly born neural cells followed the example of their "elders" in order to survive. This image shows interneurons labeled with a green fluorescent protein at birth so the scientists could follow their migration into the olfactory bulb and their subsequent morphological differentiation and maturation.

et cetera . . .

BIG ROLE FOR TINY RNA

Tiny RNAs discovered in "junk" DNA play an important role in controlling gene function, Yale scientists reported in the journal *Nature* in October.

A team led by Haifan Lin, PH.D., director of the Yale Stem Cell Center and professor of cell biology, discovered these RNAs, called piRNAs, in mammalian reproductive cells in 2006. The team's findings suggest that piRNAs also exist in nonreproductive body cells and help to control stem cell fate and tissue development. The researchers found that a particular piRNA forms a complex with a protein called Piwi, which then binds to a specific region of chromatin (i.e., the genome) that regulates gene activity.

"This finding revealed a surprisingly important role for piRNAs, as well as junk DNA, in stem cell division," Lin said. "It calls upon biologists to look for answers beyond the 1 percent of the genome with protein-coding capacity to the vast land of junk DNA, which constitutes 99 percent of the genome."

—John Curtis

VIRUS KILLS BRAIN TUMORS

Yale researchers have engineered a virus that can find its way through the vascular system and kill deadly brain tumors, offering a potential new treatment for cancers in the brain.

Such malignant brain tumors as glioblastomas and metastatic tumors are diagnosed in 22,000 Americans each year. There is no cure for these malignancies. They often kill within months; current treatments usually fail because they don't kill all the cancer cells.

Anthony N. van den Pol, PH.D., professor of neurosurgery, and colleagues reported in the *Journal of Neuroscience* in February that they had transplanted multiple types of human and mouse tumors into the brains of mice and then inoculated the mice with a lab-created vesicular stomatitis virus known as VSVrp30a, a distant cousin of the rabies virus. Three days later, the tumors had been infected by the virus and "were dying or dead," while transplanted normal cells were spared, van den Pol said. "This underlines the virus' potential therapeutic value against multiple types of brain cancers."

—John Dillon

"A passport to the young"

An alumnus and Harvard professor uses film to teach lessons in law and psychiatry.

Early in the 1990s, psychiatrist and law professor Alan A. Stone, M.D. '55, noticed a change in his law and literature class. When he asked which students had read a certain play or novel—Thomas Mann's *Death in Venice*, for instance—not a single hand went up. Then a student would venture: "I think I saw the movie."

"Young people are incredibly well-informed about film and incredibly ill-informed about literature," said Stone. "And I'm talking about students at Harvard College and at Harvard Law School."

Stone, the Touroff-Glueck Professor of Law and Psychiatry at Harvard Law School, was trying to use literature to connect students with the large themes of psychology and justice. Reading fiction, said Stone, provides "an incredible opportunity to talk about moral issues that are usually approached in law school through such arcane discussions that the moral issues disappear before your eyes." But the approach was no longer working: few students had read Sophocles or Dostoyevsky, Austen or Flaubert. Stone needed, as he puts it, a new "passport to the young."

He found such a passport when fellow law professor Randall L. Kennedy, J.D. '82, asked Stone to write about white racism for the magazine *Reconstruction*. Stone used the 1989 film *Glory* to address the issue. His analysis—that the movie resorted to racial stereotyping in its depiction of the first all-black regiment to fight for the Union in the Civil War—generated numerous letters to the magazine.

By then, Stone had realized that the shared stories of the new generation were not written in the pages of books but, rather, recorded on film. He created a popular course called "Law, Psychology and Morality: An Exploration Through Film." "This allows students to grapple with issues that are the reason they came to law school in the first place: to identify and correct injustice," said Stone. The primary texts for the class include the films

CARLOS SILVA

Alan Stone, who teaches law and psychiatry at Harvard, uses popular films to engage his students on moral issues. Young people, he said, are well-informed about film, but ill-informed about literature.

Do the Right Thing, Lone Star, Crimes and Misdemeanors, The Battle of Algiers and *Character.*

Unexpectedly, the *Glory* essay proved to be a passport of sorts for Stone himself: the former president of the American Psychiatric Association and residency director at McLean Hospital entered new territory as a film critic. Since 1993, he's written more than 100 reviews for the bimonthly *Boston Review*.

Stone is not drawn to movies for diversion but instead to witness the stories of people thrust into situations that test character, such as Oskar Schindler's insight that he could save the lives of Polish Jews forced to work in his factories.

MIT Press recently published 15 of Stone's reviews in a small volume titled *Movies and the Moral Adventure of Life*. Films reviewed in the book include *American Beauty, The Passion of the Christ, Pulp Fiction, Antonia's Line* and *Henry V*.

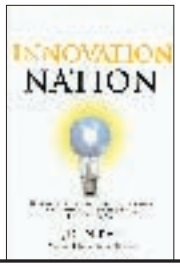
A *Los Angeles Times* critic called Stone "a discovery to rejoice at." Stone's film analysis, wrote David Thomson in November, "is not the breathless rave on this Friday's release, but a culmination of the process by which a picture can be seen a few times, mulled over, seen again and then at last written about—as if film writing might be as contemplative, gradual and enriched as any other scholarship."

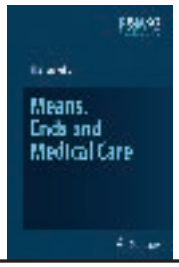
At 78, Stone looks forward to writing many more reviews. (He still sees a few psychotherapy patients, too.) The films he finds worth his attention, he said, are "films that challenge me and make me reflect on the moral adventure of life."

To read reviews by Stone, visit http://bostonreview.net/onfilm.html.

—*Cathy Shufro*

Bookshelf focuses on books and authors at the School of Medicine. Send suggestions to Cathy Shufro at cathy.shufro@yale.edu.





IICAPS: A Home-Based Psychiatric Treatment for Children and Adolescents
by Joseph L. Woolston, M.D. '70, the Albert F. Solnit Professor of Child Psychiatry in the Child Study Center and professor of pediatrics; Jean A. Adnopoz, M.P.H. '81, clinical professor in the Child Study Center, and Steven J. Berkowitz, M.D., assistant professor in the Child Study Center (Yale University Press) Intended for health providers and planners, this book presents a model of mental health treatment for children with serious psychiatric disorders. The IICAPS (Intensive In-Home Child and Adolescent Psychiatric Services) program offers an alternative treatment paradigm for families that has proven effective in reducing the need for inpatient and other institution-based services. The authors conclude with a discussion of some of the unresolved challenges inherent in home-based care for children with serious psychiatric disorders.

Innovation Nation: How America Is Losing Its Innovation Edge, Why It Matters, and What We Can Do to Get It Back
by John Kao, M.D. '77 (Free Press) The author, a former Harvard Business School professor, offers a troubling portrait of the erosion of U.S. competitiveness in innovation in recent years. Kao then takes the reader on a tour of leading innovation centers in Singapore, Denmark and Finland. He proposes a national strategy that would empower the United States to marshal its vast resources of talent and infrastructure in ways that have been shown to produce results.

Means, Ends and Medical Care
by H.G. Wright, PH.D., M.D. '70 (Springer) The author uses the conceptual tools of cognitive science to analyze and critique some of the most basic concepts of contemporary medical care. By uncovering the complex internal structure of human concepts of health and disease, Wright shows the error of assuming that professionals always understand in advance the medical and moral ends involved in any medical situation. The result of this alternative view of mind and medical judgment is a model for reasoning that, although not specifiable by a set of fixed rules, can give realistic guidance for medical decision making.

The Healer's Heart: A Modern Novel of the Life of St. Luke
by Diane M. Komp, M.D., professor emeritus of pediatrics (WaterBrook Press) The author creates a world around a fictional infectious disease specialist named Dr. Luke Tayspill. Luke's story covers the world: his childhood home in Ohio; war-torn Sarajevo; London, where his estranged wife deals with post-traumatic stress disorder; a quiet Gullah island off the coast of South Carolina with unexpected family connections; and ravaged Sierra Leone, where Luke travels after finding an unpublished manuscript written by his beloved grandfather in order to complete a story his grandfather began.

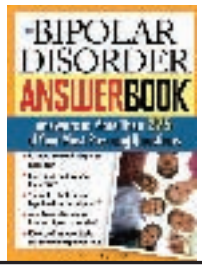
Unnatural History: Breast Cancer and American Society
by Robert A. Aronowitz, M.D. '85 (Cambridge University Press) The book traces the changing definitions and understandings of breast cancer as the author explores the experience of breast cancer sufferers; clinical and public health practices; and individual and societal fears.

The Papillomaviruses
edited by Daniel C. DiMaio, M.D., PH.D., Waldemar Von Zedtwitz Professor of Genetics and professor of therapeutic radiology, and Robert L. Garcea (Springer) This volume offers a complete description of the current state of knowledge about the biology of the papillomaviruses. It evaluates the risk to humans posed by infection with human papillomaviruses (HPV), including cervical cancer, the second most common cancer in women worldwide. This book also considers the possible involvement of HPV infection in cancers in other body sites.

Alzheimer Disease and Other Dementia Types: A Practical Guide, 2nd ed.
by Marc E. Agronin, M.D. '91 (Lippincott, Williams and Wilkins) This guide focuses on assessment, diagnosis and management of the complex array of dementia disorders seen in older patients. The author addresses all the subtypes of dementia and such associated psychiatric conditions as agitation, psychosis and depression. This edition features a new chapter on mild cognitive impairment as well as expanded coverage of Alzheimer disease and risk factors. Other chapters offer advice on caregiver support and legal and ethical concerns.

Help Your Child or Teen Get Back on Track: What Parents and Professionals Can Do for Childhood Emotional and Behavioral Problems
by Kenneth H. Talan, M.D., FW '71 (Jessica Kingsley Publishers) This book shows the reader how to deal with a child who may have an emotional or behavioral problem. It describes the red flags and disruptions in development that cause concern; offers solutions that parents can implement at home; and advises when they should seek professional counsel. For parents who decide to seek professional intervention, the author explains treatment options that include psychological treatment, psychiatric medications and complementary and alternative therapies.

Epidemiology, Biostatistics and Preventive Medicine: With STUDENT CONSULT Online Access, 3rd ed.
by James F. Jekel, M.D., M.P.H. '65, professor emeritus and lecturer in public health, David L. Katz, M.D., M.P.H. '93, associate professor (adjunct) of public health, Joann G. Elmore, M.D., M.P.H. '92, and Dorothea M.G. Wild, M.D., M.P.H. '03, lecturer in public health (Saunders) This text contains the latest information on health care policy and financing, infectious diseases, chronic disease and disease prevention technology. It also includes 350 USMLE-style questions and answers, complete with detailed explanations of the correctness or incorrectness of various choices.



Molecular Neurology
edited by Stephen G. Waxman, PH.D., M.D., the Bridget Marie Flaherty Professor of Neurology, Neurobiology and Pharmacology and chair of neurology (Elsevier Academic Press) Molecular neuroscience is revealing important clues to the pathogenesis and pathophysiology of neurological diseases and to the therapeutic targets that they present. Waxman explains the ways in which researchers use their understanding of the molecular basis of neurology to develop new therapies. The book highlights the principles underlying molecular medicine as related to neurology and presents up-to-date principles and disease examples. The author also reviews the concepts, strategies and latest progress in the field.

Ayurveda: A Comprehensive Guide to Traditional Indian Medicine for the West
by Frank John Ninivaggi, M.D., FW '77, assistant clinical professor in the Child Study Center (Praeger Publishers) Ayurveda is the traditional medical system of India, used for thousands of years as a source of proactive health measures as well as integrated healing strategies for body, mind and spirit. The author explains the ways in which Ayurveda can promote physical and mental health by targeting such threats to health as acute and chronic stress, pre-diabetes, metabolic syndrome, obesity, coronary artery disease and diabetes.

The Bipolar Disorder Answer Book: Answers to More Than 275 of Your Most Pressing Questions
by Charles Atkins, M.D., lecturer in psychiatry (Sourcebooks) This book describes bipolar disorder, a condition that causes abnormal shifts in a person's mood, energy level and ability to function. The book provides answers to common questions and serves as a reference for people with the disorder as well as for their loved ones.

Cardiovascular Molecular Imaging
edited by Albert J. Sinusas, M.D., professor of medicine (cardiology) and diagnostic radiology, Robert J. Gropler, M.D., David K. Glover, M.E., and Heinrich Taegtmeyer, M.D., PH.D. (Informa Healthcare) This book is a guide to targeted molecular imaging of the cardiovascular system. It covers new methods for the analysis and management of cardiovascular pathophysiology and explains new technologies for analyzing cardiovascular receptors; reporter probes and gene expression; and vascular structure and biological processes that affect the heart and associated vessels.

The descriptions above are based on information from the publishers.

SEND NOTICES OF NEW BOOKS TO
Cheryl Violante, *Yale Medicine,* 300 George Street, Suite 773, New Haven, CT 06511, or via e-mail to cheryl.violante@yale.edu

With online videos library patrons learn the latest in how to do research

The growing popularity of videos has changed the public face of an institution not generally known for being trendy: the medical library. The website of the Harvey Cushing / John Hay Whitney Medical Library now offers 51 videos—and counting—but not of celebrity gaffes or political satire. Instead, they show library patrons how to do research online.

"The next generation of learners is more visual than textual," said Lei Wang, M.L.S., an instructional design librarian at the library, referring to what's sometimes called the YouTube generation. "They expect video from you." Video sharing sites, such as YouTube, said Wang, have changed online norms even among people who use the library. Rapid changes in technology, he said, have made possible fast access to videos online. "The Web infrastructure is allowing large amounts of data to be transferred to personal computers."

Over the course of a month early this year, Wang made 10 instructional videos that provide in-depth instruction in using the new OVID search interface. Topics range from such basic skills as accessing OVID and choosing a database to such specialized topics as using OVID to conduct comprehensive literature reviews. Wang limits each segment's running time to about five minutes. "People's attention spans are pretty short," he said. Sometimes things change so fast that he has to revise an instructional video even before he has completed it. Wang keeps up with the latest by attending conferences.

Wang believes that if videos allow patrons to use the library's resources more easily, they're worth the effort. The library spends a lot of money on databases, such as those on the OVID platform, and on such knowledge management tools as RefWorks. "We pay for these products, and we want them to be used."

—*Cathy Shufro*

To access instructional videos, visit http://www.med.yale.edu/library/education/guides/ or visit the home page of the Harvey Cushing/John Hay Whitney Medical library and choose "Guides & Tutorials."

In Circulation focuses on activities at the Cushing/Whitney Medical Library. Send suggestions to Cathy Shufro at cathy.shufro@yale.edu.

GEORGE AGHAJANIAN

LSD, mescaline and brain receptors

That the brain has specific receptors for various drugs is now an established fact, but it took a long, strange trip by George K. Aghajanian, M.D. '58, HS '61, FW '63, a pioneer in neuropharmacology, to turn that theory into a certainty.

In 1958, for his thesis research, Aghajanian said at a Leadership in Biomedicine lecture in January, he compared the effects of mescaline and LSD in animals and speculated that the receptors mediating their effects were closely linked. But he faced a largely dubious senior faculty in psychiatry. "There was the belief at the time that the brain was not relevant to psychiatry," he said.

In the ensuing decades, Aghajanian, the Foundations Fund Professor of Psychiatry and Pharmacology at Yale, showed that LSD and related hallucinogens promote "spillover" of the excitatory transmitter glutamate from synapses in the prefrontal cortex, causing miscommunication between adjacent groups of neurons. His research helped pave the way for a new generation of antipsychotic drugs, which target brain receptors that modify the release of glutamate. "It just took 50 years," he said. "I hope that the students who go on to become physician-scientists have better luck than I did—or better timing."

—John Dillon

FRANCIS COLLINS

Genomics and personalized medicine

As the sequencing of the human genome approaches its fifth anniversary, Francis S. Collins, M.D., PH.D. '74, FW '84, asked how it will affect the practice of medicine. Will it be used to save lives? Or will the information be used to deny people jobs or health insurance? In a talk on March 27 at The Anlyan Center, Collins set out two hypothetical scenarios to illustrate how genomics might be used or ignored.

Collins, director of the National Human Genome Research Institute at the National Institutes of Health, outlined his first scenario: in 2015, a patient he calls Betty chooses not to have her genome sequenced because she fears genetic discrimination. She never learns about her family history of heart disease and her doctor thinks genetics is irrelevant to clinical practice. Betty gains weight and develops high blood pressure, but side effects keep her from taking her medication. Ten years later, Betty dies from a heart attack.

In Collins's second scenario, Betty receives all the benefits of genomics, including individualized treatment, and lives into the 22nd century. Collins implored his audience to make a commitment to personalized medicine and "SAVE BETTY!"

—Alix Boyle

HOWARD TARAS

Breakfast matters, even if it's just a doughnut

Conventional wisdom took a recess when Howard Taras, M.D., told an audience at pediatric grand rounds in February about his research into the effects of nutrition on a child's school performance.

Breakfast is important, said the professor of pediatrics at the University of California, San Diego, but whether kids eat fruit or a doughnut doesn't affect academic achievement. "For performance it doesn't really make a difference," he said, adding that "a student with poor nutritional intake at each breakfast is more likely to have fewer productive years in life with which to utilize his or her education."

His and other studies have also found that sufficient physical education "doesn't really change the outcome of their grades," Taras said. The research found, however, that children perform better on exams taken right after recess.

Poor sleep is "the most ignored" threat to school performance, said Taras, especially for children who have sleep apnea. He supports later starting times for the school day, adding that kids "aren't going to bed later" to take advantage of them.

Administrators and students' doctors need to communicate better with one another in order to manage children with chronic conditions, he said.

—J.D.

JOHN EYLER

Vaccines and the flu virus of 1918–1919

In 1918, with the world in the grippe's grasp, researchers were desperate for a way to stem the pandemic. They turned to new vaccines, all of which mistakenly targeted bacteria instead of viruses, said John Eyler, PH.D., a medical historian at the University of Minnesota who gave the George Rosen Memorial Lecture at the Beaumont Medical Club in February. Medical journals and the lay press touted the vaccines' efficacy even though experts—including the American Public Health Association (APHA)—harbored doubts.

By 1919, "the tide of professional opinion began to change" about the accuracy of the results, said Eyler. In retrospect it became clear that the early trials were rife with problems: poor selection criteria leading to biased samples and "no concern about who was a proper subject," Eyler said.

"American physicians certainly were inexperienced at conducting trials," Eyler said. They conducted them when the nation was "desperate" for relief from the pandemic, but the profession had no standards for what constituted an adequate vaccine trial.

The APHA established stricter standards for vaccine trials in 1919, though randomized trials wouldn't become common practice until decades later.

—J.D.

An artist and a medical missionary collaborate

Together, Peter Parker and Lam Qua produced an enduring record of medical care in China in the 1800s.

By Melinda Tuhus

In 1834, within a month of his graduation from the Medical Institution of Yale College and his ordination as a Presbyterian minister, Peter Parker departed for China as a medical missionary. A year after his arrival in Guangzhou he started a hospital to treat eye diseases and began a collaboration with portrait artist Lam Qua through which both men would leave their mark on medicine.

Parker went to China with the hope that by healing his patients' bodies he would open the door to their souls. British and American patrons provided financial support for his Ophthalmic Hospital, over which he hung a sign that read in Chinese, "Hospital of Universal Love," and which provided medical services at no charge. In addition to treating diseases of the eye, Parker also practiced surgery, including the removal of tumors. Today he is best known for introducing anesthesia—sulphuric ether—to China.

Down the street from Parker's hospital was the studio of Lam Qua, who had learned the Western style of portraiture from George Chinnery, an English painter who had settled in China. Qua was the first Chinese portrait painter to be exhibited in the West, a master who made his name and his fortune painting the wealthy—both local and expatriate—of the city of Guangzhou and beyond. Parker hired him to document the disfiguring tumors that afflicted many of his patients. The two men worked together for close to 20 years.

Most of Qua's subjects appear in profile or facing forward, draped in dark clothing and presenting a serene visage. Yet the subject matter is likely to evoke not serenity, but fascination and perhaps horror. One painting shows a man with a tumor roughly the size, shape, and positioning on the body of a cello being played, while many others depict women with grotesquely deformed breasts. Qua produced 114 paintings for Parker, 86 of which are housed in the Peter Parker Collection in the Cushing/Whitney Medical Library, along with the physician's case notes.

When Parker traveled to the United States to promote his mission, he brought these portraits with him. Ultimately, he left them to the Department of Pathology at the medical school, which in turn gave them to the Medical Historical Library. The paintings—oil on board—are now stored in vertical shelving in the historical library. Preservation librarian Sarah A. Burge, M.L.S., said that pulling the paintings out for viewing is hard on them and makes it impossible to view the collection as a whole. Still, she said, "Researchers come from all over the world to look at them. It's a heavily used collection."

With support from the Helen Melton Book Preservation Fund, efforts are under way to conserve not only the original paintings, but also Lam Qua's preliminary watercolor studies on pith paper. "It's like rice paper," Burge said. "They're extremely fragile, and in their current state they cannot be handled or viewed."

Photographs of the paintings were recently placed online in order to make them accessible to a wider audience. Does the fact that the works can now be viewed electronically reduce the number of people coming to view them at the library? If anything, Burge said, she thinks their existence on the Web has spurred interest. "People find out that we have the collection," she said, "and then they want to see it in person."

The collection of oil paintings is available online at http://www.yale.med.edu/library/subjects/digital.html.

Melinda Tuhus is a freelance writer in Hamden, Conn.

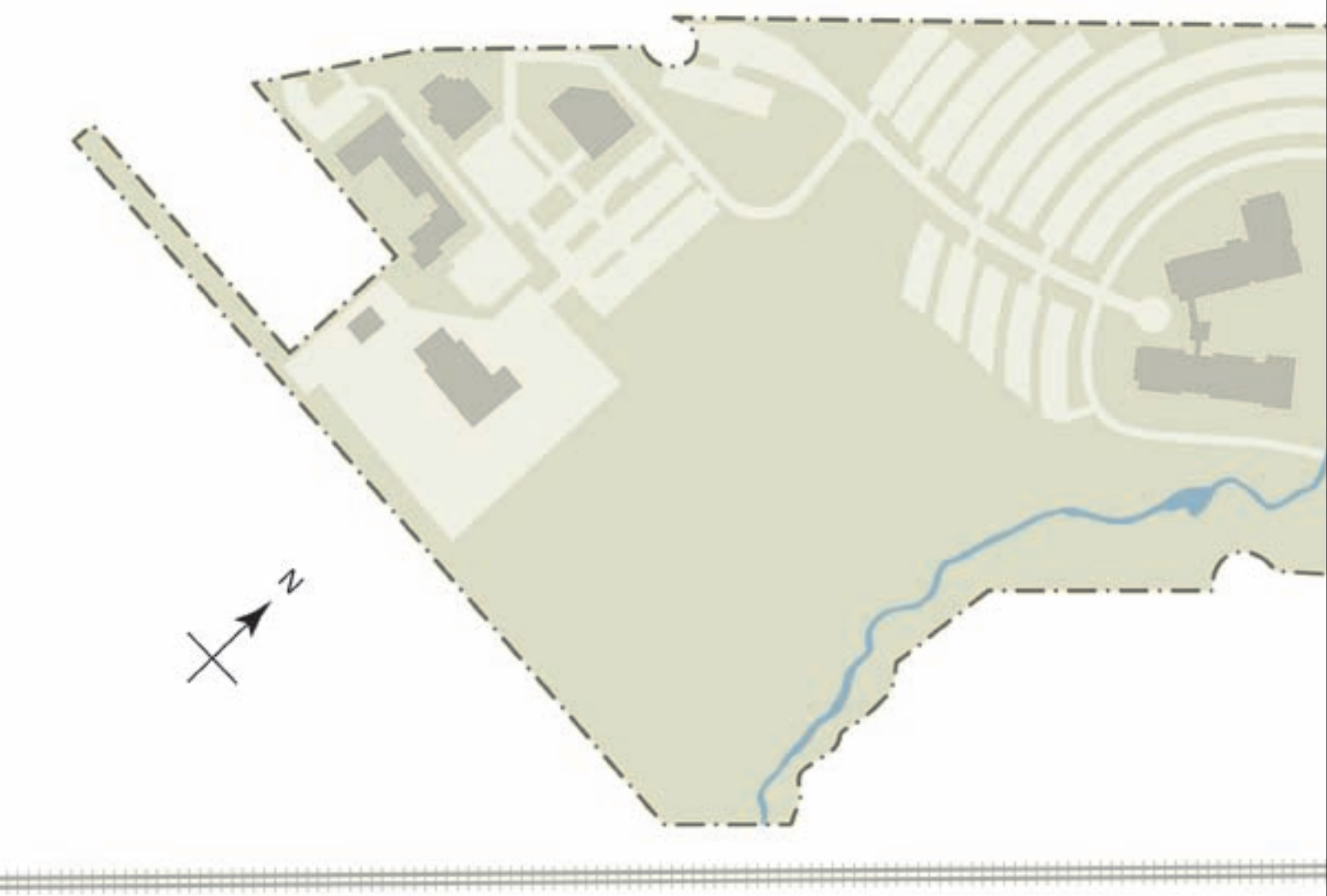
OPPOSITE AND ABOVE After medical missionary Peter Parker opened his Ophthalmic Hospital in Guangzhou, China, he commissioned the artist Lam Qua to document his patients' disfiguring tumors. The portrait at left shows a young boy with a tumor of the right chest wall. The portrait at right shows a patient after the amputation of his arm. Parker described this case in a journal entry in November 1836: "At 11 a.m. the patient was seated in a chair supported around the waist by a sheet. The time did not exceed a minute from the application of the scalpel till the arm was laid on the floor. ... The patient made a good recovery." Qua produced 114 paintings for Parker; 86 of which are in the Peter Parker Collection in the Medical Library, along with the physician's case notes.

MEDICAL HISTORICAL LIBRARY, CUSHING/WHITNEY MEDICAL LIBRARY (2)

How the West was won

By Marc Wortman

Cartography by Anandaroop Roy | Photographs by Matthew Garrett



The acquisition of the former Bayer HealthCare facility, now known as West Campus, resolves long-standing space needs and opens undreamed-of opportunities. The new campus will transform Yale—but how?

On Thursday, November 9, 2006, much of the nation was digesting the news about the dramatic swing in party control of Congress after the midterm elections two days earlier. In his office at Woodbridge Hall, however, Yale President Richard C. Levin had some startling local news in mind. Bayer HealthCare had announced that morning that it was shutting down its vast North American research headquarters straddling the border of the neighboring towns of West Haven and Orange. The disappearance of what had been the largest employer and taxpayer in the two towns immediately west of New Haven seemed to spell economic disaster for the region. But when Levin learned the news about the 136-acre site where nearly 3,000 people had once worked, he leaped up from his desk. "What an opportunity!" he exclaimed. "This is a once-in-a-lifetime opportunity for us." Levin wanted to purchase the site, potentially changing the face and character of Yale University forever. But first he did what he could to find another buyer for the property.

For the past decade Yale has been building at a pace that rivals the near-complete campus reconstruction of the 1930s, which gave the university most of its present architectural face. Much of the recent construction binge has focused on the sciences, particularly biomedical research. In just the past three years, several major new academic buildings have opened as part of a billion-dollar plan to bolster science research and teaching. For instance, the 457,000-square-foot Anlyan Center, which opened in 2003, and the 120,000-square-foot Amistad Street building dedicated last October have increased the medical school's laboratory space by nearly half. When the new 14-story Smilow Cancer Hospital at Yale-New Haven Hospital opens in 2009, it will unite all of Yale Cancer Center's clinical services under one roof. On the main campus, numerous new science buildings affiliated with the medical school have opened or will open soon, including new chemistry and environmental studies buildings. Plans also call for significant additional construction, renovation and expansion of science facilities within the medical center.

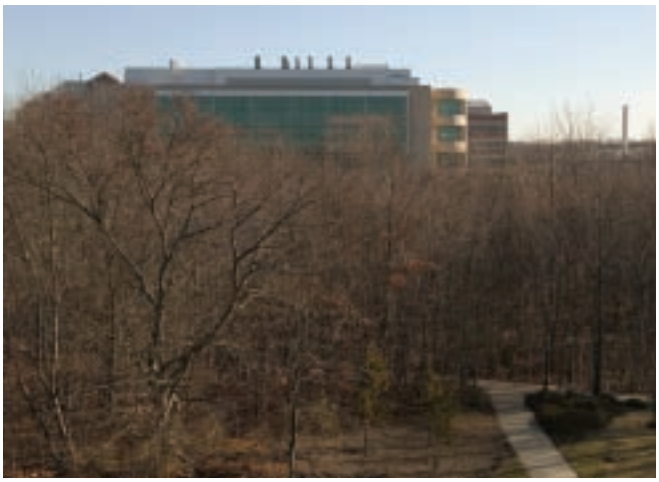
Despite this building frenzy, Yale still lags well behind its principal competitors in both the size and growth of its science facilities. That's in part because Yale remains largely landlocked within its dense New Haven surroundings, leaving scant room for outward expansion. And where there is room, such as at the medical school, construction costs have limited expansion. Yale, and in particular its medical school, continues to garner grant funding at a high rate on a per-faculty basis—it is presently third among American medical schools—but as a whole the university has fallen behind rivals in capturing its share of available resources for scientific research, dropping to 19th place in total government funding for science. The medical school is in 6th place in total NIH funding. "The quality density is just as good as the top competitors," says medical school Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, "but having less research space and thus less research than some of the other top schools limits the impact of our science programs."

Levin asked Alpern what the medical school might do with the Bayer site were Yale to buy it. The possibility, though, was "so sensitive," says Levin, that he made only Alpern and the University's officers and trustees aware of his interest in the property. Alpern quickly put together a list of possible uses, and, Alpern says, "The list was pretty long." That was no surprise to his colleagues. Says Daniel C. DiMaio, M.D., PH.D., vice chair and Waldemar Von Zedtwitz Professor of Genetics, who consulted with Alpern about the former Bayer campus: "The rate-limiting factor here is space, not ideas or money."

Room to grow—with ready-made laboratory facilities—suddenly appeared like a vision on the western horizon. About a 15-minute drive from downtown New Haven, the Bayer site's 17 buildings include 450,000 square feet of state-of-the-art research laboratory space in four modern buildings, much of it either recently built or renovated and some of it never even fully occupied. Along with that, the campus comprises nearly 1 million additional square feet of modern offices, warehouses, and miscellaneous other spaces, including a day-care center, a power plant and surface parking for nearly 3,000 cars with easy access to Interstate 95. The site also has a library, a 250-seat auditorium, multiple seminar and conference rooms, modern computing and telecommunications facilities and a 200-seat cafeteria and other food service areas.

The addition of what would amount to an entirely new third science campus, albeit one outside Yale's hometown of three centuries, would, says Levin, offer "great potential to lift Yale science to the very top rank" among research universities. But he had to keep quiet.

Levin may have coveted the property, but Yale could not show its interest. Sitting in his Woodbridge Hall office, Levin says, "It was important for the region to attract another pharmaceutical firm." Not only might a large private corporate



Yale's new West Campus, a former pharmaceutical research and manufacturing facility, covers 136 acres and has 1.6 million square feet of floor space. Clockwise from top left, the Oyster River and a small forest bisect the property; 600,000 square feet of manufacturing and warehouse space to hold and display collections from the university's libraries, museums and galleries; a five-acre parcel with several nature trails; and 3,000 parking spaces.

tenant make immediate use of the facilities and rehire laid-off employees, "It was consistent," he says, "with our long-standing plans for contributing to a region with a strong science-based economy," through Yale's own biomedical research and efforts to build biotechnology companies based on university discoveries. Yale would need to sit on its hands and wait to see what new owner might emerge.

A productive corporate campus

For more than four decades, a pharmaceutical firm occupied at least part of the West Haven-Orange site. Bayer HealthCare, a division of the German pharmaceutical giant Bayer AG, and its predecessor at the West Haven site, Miles Laboratories, had invested nearly $1 billion there since first acquiring the former pig farm in 1965—and then added adjacent property when a multiplex theater complex closed and moved across the street. Eventually the campus grew to be Bayer's largest site in the United States and the company's North American headquarters.

The site had been a productive one for Bayer. Its scientists discovered and developed the kinase inhibitor sorafenib there. Last year the Food and Drug Administration approved the drug as a treatment for renal cell carcinoma, a deadly form of advanced kidney cancer, and it is now marketed as Nexavar. In addition to research, Bayer also used the site as a manufacturing center. Billions of tablets of the popular heartburn treatment Alka-Seltzer were once sent out from West Haven to the American market. More recently, crews worked around the clock under tight security churning out Cipro tablets, the trade name of the antibiotic ciprofloxacin, in response to the huge demand for stockpiles of the drug following the 2001 anthrax attacks in Washington, D.C., and elsewhere.

When Bayer put the property on the market, Connecticut Governor M. Jodi Rell formed a commission to find a buyer. Levin designated Bruce D. Alexander, Yale's vice president for New Haven and state affairs and campus development, to serve on the commission, and Yale threw its weight behind the effort to attract a large pharmaceutical corporation. But with much of the pharmaceutical industry in the midst of painful restructuring and contraction, "there was not a glimmer of interest," recalls Levin. The only bidders for the site, says Alexander, were real-estate developers who would have leveled it to make room for retail and commercial complexes. "That would have been a huge loss," says Alexander. Levin decided it was time to move.

Yale entered the bidding against 14 other potential buyers but walked away with the prize in late June 2007. The final price, revealed at the closing in September, was astonishingly low: $109 million plus payments in lieu of taxes to West Haven and Orange amounting to $600,000 annually, and a million-dollar contribution over the next few years for training assistance to New Haven-area middle and high school science teachers. To put the purchase price in perspective, construction of The Anlyan Center alone cost about $176 million. At the approximately $700-per-square-foot cost of constructing new biochemistry laboratory space—plus the other buildings—says Alexander: "You could easily value the property at six or seven times what we paid for it in terms of its replacement cost," far more if it were possible to build that much new space on the Yale campus in New Haven. And that does not count the costly equipment Bayer left behind—including scores of chemistry and biology safety hoods—nor the land itself. According to Levin, the site could accommodate nearly double the number of structures at present—"without touching the environmentally sensitive portions," including about 20 acres of wetlands.

Speaking about the site, which Yale now officially calls the West Campus, Levin becomes animated, leaning forward in his chair, his voice rising with excitement. "This has transformative potential, frankly—only some of which we can envision today," he says. "We've given our successors an opportunity to dream in ways we can't imagine today."

DiMaio, who is also the scientific director of Yale Cancer Center, hopes to see a long-envisioned cancer biology research center established there, bringing together an interdisciplinary oncology team able to perform genetic analyses of tumor cells and then design novel targeted pharmaceutical treatments for them. A student at Yale College when the first women entered as undergraduates, DiMaio believes that the acquisition and development of the West Campus has the potential to be the most significant event at Yale since coeducation. "If we don't seize this opportunity and transform Yale, we will have failed."

Transforming Yale

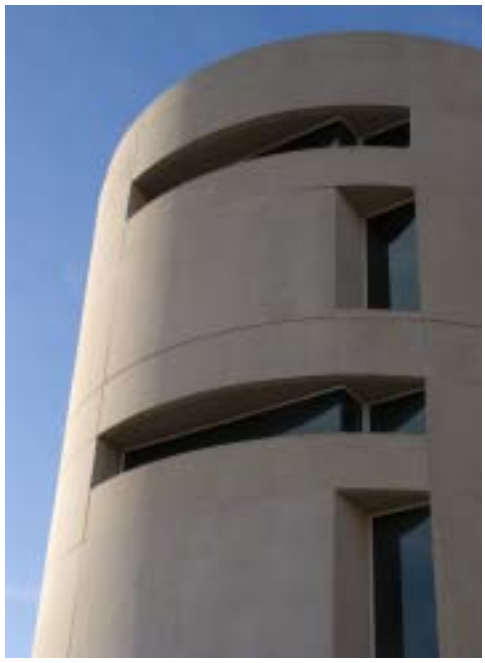
The purchase happened quickly. Only a handful of people even knew it was being considered. Suddenly, an entirely new western territory opened up for Yale. University Provost Andrew Hamilton, PH.D., says, "This is a quantum opportunity and leap for Yale." But what is Yale leaping into?

Over the past year, Levin, Alpern and Hamilton have met frequently to explore ideas for the new campus. They have also held meetings with many faculty leaders, and a retreat for medical school departmental chairs focused on the new site. An emerging theme from their discussions was not simply to transfer existing laboratories, people and administrative structures from the overcrowded New Haven campus to the empty West Campus. "We need to guard against allowing the campus to become a spillover space for existing programs," insists Levin. Rather, he wants the space to be devoted to entirely new projects. "This allows us to think about new structures and new forms of science appropriate for the 21st century."

"We are not going to rush into decisions," Hamilton says; however, a few governing principles have emerged. "The West Campus will raise the visibility and impact of Yale science. It will not be an extension of existing Yale activities but

West Campus has 450,000 square feet of space for biology and chemistry laboratories in several buildings at the parcel's eastern end. The laboratory buildings also have offices and conference rooms. The property's purchase price included scientific equipment stored in warehouses.

Yale has engaged an architect to draft plans that will introduce the neo-Georgian and Gothic Revival styles of the Yale campus and minimize the corporate office park ambiance. Preliminary plans call for shifting some existing roadways, demolishing some buildings and creating more courtyards.



will represent something distinctly different in organization and the way activities are planned." Says Alpern: "This is an opportunity to grow a lot more, but also an opportunity to focus on cutting-edge areas."

According to Alpern, the trio looked at multiple models for campus expansion. The one that best fit their thinking was the Whitehead Institute for Biomedical Research in Cambridge, Mass. Its faculty members have teaching affiliations with the Massachusetts Institute of Technology. Whitehead's director, David C. Page, M.D., likens the institute to an artist's colony in which established and emerging scientists have the freedom and resources to pursue high-risk, novel and interdisciplinary research. Page, a renowned genetics scientist and MacArthur Foundation "genius award" winner, touts the freedom Whitehead scientists have "to pursue new ideas while working in a collaborative environment. Our modest size and strong financial position allow us to move quickly to exploit scientific opportunities."

Alpern expects that the West Campus will be organized around a series of new Whitehead-like interdisciplinary institutes, each centered on "a spectacular faculty member who will then recruit three to five other scientists for his or her institute." Several core facilities will also be established there, drawing on Yale's existing strengths and the laboratory configuration left by Bayer. These include a high-throughput genetic screening facility and a high-throughput chemistry laboratory—drawing on the Department of Chemistry on the main Yale campus—with drug screening and development capabilities not presently available on the medical campus.

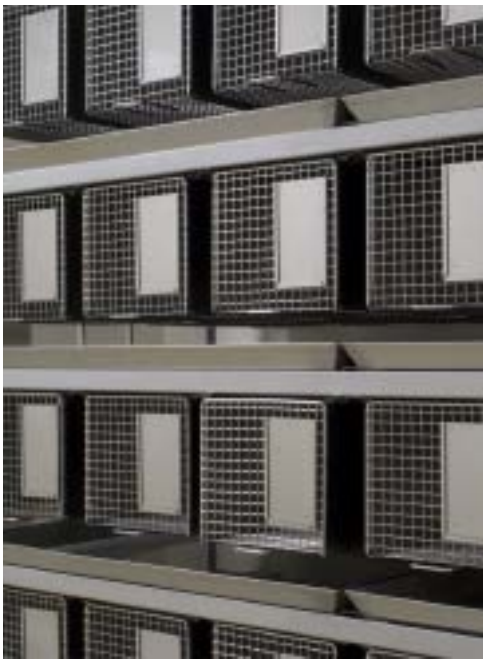
Yale, Alpern says, has already begun recruiting new faculty members for the first of the proposed institutes—cell biology, major psychiatric disorders and cancer biology. "The key," he says, "is to attract exceptional investigators from the start. If they're weak, the value of the real estate goes way down." Levin says that present faculty with innovative ideas for new interdisciplinary research programs may also move there.

Levin, Alpern and Hamilton emphasize that the West Campus' facilities will link up with the entire university. Among those links will be a new $1.4 million high-speed optical fiber connection. According to Steven M. Girvin, PH.D., deputy provost for science and technology, that will enable the university to move all current nonresearch computing functions from the Information Technology Services center at 155 Whitney Avenue (to be razed to make way for a new School of Management campus) to the existing data center on the West Campus. The new cables will also allow a big growth in research computing capabilities. "Eventually we will need new computing space on the West Campus for high-performance scientific computation, as we are running out of space on the main campus," Girvin says.

The West Campus' acres of manufacturing and warehouse floor space will be devoted to displaying, conserving and storing the thousands of artworks and other valuable collections presently warehoused around the region. Stored library and archival materials and preservation services may also relocate there. Alpern says, "It would make the campus special if activities there include the arts." Among the ideas being discussed are creating a contemporary art museum "like a Tate Modern," he says, comparing it to the popular and massive art gallery housed in a former power station in London. "That would give the campus a Yale flavor."

A Yale feel

Right now, the 15-minute drive from the Yale campus in New



Thousands of works of art as well as archival materials and library preservation services may find a new home in manufacturing and warehouse space at West Campus. The site could also house a new modern and contemporary art museum. Its science laboratory buildings include ample space for keeping animals.

Haven to the West Campus transports visitors to a completely different world. The 136 fenced-in acres—equivalent to about a third of Yale's total New Haven campus acreage—run for close to a mile alongside the roaring cataract of Interstate 95 and nearly half a mile south of the highway to the periodic clatter of trains along the Amtrak and Metro-North railroad tracks that parallel the Long Island Sound coastline down the Northeast Corridor. The West Campus doesn't feel or look anything like downtown New Haven or Yale's august neo-Georgian and Gothic Revival campus. The bustling urban and collegiate world of the medical school and the main campus doesn't exist at all out there. There are no coffeehouses or vendor carts, no honking horns or scurrying pedestrians. Instead, the site is a vast ghost town, its cooling, heating, electrical, security and telecommunications systems maintained by a skeleton crew. A Yale banner announces that the university has staked its claim to the West Campus. Along with its layout of scattered, undistinguished if pleasant modern glass, brick and concrete buildings set amidst lawns, parking lots, roadways and concrete walkways, the Bayer property includes the Oyster River, which runs through a deep wooded ravine that bisects the property. Wild turkeys, deer and coyotes roam the landscape.

Alexander Cooper, a principal in the New York architecture and planning firm of Cooper, Robertson & Partners, says, "It looks like suburban office parks you'd find in any of the 50 states." Yale has engaged Cooper, who completed a new master plan for the New Haven campus, says Levin, "to think about ways to give the West Campus a Yale feel." Some preliminary suggestions Cooper presented to the Yale trustees in December included demolishing some structures, rerouting some streets, putting towers at the ends of streets and clustering buildings around courtyards, as well as adding landscape alterations to make the campus more pedestrian-friendly. "It can become a great campus, absolutely," Cooper says.

Just what will make it truly a *Yale* campus remains uncertain and will likely not be fully resolved for decades. Along with the present spaces dedicated to future biomedical research, arts and library facilities, Levin says possibilities exist for new structures for the applied physical sciences and clinical centers. Even residential facilities might be constructed on the site. "The possibilities," he says, "are not fully imaginable today."

Regional plans announced well before Yale's acquisition of the site call for a new Metro-North commuter rail station to be built just outside the southwest corner of the site. Levin mentions that a dedicated shuttle train might operate between the West Campus and downtown New Haven. "It's imperative," he says, "that the West Campus be fully integrated into the core university. There have to be many faculty going back and forth."

Getting faculty to take the leap of imagination to see the potential of the new West Campus, admits Alpern, "will be tough." But before last year, the possibility that Yale would even acquire the property was not being considered. The future of the West Campus will take many years, and probably decades, to unfold. "When there was gold in the hills," Levin says, "we populated the West. We'll need a few brave pioneers to populate the wilderness. When they see the possibilities, others will want to join." As they do, Yale will grow and change in ways that nobody can fully predict. YM

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Matthew Garrett is a photographer in New Haven.

A neurosurgeon's photographic legacy

Harvey Cushing pioneered many techniques in neurosurgery, among them the still-young art of photography as a tool of medicine.

Photographs
by Harvey Cushing

ABOVE **A negative of this portrait of Harvey Cushing recently surfaced as curators went through the photo archive that is believed to hold as many as 15,000 images. This picture was probably taken in Boston around 1930.**

OPPOSITE **Among the many treasures in Cushing's Brain Tumor Registry are the photographs he took of his patients, before and after surgery. Many of the patients were photographed with one of their hands showing. The hands took on importance in the photographs because many diseases affect the size and shape of the hands—they may be small in pituitary dwarfism and large in acromegaly, a hormonal disorder caused by a benign tumor of the pituitary gland that affects adults in their early 20s. Not all photographs have been matched to patient records. The boy at left is believed to have a pituitary tumor.**

Early in the 20th century the country's leading neurosurgeon was Harvey Cushing, M.D., a practitioner whose meticulous standards and innovative techniques set the stage for those who followed. Surgical tools and neurological diseases bear his name; among his achievements are improved patient survival rates, the introduction of local anesthesia to brain surgery and the use of X-rays to diagnose brain tumors.

His attention to detail also led to the creation of the Brain Tumor Registry, a collection of more than 2,200 patient case studies that includes human whole-brain specimens, tumor specimens, microscope slides, notes, journal excerpts and more than 15,000 photographic negatives. The materials, which date from as early as 1887, were organized and classified by Cushing's assistants, Percival Bailey, M.D., and Louise Eisenhardt, M.D. In addition, from 1922 until Cushing's retirement a decade later, Eisenhardt kept a "little black book" that included case results, diagnoses and mortality percentages for every type of tumor operated on at the Peter Bent Brigham Hospital in Boston.

Cushing arrived in Boston in 1912 from Johns Hopkins Hospital, where he had completed his surgical residency. The trustees of the new Brigham Hospital had offered him not only a post as surgeon in chief but also the opportunity to help design the building, set policies and establish a section of neurological surgery. In addition, Cushing had a position as a professor of surgery at Harvard. Within three years he had achieved a surgical mortality rate of 8.4 percent, while other leading neurosurgeons were reporting rates of 38 to 50 percent. He attributed his success to his insistence on sterile procedures that reduced infections, a leading cause of mortality in brain operations. Cushing also laid the groundwork for the basic classification of brain tumors and was responsible for the first applications of electricity to neurosurgery by using a newly developed electric scalpel.

On Cushing's retirement from Harvard in 1932, he returned to Yale, where he had received his bachelor's degree in 1891, as the Sterling Professor of Medicine in Neurology. His tumor registry followed him. Its first home at Yale was the Brady Museum, where anyone interested in brain tumors was invited to use the collection for study. Over time the collection fell into disuse and ended up in a room in the basement of the Harkness dormitory. Christopher J. Wahl, M.D. '96, rediscovered the collection as a medical student and wrote his degree thesis on it.

Last fall Dennis D. Spencer, M.D., HS '77, chair and the Harvey and Kate Cushing Professor of Neurosurgery, and Aaron A. Cohen-Gadol, M.D., published *The Legacy of Harvey Cushing: Profiles of Patient Care*. An excerpt from the introduction, written by Wahl, Spencer, Cohen-Gadol and Terry Dagradi, curator of the photography collection, follows.

In 1902, a golf ball-sized piece of brain tissue, or more to the point, the conspicuous absence of a golf ball-sized piece of tissue, was the catalyst that led to the conception of the Cushing Brain Tumor Registry. Cushing's opportunities for intracranial tumor surgery at Johns Hopkins Hospital were few and far between and successes were rare. Still, he regularly examined all tissues removed during surgical cases, a habit he learned from his mentors, William S. Halsted, M.D., chief of surgery at Hopkins, and Emil Theodore Kocher, M.D., a Swiss surgeon who won the 1909 Nobel Prize in physiology or medicine for his work on the physiology, pathology and surgery of the thyroid gland. Following the removal of a "pituitary cyst" from a female patient, the Johns Hopkins Pathology Department "misplaced" Cushing's tissue specimen. The young surgeon, prone to fits of anger—which occasionally drew admonition from chief of medicine William Osler, M.D.—failed to contain his fury. He insisted that from that day on, he would be allowed to personally retain all specimens removed during his operative cases or autopsy.

[Cushing moved to Harvard and the Brigham Hospital in 1912, where he continued his practice of keeping meticulous records on each and every patient. Upon reaching Harvard's mandatory retirement age of 63 in 1932, he accepted a position at Yale and opened his collection to the medical community. Cushing died in New Haven in 1939.]

For two decades, Yale's Brain Tumor Registry, with Eisenhardt at the helm, remained a site of pilgrimage for young neurosurgeons and neuropathologists to study intracranial pathologies. Elias E. Manuelidis, M.D., became Eisenhardt's successor in the section of neuropathology and curator of the enormous archive. Throughout the 1940s and '50s, many young scholars, particularly neurosurgeons and neuropathologists studying for their certification boards, came to New Haven to utilize the collection. Over time, however, the gross specimens and photographic negatives came to be little used for research purposes. By 1968, the year after Eisenhardt's death, Manuelidis faced a tremendous problem; the section of neuropathology at Yale prepared to secede from pathology. With the organizational split, laboratory space would be scarce; and vast bookshelves, stacked floor to ceiling with gallon receptacles containing brain specimens and stacks of photographic negatives, would play a minor role in the changing atmosphere of scientific research.

The 40-year-old specimens had fallen into a chronological void—too old to be of scientific value but ironically, too young to be of historical interest. The unwieldy archive also reeked of formaldehyde. The Edward S. Harkness Medical School Dormitory at Yale, built in 1955, retained rooms in the sub-basement for storage adjacent to a fallout shelter. Many of the storage cages contained provisions for a nuclear emergency, including large barrel tins of meal, drinking water and sanitary supplies; others were used for cold storage of building supplies, file cabinets and discarded medical equipment. Manuelidis acquired permission to stow the entire Cushing collection—photographic negatives, gross specimens, laboratory materials and dyes, even an old gurney—in a locked room near the shelter. He employed the help of faculty and students, and moved everything save the microscopic slides (which are still in use today) into the space below the dormitory. The collection remains in this sub-basement.

Patient photographs and records

Unexpectedly, the most revealing source of information related to Cushing's work lay in the Brain Tumor Registry's 15,000 photographic negatives. Cushing's negatives portray patients pre- and postoperatively, gross specimens, tumor specimens, photomicrographs, journal excerpts, letters and any other number of images relating to the early years of brain tumor surgery. The photographs often portray obsolete surgical practices as well as tumors that have grown to proportions rarely seen today outside the Third World. They also allude to the symptomatology, signs and diagnostic techniques that led Cushing, Eisenhardt and Bailey to lay the foundations of modern neurosurgery and neuropathology. Approximately 80 percent of the negatives are etched into the emulsion of 5-by-7-inch glass plates; the remaining negatives appear on celluloid film. Owing to the negatives' large format, the prints are striking for their clarity and detail.

Because the negatives are in chronological order correlated with the hospital records, Cushing preserved for

history a remarkable photographic diary. In the photographic negatives, one can follow Cushing's observations of the clinical presentation of disease. One sees the sudden emergence of new surgical approaches, documented in the records and complemented by novel intraoperative drawings and photographs of patients with craniotomy scars indicative of a changing technique. In these images, radiographs provide evidence of the emergence of the silver hemostatic clip; portraits exhibit similarities in morphology leading to Cushing's elucidation of pituitary basophilism; and histological photomicrographs highlight the utilization of staining techniques that Bailey brought to the Brigham.

The microfilmed hospital records that accompany the photographs indicate that Cushing cultivated in his residents the same meticulous attention to factual detail for which he is known. Past medical histories, family histories, complaints, progress notes, laboratory and perimetry results, neurological and physical examinations, operative notes, postmortem reports, telegrams, correspondence, and Cushing's ubiquitous operative sketches make the records so comprehensive that scientific studies of the cases, including the applications of premorbidity scales, are possible. The photographic negatives and patient records tell the historian much about Cushing, indeed much about the state of clinical medicine and surgery at the Peter Bent Brigham Hospital in the early part of the 20th century.

Cushing's photographic legacy

To further understand the possible contributing factors behind Cushing's interest in photographing his patients, one needs to review a brief history of photography itself. In 1839 Louis-Jacques-Mandé Daguerre presented to the world his technique for developing a photographic process based on mercury vapor and silver iodide fixed by hot common salt. Although fragile, the daguerreotype was extremely popular in America between 1839 and 1860, about 3 million being produced each year at a peak in the early 1850s. Medical journals began to photograph patients before and after surgery, primarily for head and neck cancers and plastic procedures.

Following the daguerreotype, a wet plate process that used collodion, a mixture of guncotton in alcohol and ether, was introduced to make the first photographs on glass. The ambrotype perfected the collodion process in 1854 but was

In 1911, while he was at Johns Hopkins University, neurosurgeon Harvey Cushing operated on this patient, who suffered from acromegaly.

Cushing's collection of photographs shows patients of all ages and in different stages of treatment. The patient on the left, for example, has a dressing for a peripheral nerve repair. No case record was available for the patient in the middle photograph. The asymmetry of the face of the girl on the right is the result of a left porecephalic cyst in her left hemisphere.

Case records for the woman on the left and the girl on the right have not yet been matched to the photographs. The girl in the middle had craniopharyngioma, a slow-growing tumor that afflicts children between the ages of 5 and 10. The photograph shows the right temporal decompression that was done to relieve pressure.

soon replaced by the tintype, invented by Hamilton L. Smith in Ohio in 1856. In 1880, a bank clerk named George Eastman obtained a patent in the United States for a photographic dry plate developed in England in 1878. He followed his dry plates with the invention of photographic film in roll form in 1883. By 1900, cheap cellulose film and cameras were available to the public. Cushing or the unknown photographer at the Brigham, however, chose to continue using the dry glass plate technique from the earliest photo available in 1903 to the latest one in 1930. Several later photos were taken with the newer cellulose film; they have not withstood the aging process. On the other hand, the glass plates are perfectly preserved and are of remarkably high quality.

Cushing's early 20th-century portraits were grounded in the late 19th-century tradition of scientific facial photography. Although X-ray imaging was to emerge as the next extension of human sight, peeling off one more layer of tissue between the viewer and the living brain, Cushing used photographs as an extension of his diagnostic powers and a catalog of his historical sense.

In the Cushing Brain Tumor Registry for 75 years had lain the portraits of every patient Cushing touched, almost always photographed before and after an operation, but many times serially during the hospital stay, particularly if the patient were deteriorating. When there was nothing more Cushing could do as a surgeon, he documented the unrelenting course of the illness and the patient's death. And, for the majority of his patients who survived, he often chronicled their clinic visits, sending the patient down for a "routine photo," as we would repeat an MRI scan today. Unfortunately, we have no clue as to who took these pictures, whether it was the same person or a series of photographers. The quality, however, speaks for a professional who understood how these diseases were to be represented for Cushing and who knew that the quality and permanence of the glass plate method were superior to the more acceptable and common practice of using cellulose film.

Cushing never wrote about his patient portraits or their faces as an emotional response to their diseases. Instead, he described brain disease, often for the first time, through the camera's lens. Cushing's groundbreaking work in identifying and classifying tumors of pituitary and parapituitary origin may have stimulated the first photographs of patients with these tumors. The phenotypic expression of such pituitary tumors as acromegaly, a rare disorder that results in increased growth of bone and soft tissue, could be identified in pictures and documented for publication, and the photographs could be repeated to look for progression or remission after surgery. However, Cushing did not photograph only those patients with obvious phenotypic expression of their disorders; he photographed essentially every patient in his care. Although it is not clear how most of these images contributed to patient care, education, or research at the time, the possible unintended consequences for art and history are incredibly powerful.

These patients' photographs are most likely the first, as well as the most complete, catalog of neurological disease at the beginning of the 20th century. What makes them even more powerful is Cushing's compulsive cross-reference process that ties each picture to the available hospital record on microfilm. Cushing also captured in the patients' faces what we do not image today—loneliness, fear, pain, trust, despair, and often just stoicism.

By any measure, Cushing's written and photographic diary of neurosurgery in the early part of the 20th century steps beyond semantic issues. The technique and large format of the photographic negatives capture a raw emotional energy and oftentimes macabre subject matter that bring the viewer into empathetic participation with Cushing's patients. This relationship becomes much more sublime when one stops to consider the age of the photographs and recognizes that while neurosurgery has changed so much over this past century, the experience of being a patient has not. In 1969, the year Cushing would have been a centenarian, the neurosurgeon and author Wilder Penfield, M.D., qualified him as "an artist, a Leonardo da Vinci devoting his talent to surgery." The passing of time and the re-evaluation of the materials belonging to the Harvey Cushing Brain Tumor Registry confirm the accuracy of Penfield's statement. **YM**

podcast

A podcast of Dennis Spencer speaking on surgical techniques to treat epilepsy can be found on the Yale page on iTunes U. Visit itunes.yale.edu or launch iTunes, then select Yale from the offerings under iTunes U. The podcast is included under "Yale Health & Medicine."

An eye for detail and a steady hand

Harvey Cushing, M.D., left his name as well as his mark on American medicine—Cushing's disease, Cushing's sign, Cushing's syndrome and Cushing's scissors. His pioneering innovations in anesthesia and surgical education are still practiced today. But Cushing's prodigious talents found expression in yet another form: he was also a gifted medical illustrator.

A lecture last fall titled "Harvey Cushing: The Artist," part of the Fulton-Cushing Lecture Series, explored this lesser-known aspect of the Cushing legacy. "Harvey Cushing was many things to many people: a master neurosurgeon, the father of endocrinology, but he was also a first-rate medical illustrator," said Robert Udelsman, M.D., M.B.A., chair and the William H. Carmalt Professor of Surgery.

Cushing displayed artistic ability at an early age. A picture of a lion he drew at age 16 reveals the work of a precocious talent, far from the doodles of a typical teenage boy. Cushing's sharp eye is also evident in sketches of his brother, Ned, and in pictures of the Cuban countryside he drew while on vacation in 1894.

But Cushing didn't draw pictures just to entertain himself; his drawings served as a detailed record of what he observed. This artistic purpose became increasingly important to him when he enrolled in the Harvard Medical School and later, when he became a house pupil, as interns were then called, at the Massachusetts General Hospital.

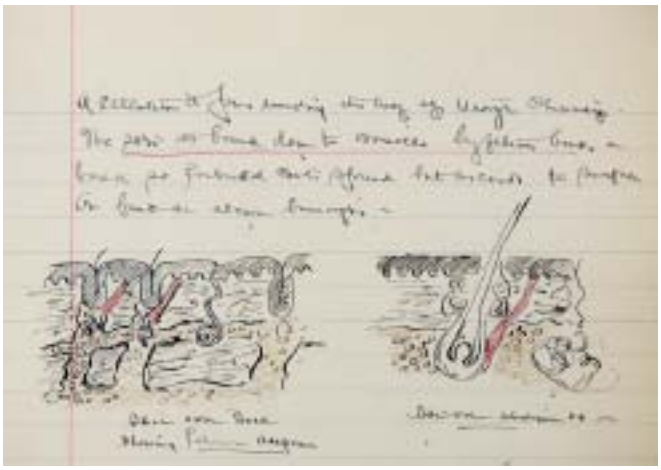
Cushing "drew as a method of conveying what he saw on the clinical wards," Udelsman said. One pen-and-ink drawing found in Cushing's clinical notebook shows an elderly man with Cheyne-Stokes respiration. Another drawing depicts a man with a massive goiter that resembles a sack of potatoes.

Cushing's artistic mentor was Max Brödel, known as the father of modern medical illustration. The two met at Johns Hopkins University, where Brödel had established the Department of Art as Applied to Medicine. Brödel taught Cushing his techniques, which included the use of chiaroscuro—contrasts between dark and light to achieve a sense of volume in depicting three-dimensional objects. Cushing, always a quick student, adopted this method and used it effectively to convey such images as a neurosurgeon's-eye view of the human brain.

As Cushing's medical career progressed and his skills as an artist grew, he started making illustrations of the medical procedures he planned to use. One Cushing illustration shows a patient with a cleft palate; in the next drawing, one can see Cushing carefully working out his plans to perform the corrective operation.

Cushing was photographed often during his illustrious career; a familiar picture shows him in his dressing room after surgery, head bent over his pad. He's still wearing surgical gloves as he sketches his operative findings. Today, doctors tape-record their clinical observations, but for Cushing, words and photographs fell short of what could be conveyed by a skilled illustrator—so he made sure he became one.

—Jennifer Kaylin



Harvey Cushing made drawings, including landscapes during a Cuban vacation, in order to keep a detailed record of what he observed. As a medical student and hospital intern he drew to convey what he observed on the clinical wards. From Max Brödel, the father of modern medical illustration, Cushing learned to use chiaroscuro—contrasts between dark and light—to convey such images as a neurosurgeon's-eye view of the human brain. He also made illustrations of the medical procedures he planned to use.

A campaign makes a stop at Yale University

Senator Hillary Rodham Clinton visited the Child Study Center, where she worked on child and family issues during law school.

By John Curtis

In the fall of 1969 a recent graduate of Wellesley College arrived in New Haven in "an old beat-up car with a mattress roped to the top" to study at Yale Law School. On February 4, Senator Hillary Rodham Clinton, J.D. '73, returned to Yale on the eve of the Super Tuesday primaries as a candidate for president of the United States.

"This is so nostalgic," Clinton told an audience of more than 200 people that included a large press contingent in the Cohen Auditorium of the Child Study Center (CSC). "I think back on those years as among the most important of my life for a number of reasons." It was at the law school that she met her husband, the former president of the United States, Bill Clinton.

The reunion became an emotional occasion for both Clinton and Penn Rhodeen, J.D., a public interest lawyer in New Haven who had supervised her work in his legal clinic when she was a student. In his introduction, Rhodeen recalled that Clinton had worn purple bell-bottoms and a sheepskin coat. "You looked so wonderful and so 1972," he said. As he neared the end of his remarks, Rhodeen choked up and Clinton's eyes watered. "I said I would not tear up," she said.

It was at Yale that Clinton first became an advocate for children, inspired by a talk at the law school by Marian Wright Edelman, founder of the Children's Defense Fund. Clinton spent the next summer working with Edelman on behalf of youths incarcerated in adult facilities and against President Richard Nixon's plan to grant tax-exempt status to segregated private academies. "I started to look at ways of using the law on behalf of children," said Clinton, a Democrat who represents New York in the Senate. "That is how I found my way to the Child Study Center."

At the CSC Clinton worked with the late Sally A. Provence, M.D., and the late Albert J. Solnit, M.D., HS '52, pediatricians who championed child and family issues. She also worked with Jay Katz, M.D., HS '56, J.D., the Elizabeth K. Dollard Professor Emeritus of Law, Medicine and Psychiatry at the Yale Law School. "We created a program," she said. "We convinced the Child Study Center and the law school that it was a good idea for law students to come over here."

For the February event, Clinton's staff assembled a group of 11 local women for a round-table discussion. The group included a small-business owner from Stamford, a single mother of two, a Connecticut state senator, a stay-at-home mother from Middletown, the former president of the Connecticut Nurses' Association, a clinical psychologist on the CSC faculty, a retired Army nurse, a community activist from Bridgeport, a retired New Haven police officer, a union official from New London and a second-year Yale law student who directs a domestic violence clinic.

The panelists' stories played into Clinton's policy themes: the stay-at-home mother talked about trying to make ends meet with two children in college and a third whose medical needs are not covered by her health insurance; the business owner decried the high cost of health insurance that limits her ability to hire new employees and expand her business; the single mother's part-time job pays too little for her to engage quality child care and limits her career options; and the union leader said health care had topped the agenda during contract negotiations.

From each woman's story Clinton plucked details that illustrated such themes of her campaign as her proposal for universal health coverage. "Universal health care is not just the moral thing to do, it's the economically smart thing to do," she said. Insurance companies, she noted, will reimburse for amputations but not screening for diabetes. Health care, she said, "should be more about keeping us well than about stepping in when we're sick." She proposed allowing

MICHAEL MARSLAND

On the day before the Super Tuesday primaries, Hillary Rodham Clinton, a U.S. senator from New York who is seeking the Democratic Party's presidential nomination, returned to Yale to lead a discussion of health care issues.

the Bush administration's tax cuts to expire and applying the increased revenues to universal coverage.

"We are going to have different rules," she said. "The insurance companies are determining how people practice medicine and how hospitals cover costs. It is time to put our health back under the control of the professionals. We don't want people going to the emergency room for sniffles and headaches. We want them to go to their own doctor."

One of the last questions came from Rachel Friedman, a medical student who is graduating this spring. One of three in her class who's planning to enter family medicine, Friedman asked what could be done to counter the shortage of family practitioners.

"We have to help medical students with the cost of med school," Clinton replied, to cheers from students in the audience, who also cheered her suggestion for loan forgiveness for doctors who enter family practice.

After 90 minutes Clinton was ready to leave for her next campaign event, and the former law student in purple bell-bottoms was on her way. **YM**

John Curtis is the managing editor of *Yale Medicine*.


Cynthia Walker


Sankar Ghosh


Nigel Grindley


Anna Pyle


Thomas Steitz


Edward Zigler


Walter Gilliam


Sven-Eric Jordt

Cynthia Walker, M.B.A., has been appointed deputy dean for finance and administration at the School of Medicine. Walker comes to Yale from Harvard Medical School, where she began as a financial analyst in 1983 and served as associate dean for finance, CFO, dean for finance and executive dean for administration. She has been active in a number of national organizations, including the Association of American Medical Colleges and the American Institute of CPAs.

Walker has an undergraduate degree from Yale and an M.S./M.B.A. from Northeastern University. She started her new post at the medical school in January. She replaces Jaclyne Boyden, who served as deputy dean for finance and administration from 2004 until last year.

Her responsibilities will include budget and financial operations, strategic financial planning, facilities and space management, human resources and information technology.

Six faculty members in the biomedical sciences were honored as fellows of the American Association for the Advancement of Science. They were inducted along with three other Yale faculty members at the association's annual meeting in Boston in February.

Sankar Ghosh, PH.D., professor of immunobiology, molecular biophysics and biochemistry, and of molecular, cellular and developmental biology, was named a fellow in the Section on Biological Sciences for "distinguished contributions to the field of immunology."

Nigel D.F. Grindley, PH.D., professor of molecular biophysics and biochemistry, was named a fellow in the Section on Biological Sciences for "distinguished contributions to our understanding of mechanisms of recombination."

Andrew D. Miranker, PH.D., associate professor of molecular biophysics and biochemistry, was named a fellow in the Section on Chemistry for "distinguished contributions to the field of protein folding."

Anna M. Pyle, PH.D., the William Edward Gilbert Professor of Molecular Biophysics and Biochemistry, director of the Division of Biological Sciences and a Howard Hughes Medical Institute investigator, was named a fellow in the Section on Chemistry for "fundamental studies on RNA tertiary folding and on the mechanical behavior of RNA remodeling enzymes."

Gordon M. Shepherd, PH.D., professor of neuroscience, was named a fellow in the Section on Neuroscience "for distinguished contributions to the understanding of the circuitry of the brain and the structure and function of the olfactory bulb."

Thomas A. Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry, professor of chemistry and a Howard Hughes Medical Institute investigator, was named a fellow in the Section on Biological Sciences for "distinguished contributions to structural biology."

Three Yale scholars have won the 2008 University of Louisville's Grawemeyer Award in Education for their book, *A Vision for Universal Preschool Education*. **Edward F. Zigler**, PH.D., Sterling Professor Emeritus of Psychology, **Walter S. Gilliam**, PH.D., assistant professor in the Child Study Center, and **Stephanie M. Jones**, PH.D. '02, argue in their 2006 book that making preschool available to children aged 3 and older would improve the school readiness of the nation's young children, fill a gap for working families, lower the high school dropout rate, reduce crime and boost the economy.

Sven-Eric Jordt, PH.D., assistant professor of pharmacology, and **Susan Kaech**, PH.D., assistant professor of immunology, received the Presidential Early Career Award for Scientists and Engineers in a White House ceremony on November 1. The awards, which identify and honor outstanding researchers who are beginning their careers, include five years of support. Jordt was honored for conducting ethics seminars for incoming students and for his research on the effects of environmental irritants in airway diseases and inflammation. Kaech was selected for mentoring undergraduate and graduate students as well as postdoctoral fellows and for characterizing the development of memory T cells in long-term immune protection.

Peter S. Aronson, M.D., FW '77, the C.N.H. Long Professor of Medicine and professor of cellular and molecular physiology, has been named the 2008 Carl W. Gottschalk Distinguished Lecturer of the American Physiological Society Renal Section. He delivered a lecture in April at the Experimental Biology Meeting in San Diego. Aronson served for 15 years as chief of the Section of Nephrology in the Department of Medicine.

Paul G. Barash, M.D., professor of anesthesiology, received the Distinguished Alumnus of the Year Award from the University of Kentucky College of Medicine in October. This honor is accorded to physicians who have achieved a high level of excellence in their careers through research, public policy, development of innovations or delivery of exceptional quality of care to their patients. In 2004 Barash received the Commonwealth Award, given to physicians who have earned distinction for their leadership and contributions to medical care benefiting the college, the state and the nation. He is the only alumnus to receive both awards.

Michael Cappello, M.D., professor of pediatrics, of microbial pathogenesis and of epidemiology and public health, was named recipient of this year's Bailey K. Ashford Medal from the American Society of Tropical Medicine and Hygiene. The award is given each year for distinguished work in tropical medicine to a researcher in early or mid-career. Cappello received the medal at the society's annual meeting in Philadelphia on November 4.

Vincent T. DeVita Jr., M.D., the Amy and Joseph Perella Professor of Medicine at Yale Cancer Center, was presented with a 2007 FREDDIE Special Award for Public Service by MediMedia Information Technologies at their annual gala in Philadelphia on November 2. The award honors his leadership in cancer research and treatment. Director of Yale Cancer Center from 1993 to July 2003, DeVita served as director of the National Cancer Institute and the National Cancer Program.


Susan Kaech


Michael Cappello


Vincent DeVita


Erin Lavik


Alexander Neumeister


Jennifer Prah Ruger


Gerald Shulman


Dennis Spencer

David A. Fiellin, M.D., associate professor of medicine, was elected to the board of directors of the College on Problems of Drug Dependence (CPDD). CPDD is the premier membership organization for NIH-funded researchers addressing drug dependence and abuse.

Richard Flavell, PH.D., professor of immunobiology, received the Rabbi Shai Shacknai Memorial Prize and Lectureship in Immunology and Cancer Research for 2008 from the Lautenberg Center of Hebrew University in Jerusalem in January. The prize recognizes and brings outstanding investigators in immunology or cancer biology to lecture at the Faculty of Medicine at the university.

Erin Lavik, PH.D., assistant professor of biomedical engineering, was honored by the Connecticut Technology Council as one of their 2008 Women of Innovation. The annual event honors Connecticut women for their achievements as small-business owners, entrepreneurs, researchers, community leaders and innovators. Lavik focuses her research on developing new therapeutic approaches to the treatment of spinal cord injury and retinal degeneration.

James F. Leckman, M.D., was honored in October by NARSAD, the world's leading charity dedicated to mental health research. Leckman, the Neison Harris Professor of Child Psychiatry, Psychiatry, Psychology and Pediatrics and director of the Child Study Center, received the Ruane Prize for Outstanding Achievement in Child and Adolescent Psychiatric Research. Leckman's research focuses on autism, Tourette disorder and obsessive-compulsive disorder.

Robert J. Levine, M.D., professor of medicine, has been appointed to the National Academy of Sciences' Panel on Collecting, Storing, Accessing, and Protecting Social Survey Data Containing Biological Measures. The panel has been asked to provide recommendations for best practices, procedures and guidance for funding agencies, institutional review boards and researchers.

Richard P. Lifton, M.D., PH.D., chair and Sterling Professor of Genetics, received the Wiley Prize in Biomedical Sciences in April for discovering genes that cause many forms of high and low blood pressure. The prize, given by a worldwide publisher of medical and scientific books, consists of a $25,000 grant and an invitation to deliver a lecture at The Rockefeller University in New York City.

Thomas H. McGlashan, M.D., professor of psychiatry and director of the Yale Psychiatric Institute, has received the Stanley Dean Award for Research in Schizophrenia from the American College of Psychiatrists (ACP). The award is presented annually to an individual or group that has made major contributions to the understanding and treatment of schizophrenic disorders. McGlashan received the award at the ACP annual meeting on March 1 in Kauai, Hawaii.

Ruslan Medzhitov, PH.D., professor of immunobiology and a Howard Hughes Medical Institute investigator, has received a Blavatnik Award for Young Scientists from the New York Academy of Sciences. Medzhitov studies the way in which the human immune system detects and subsequently becomes activated by infection. The Blavatnik Awards recognize the most noteworthy and innovative researchers from New York, New Jersey and Connecticut, and carry an unrestricted cash prize of $25,000.

Alexander Neumeister, M.D., associate professor of psychiatry and director of the Molecular Imaging Program of the Clinical Neuroscience Division, has received a five-year, $600,000 Investigator Award from the Patrick and Catherine Weldon Donaghue Medical Research Foundation for Health-Related Research. The funding will support Neumeister's study of the relationship between trauma and stress and an increased risk of depression.

Marina Picciotto, PH.D., received the Jacob P. Waletzky Memorial Award for Innovative Research in Drug Addiction and Alcoholism in November. The award is supported by the Waletzky family and the Philanthropic Collaborative at Rockefeller Philanthropy Advisors. The Society for Neuroscience confers this award on a scientist who has done or plans to do research in the area of substance abuse and the brain and nervous system.

Jennifer Prah Ruger, PH.D., assistant professor in the Division of Global Health at the School of Public Health, has received a five-year, $600,000 Investigator Award from the Patrick and Catherine Weldon Donaghue Medical Research Foundation for Health-Related Research. The funding will support Ruger's study of ways to allocate high-quality health care in an equitable fashion while retaining desired levels of efficiency and technological innovation.

Gerald I. Shulman, M.D., PH.D., professor of medicine and of cellular and molecular physiology and a Howard Hughes Medical Institute investigator, is the 2008 recipient of the Stanley J. Korsmeyer Award in recognition of his contributions to the fields of insulin resistance and type 2 diabetes mellitus. The award is given by the American Society for Clinical Investigation and carries an unrestricted $10,000 grant. Shulman has pioneered the application of magnetic resonance spectroscopy to noninvasive examination of intra-cellular glucose and fat metabolism in humans.

Dennis D. Spencer, M.D., HS '77, chair and the Harvey and Kate Cushing Professor of Neurosurgery, was elected president of the 3,000-member American Epilepsy Society (AES) during the organization's annual meeting in Philadelphia in December. AES is the professional society for physicians and scientists who study and treat epilepsy. Spencer is internationally recognized for his contributions to the surgical treatment of neurological diseases causing epilepsy.

SEND FACULTY NEWS TO
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TOP In the show's finale Terri Huynh, Laura Tom and Hiromi Yoshida performed, "Accredit Us," to the tune of "Aquarius."

BOTTOM LEFT Sonja Rakowski, as Peggy Bia, threatens to strangle Auguste Fortin, played by Tyler Dodd, unless he agrees to murder an inspector from the LCME. Katherine Rose, playing Nancy Angoff, looked on.

BOTTOM RIGHT Katherine Rose portrayed Nancy Angoff, the associate dean of student affairs.

Of gangstas, capos and accreditation inspectas

This year's second-year show portrays the faculty as mobsters and the medical school as a racket.

Following a tradition dating back to 1949, the Class of 2010 presented *The Unaccreditables*, its second-year show, in February. As their predecessors have done for almost six decades, the students mocked deans, faculty and one another in a multimedia show that included live singing and dancing on stage as well as videos—including one in which Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, played himself as an embezzling gangsta.

That was one subplot in a grander scheme that portrayed a faculty board meeting as a sit-down of mob capos, with the school as a criminal enterprise. The capos' current problem is getting the school reaccredited by the Liaison Committee on Medical Education (LCME). Unfortunately, there's no way the school will pass muster. The committee has doubts about the school's "hands-off approach to medical education," aka the Yale system.

Among the source material for the song-and-dance routines were Cream's "White Room"; "It's Easy, M'Kay," from the animated TV show *South Park*; "Rappers' Delight," by the Sugarhill Gang; the early 1960s hit "The Shoop Shoop Song"; "I'm Too Sexy," by the British pop band Right Said Fred; and, of course, the theme from *The Godfather*.

The LCME inspector, played by Alexi Nazem, finds fault throughout his tour. "Your anatomy labs," he finds, "are very musical, but not at all educational."

Then there's the question of the second-year show itself: "What kind of creditable medical school would allow the entire second-year class to waste two weeks on this #@%&*?"

At a faculty board meeting, Frank J. Bia, M.D., until recently a professor of medicine; Margaret J. Bia, M.D., professor of medicine; Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs; Richard Belitsky, M.D., deputy dean for education; John N. Forrest Jr., HS '67, director of research; and Richard Silverman, director of admissions, all played by students, look for a way out. Bribe the inspector? Scratch that. There's no money. Alpern has been siphoning off school funds to support a lavish lifestyle, including a second kidney-shaped pool at his home. Only two options remain. "I think it's time we sent the inspector to sleep with the fishes," intones Frank Bia, played by Kaveh Mansuripur. The other possibility? Well, the faculty have noticed an attraction growing between the inspector and Angoff, played by Katherine Rose. In the end all is resolved when Angoff and the inspector tryst over Twister, "the game that ties you up in knots."

—John Curtis

HAROLD SHAPIRO (3)

TOP As he did last year, Wade Brubacher, a professional auctioneer from Kansas and father of second-year medical student Jacob Brubacher, volunteered his services for the Hunger and Homelessness Auction. The event raised $30,000 for area charities.

BOTTOM, LEFT AND RIGHT Browsers examined items during the silent auction that preceded the live auction.

Auction raises $30,000 to benefit the homeless and hungry in New Haven

For 24 hours one day in November, first-year medical student Ali Batouli was at the beck and call of classmate Caitlin Koerber. "I owned his soul on Friday, November 16," Koerber said, referring to her $75 purchase of Batouli's services at the 2007 Hunger and Homelessness Auction earlier that month. Among the more than 300 items offered at both the live and silent auctions—including babysitting and meals prepared by students, weekend stays in faculty vacation homes, rides on faculty yachts and dinners at local restaurants—was an item from Batouli.

"For one full day I will do anything you ask me to, except break the law, physically harm myself or someone else, permanently alter my appearance and spend a lot of money I don't have. Certain restrictions may apply. Ask your doctor if you are allergic to Ali."

After soliciting ideas from classmates, Koerber said, "Ali was ordered to do monkey impressions in anatomy lab whenever anyone said the word piriformis (which was a lot), wear a green and white polka-dot dress in lab, hug everyone and serenade each learning society with 'I'll Make Love to You.' After lab, Ali drove me to Philadelphia, where I was spending my Thanksgiving break. We tangoed in gas stations where Ali bought me Starbucks and gave me a piggyback ride back to the car, at my request."

Behind the fun was a serious purpose: the auction raised $30,000 for seven area charities. The proceeds will benefit the Emergency Shelter Management Service, the Community Health Care Van, Loaves and Fishes, Domestic Violence Services, the Community Soup Kitchen, the Downtown Evening Soup Kitchen and Caring Cuisine.

Barbara Hirschman, a second-year M.D./PH.D. student and one of the auction's two co-chairs, said local organizations were asked to submit grant applications. Members of the auction's board, which includes students in medicine, public health, nursing and the Physician Associate Program, also made site visits.

"We want to fund organizations that can complete a project," Hirschman said. "We want to see that the money we provide them has a tangible benefit as opposed to going to operational costs."

—*J.C.*

JOHN CURTIS (3)

JOHN CURTIS

Alumna Lisa Sanders had a career in journalism before turning to medicine. Now she combines both pursuits in a column in *The New York Times Sunday Magazine*.

A doctor's passion for medical storytelling

For a Yale alumna, the patient history and physical takes on a new narrative life in *The New York Times*.

Lisa Sanders, M.D. '97, HS '01, loves a good story and has built her career around her narrative skills, beginning with her early days in television and continuing through her subsequent decade in medicine. The form her tales have taken, however, has changed over the years.

A few years ago, when an editor friend asked Sanders what she thought doctors could write about, her answer was that they write one thing and they write it every day: the history and physical. Her belief in the storytelling power of the H-and-P led to "Diagnosis," a monthly column in *The New York Times Sunday Magazine*, about cases that stump doctors and how they are ultimately resolved. In Sanders' hands, the column's H-and-P format is an effective way of weaving tales about such cases as an emaciated 9-year-old girl who suffered months of vomiting and diarrhea before being diagnosed with Addison disease, or a young man whose Hodgkin disease was diagnosed after frightening episodes of memory loss. The column's success inspired the TV series *House*, about a curmudgeonly physician who is a brilliant diagnostician. "Until *House* came about, diagnosis [in TV medical dramas] was the one-liner between symptoms and the terrible response to treatment. *House* takes that moment and looks at it, which is what my column did," said Sanders.

Sanders started her working life not in medicine but in journalism. After graduating from the College of William and Mary in 1979, she worked as a producer at CBS News, where she earned an Emmy Award. By the early 1990s, she was looking for something else to do with her life. She had covered medicine and it had captured her attention. "I thought, 'This is something interesting.' If I can do it, it will be fun," she said. "And it turns out it has been fun."

In 1992, after two years at Columbia University's Post-Baccalaureate Premedical Program, Sanders entered the School of Medicine. At age 36 she was the oldest member of the Class of 1996. She completed her internal medicine residency at Yale and became chief resident in 2000.

Since then, Sanders has combined her talent for storytelling with her passion for medicine. She is an assistant clinical professor of medicine at the School of Medicine and teaches in the Yale Primary Care Residency Program at Waterbury Hospital. Sanders believes that when talking with the same patient, different doctors get both the same story and a different story, depending on how comfortable the patient feels and what questions the doctors ask. Eliciting a history is an important skill, she believes, and one she spends a lot of time helping residents develop. She also uses the physical exam to teach residents how to think about and approach problems. Although she occasionally lectures, Sanders feels that medicine isn't learned that way. "The trick in medicine is not facts," she said. "The trick is figuring out how to apply what you know to the case at hand. That actually turns out to be a very difficult skill."

LOURDES FELIX

David Brenner "escaped" from Yale after 11 years as a medical student and resident before his academic journey led to the University of California, San Diego, where he is vice chancellor for health sciences and the dean of the medical school.

Sanders listens to each person's story, never spending fewer than 20 minutes with a patient. She specializes in obesity and has plans to set up an outpatient obesity clinic at Waterbury Hospital. Several years ago, while researching low-carbohydrate diets, Sanders realized that adhering to a way of eating, rather than a specific diet, is the key to losing weight. This led to her 2004 book, *The Perfect Fit Diet: How to Lose Weight, Keep It Off, and Still Eat the Foods You Love* (St. Martin's Griffin), which offers guidelines on how to devise a sensible eating plan based on personal food preferences.

Sanders lives in New Haven with her husband, writer Jack Hitt, and their two daughters. She fits teaching, consulting, writing and treating patients into her schedule by getting up at 4 a.m. to write for three hours before beginning the rest of her day. In addition to her column, she is working on her second book, *The Tools of the Trade: The Art and Science of Medical Mysteries*. Scheduled for publication next spring, the book seeks to put the reader into the doctors' shoes as they negotiate the uncertainty between symptoms and diagnosis. She loves writing because it requires her to step back from the immediacy of treating patients, but medicine is the driving force behind everything she undertakes. As for what her future holds, the ending to that story hasn't been written yet. "I used to have five-year plans," she said, "but nothing I've ever done has been on them."

—Jill Max

A gastroenterologist moves around the country and into a top job at UCSD

An academic journey that began at Yale's Ezra Stiles College in 1971 has led **David A. Brenner**, M.D. '79, HS '82, from coast to coast and, most recently, to the top leadership role at the medical school of the University of California, San Diego (UCSD).

After an internal medicine residency at Yale-New Haven Hospital—"I escaped after 11 years," he chuckled—a fascination with basic research brought him to the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases. In 1985 he went to UCSD for a gastroenterology fellowship, later joining the faculty. Next he joined the University of North Carolina at Chapel Hill as chief of the Division of Digestive Diseases and Nutrition, and in 2003 he became chair of medicine at Columbia University's College of Physicians and Surgeons, where his daughter Laura is currently a medical student. (His son, Nathan, is a recent graduate of the University of Georgia.) San Diego, though, has lured him back. In February he became vice chancellor for health sciences and dean of the school of medicine after his predecessor, Edward W. Holmes, M.D., accepted two research positions in Singapore. Brenner is head of the schools of medicine and pharmacy as well as of the hospital and its faculty, and his duties bring him into close contact with students, bench researchers, patients and decision makers for the university as a whole.

Brenner's interest in research began early. At Yale College he majored in biology. In medical school, he began working with researchers in the Yale Liver Study Unit. "I was always interested in biochemistry and genetic diseases, and I picked this because it looked interesting, not because I thought there was something intrinsically interesting about the regulation of metabolism by the liver," Brenner said. "Gerald Klatskin, one of the most famous hepatologists ever, was director of the liver study unit, so I just stayed, and got interested in liver disease." With his mentor, Joseph R. Bloomer, M.D., FW '72, a student of Klatskin's and now director of the Liver Center at the University of Alabama at Birmingham, Brenner published several papers in the late 1970s on the group of diseases known as the porphyrias, enzyme disorders that cause skin problems or neurological complications. He and Bloomer remain in touch. Brenner continued to make important contributions to knowledge about protoporphyria; intracellular signaling and regulation of gene transcription in the liver; and the process of hepatic fibrosis. From 2001 to 2006 he served as editor in chief of the field's most prestigious journal, *Gastroenterology*.

His current research explores why so many types of liver disease lead to the same ends—cirrhosis or permanent fibrotic change. "The liver's not that smart; it's not like the brain. There's a limited repertoire of responses to insult, it doesn't matter what the initial insult is; the final common pathway is very similar," he said. "The only effective drugs now for fibrosis are directed at the treatment for the underlying condition. But the goal is to

develop specific therapies that are directed at fibrosis itself, and not the underlying agent. Maybe half the patients with hepatitis C in the real world will fail to respond to the current standard-of-care treatment. They will go on to scarring, fibrosis, decompensation and liver cancer."

Asked how gastroenterology has changed since he began his training, he says he is concerned about what he considers to be a shrinking of its focus. Screening colonoscopy, a procedure that has saved innumerable lives since becoming routine, now dominates many gastroenterologists' practice. "It's incredibly important, relatively straightforward and very profitable. I'm worried it's gotten too narrow. The whole field is keyed on this one single disease [colon cancer] and one single procedure." Indeed, recent advances in imaging technology may force gastroenterologists, ready or not, to alter their practice pattern. "This interest in CT virtual colonographs [a less invasive means of screening for colon cancer]—what if it becomes the major way of screening? Then all these millions of patients will not need an endoscopist. ... In 10 more years, diagnostic endoscopy might no longer be done. I wish the field would be more general, more entrepreneurial about issues of nutrition, obesity and GI diseases." European gastroenterologists have been more inquisitive in this sense than their American colleagues. "When a new technology becomes available, they bring it into their practice, whether it's ultrasound or CT." In the United States, cardiac ultrasound is done by cardiologists, but abdominal ultrasound is still the province of radiologists. Gastroenterologists, he thinks, should do their own ultrasounds.

Brenner's new job suits his eclecticism. His career has been replete with accomplishments in research, clinical work and administration, and at UCSD he is still able to round on patients, troubleshoot gels in the lab and maintain leadership roles in several medical and philanthropic organizations.

"I decided that if at all possible I want to continue teaching and seeing patients; I want to continue my research program," he said. "Sometimes hands-on experience is the best."

—*Jennifer Blair*


ROSS TURNER

A public health alumna brings social justice to the campaign for healthy food

Michele Simon, M.P.H. '90, J.D., is incensed that businesses spend $36 billion annually "on marketing to get people to [consume] the wrong things." She's convinced that advertisements for alcohol, tobacco and junk foods promote chronic illnesses. And that's why the author of *Appetite for Profit: How the Food Industry Undermines Our Health and How to Fight Back* (Nation Books, 2006) crusades against "diseases caused by marketing."

As part of her food campaign, Simon established the website www.informedeating.org to build awareness of the politics of food, and to encourage active public responses to the food industry. Simon gives frequent speeches in which she urges, "Look at what the food industry has done to alter our choices, then go after agricultural policy in a social-justice way. For example, poor communities suffer because of the availability of inexpensive alcohol and the lack of healthy food." Simon is also the research and policy director for the Marin Institute, an alcohol industry watchdog group in California.

Likening her crusade to antismoking campaigns, Simon asked, "How can we change the laws so that eating healthy is not the exception? Agricultural policies are heavily influenced by industry. We're subsidizing the wrong kinds of foods—we don't even produce enough fruits and vegetables to meet daily recommended servings."

Simon's passion germinated during her years as a biology major at Carnegie Mellon University and her

While earning her public health degree at Yale, Michele Simon designed her own educational program, which included courses in law, medicine and business. Now she campaigns for healthier eating habits.

dual interests—bioethics and policy—spurred the New York City native to pursue a public health degree at Yale. When assisting with prenatal counseling at Yale-New Haven Hospital drew her toward genetics, Simon sought permission to take a course in reproductive law at Yale's law school.

"Jay Katz's class was fascinating," she recalled, referring to Jay Katz, M.D., HS '56, J.D., the Elizabeth K. Dollard Professor Emeritus of Law, Medicine and Psychiatry at the Yale Law School. [See; "A Campaign Makes a Stop at Yale University," p. 34] Simon became Katz's research assistant and was influenced by his pioneering work in bioethics and informed consent. "He certainly had an impact on me in combining health and law."

At that time Yale offered neither a health policy concentration nor joint degrees in law and public health, but Simon was permitted to design her own program, which included courses in law, medicine and business. "I'm grateful I was able to do something that really suited me, and always felt I got support from the faculty," she said.

During her first job, at California's Department of Health Services–Genetic Disease Branch, Simon decided to enhance her health policy credibility and earned her J.D. at University of California Hastings College of the Law in 1995. Then, inspired by her new vegetarian diet and convinced that nutrition curricula at colleges and universities often reflect industry-influenced "science," Simon taught herself about nutrition and quickly identified key political issues.

"With so much scientific evidence pointing to a plant-based diet being superior, why does the government tell us to eat meat and dairy every day? Why are school lunch programs so heavy on animal products?" she wondered. Using her legal training, Simon targeted nutrition policy, which was traditionally concerned with remedial programs like food stamps. "I was interested in quality, not just access—how to help people be healthier rather than just not hungry."

She soon discovered a prominent nutritionist, Marion Nestle, PH.D., the Paulette Goddard Professor of Nutrition at New York University's Nutrition, Food Studies and Public Health Department and author of *Food Politics* and *What to Eat*, who was uncovering how politics influences America's food choices. "I'm a disciple of hers, a great admirer, following in the trail she blazed, popularizing the notion of politics attached to what we eat," Simon said.

Working with colleagues at Yale's Rudd Center for Food Policy and Obesity, Simon analyzed industry influences on state food-related laws; her report, which argued that despite recent legislation to improve school food, more needs to be done, was published in the *Food and Drug Law Journal* in 2007. In late 2006, she spoke at both Rudd and the School of Public Health. "It was a lot of fun to go back as an alum. Talking about how I combine public health with law was a great opportunity to encourage graduates of the M.P.H. program to pursue policy and law, a growing field. Some major funders are seeing the need for more lawyers to work on nutrition."

Nestle calls Simon "an unusually clear thinker about food issues, as she proves in *Appetite for Profit*, a terrific book. I use it to teach students how to interpret what food corporations really mean when they mutter platitudes about wanting to improve health, and to understand why the goals of food companies and public health can never really overlap. She's so on top of the issues that I'm always learning new things from her."

Now in its second printing, Simon's well-reviewed book provides practical tools for "going up against the food industry. It's a voice for people who have been working on this issue, frustrated by the obstacles." (She has chapters on "Exposing Government Complicity" and "Battling Big Food in Schools.") And, challenging a central argument of the food industry—that nutrition is a personal lifestyle choice, not a matter of public policy—she said, "This isn't just a matter of personal choice—it's a societal responsibility."

—*Carol Milano*

Familiar *Faces*

Do you have a colleague who is making a difference in medicine or public health or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine, School of Public Health, Physician Associate Program and the medical school's doctoral, fellowship and residency programs. Drop us a line at ymm@yale.edu or write to Faces, *Yale Medicine*, 300 George Street, Suite 773, New Haven, CT 06511.

Marc Yoshizumi

Eduardo Alfonso

1940s

B. Herold Griffith, M.D. '48, HS '50, presented a paper at a meeting of the Chicago Society of Medical History in December on "Johns Hopkins and the Revolution in American Medicine." Griffith is professor emeritus of surgery and chief emeritus of plastic surgery at Northwestern University Medical School in Chicago.

F. Carter Pannill Jr., M.D. '45, was honored in October with the naming of the F. Carter Pannill Jr. M.D. Chair in Internal Medicine at the University of Texas Medical School at San Antonio. Pannill was the founding dean of the medical school in 1965.

On November 17 **Samuel Ritvo**, M.D. '42, celebrated his 90th birthday at a gala at the New Haven Lawn Club co-sponsored by the Western New England Institute for Psychoanalysis, which he helped found in 1954, and the Yale Child Study Center, where he has served on the faculty since 1950.

1970s

Guthrie S. Birkhead, M.D. '79, deputy commissioner of the Office of Public Health for the New York State Department of Health, received in March one of the 2008 Dr. Nathan Davis Awards for Outstanding Government Service from the American Medical Association (AMA). These national awards, named for the founder of the AMA, are presented to local, state and federal career and elected government officials in seven categories of public service. Birkhead's award is in the category of "Career Public Servant at the State or Local Level." He is the chief public health physician in the state health department, overseeing four public health centers and two public health offices.

Robert L. Goldenberg, M.D., HS '74, was appointed professor emeritus of obstetrics and gynecology by the University of Alabama (UAB) Board of Trustees on November 9. The board recognized Goldenberg for his 30 years of service. Since joining the faculty in 1976, Goldenberg has held a number of positions, including director of the Center for Women's Reproductive Health, director of the Center for Obstetric Research, chair of the Department of Obstetrics and Gynecology and the Charles E. Flowers Endowed Professorship in the Department of Obstetrics and Gynecology.

Harry S. Romanowitz, M.D. '73, has established the first free-standing independent pediatric urgent care center in Fairfield County, Conn., Firefly After Hours Pediatrics. Romanowitz is the medical director of the new facility, which is located in Stamford. He served more than 20 years as chair of pediatrics and pediatrician in chief at Stamford Hospital.

Marc O. Yoshizumi, M.D. '70, has retired after 29 years at the University of California, Los Angeles, where he was a professor of ophthalmology. He also served as director of the Eye Trauma and Emergency Center and of the Jules Stein Eye Institute's Medical Student Education in Ophthalmology Program.

1980s

Eduardo C. Alfonso, M.D. '80, the Edward W.D. Norton Professor of Ophthalmology, was named interim chair of Bascom Palmer Eye Institute, which serves as the Department of Ophthalmology of the University of Miami Miller School of Medicine. His appointment began on November 1. Alfonso will also serve as director of Bascom Palmer's patient care facilities. A 1984 graduate of the institute's residency program, Alfonso has been on the faculty since 1986.

Jacqueline Gutmann, M.D. '85, a reproductive endocrinologist, has joined Northern Fertility & Reproductive Associates in Philadelphia. Gutmann is a clinical associate professor and associate director of the Division of Reproductive Endocrinology and Infertility at Thomas Jefferson University School of Medicine. She specializes in assisted reproductive technologies; polycystic ovarian syndrome; and third-party reproduction and family building for same-sex couples. She also has a strong interest in complementary medicine.

Idalia Ramos Sanchez, M.P.H. '81, was named senior policy advisor

CASTING CALL FOR STANDARDIZED PATIENTS

The Yale School of Medicine (YSM) Standardized Patient Program invites alumni, their families and other interested members of the medical school community to participate as standardized patients in clinical teaching programs for medical students. Standardized patients simulate real patients as they are interviewed and examined by medical students who are observed and supervised by physicians. Scripts for patient role playing and ample training will be provided. One- to two-hour teaching sessions are held on campus on certain weekdays. It is recommended that standardized patients participate in at least 10 sessions per year. A stipend is provided to cover such costs as parking and travel. If you are interested in contributing to the YSM educational program as a standardized patient, please contact the director, Frederick Haeseler, M.D., FW '76, associate clinical professor, at frederick.haeseler@yale.edu.

Idalia Ramos Sanchez

James Talcott

M. Kathleen Figaro

Samuel Myers

Ali Kemal Ozturk
Christina Yuan

of the National Center on Minority Health and Health Disparities (NCMHD) in February. The center is part of the National Institutes of Health (NIH). Sanchez will serve as the primary legislative liaison within the Division of Scientific Strategic Planning and Policy Analysis, which coordinates the development of NCMHD's strategic plan and is responsible for assessing and highlighting NIH's efforts to eliminate health disparities. Sanchez has spent 25 years in public health; she began her career with the Department of Public Health in Hartford.

James A. Talcott, M.D. '80, M.P.H., and Nancy S. Knox were married on December 1 in New York City. Talcott is the director of the Center for Outcomes Research at the Massachusetts General Hospital Cancer Center in Boston. The center researches the effects of cancer and cancer therapy on patients in order to improve care and assess cancer-care technology. Nancy Talcott is a freelance writer and researcher for magazine articles and documentaries in New York and Boston.

1990s

M. Kathleen Figaro, M.D. '96, an assistant professor of medicine at Vanderbilt University Medical Center, has been chosen as one of four national fellows in health advocacy by Columbia University's Center on Medicine as a Profession. As a fellow she will work to improve the quality and accessibility of health insurance for poor Tennesseans after TennCare's 2005 mass disenrollment. With her husband, Alan Rice, she welcomed their first child, Victoria, on November 14.

David John, M.D., HS '90, was named director of emergency services at Caritas Carney Hospital in Dorchester, Mass., in November. John served for the past six years as the medical director of quality risk management and associate chair of the three emergency services departments at Middlesex Hospital in Middletown, Conn. He has served as the president of the Connecticut College of Emergency Physicians, chair of the Quality Section Committee of the American College of Emergency Physicians (ACEP) and chair of the Geriatrics Committee of the ACEP.

Michael A. Joseph, M.P.H. '96, PH.D., and Lauretta Adwoa Larbi Ansah, M.P.H., were married on November 9 in Brooklyn, N.Y. The ceremony was held at the Bedford Central Presbyterian Church, where Joseph and Ansah lead the HIV/AIDS ministry.

The bride is a program analyst in the office of the inspector general at the Environmental Protection Agency's program evaluation office in Manhattan. Joseph is an assistant professor of epidemiology at the State University of New York Downstate Medical Center in Brooklyn and a founder of the Black Young Professionals' Public Health Network, an organization that works to increase opportunities for minority students in the field of public health.

Samuel S. Myers, M.D. '92, M.P.H., was elected in October to the board of directors of the Worldwatch Institute, an environmental research organization. Myers is an instructor in medicine at the Harvard Medical School, where he recently completed a research fellowship in general internal medicine funded by the National Institutes of Health. For his fellowship he researched the role of patients' expectations for improvement in their clinical outcomes. Myers was also senior director of the Healthy Communities Initiative at Conservation International, which addresses health, family planning and development needs of villagers living in priority conservation areas in the tropics.

Scot Phelps, M.P.H. '95, has joined Southern Connecticut State University as an associate professor of emergency management to create the first graduate-level emergency management program in the state. He recently helped Auckland University of Technology in New Zealand to assess a similar program. He will be speaking at the World Conference on Disaster Management this June in Toronto. He can be reached at phelpss1@Southernct.edu.

2000s

Jonathan Erulkar, M.D. '01, and **Deirdre Carroll Erulkar**, M.S.N. '00, announced the birth of their second son, Benjamin Holder Erulkar, on May 18, 2007, in Boston. After completing a spine surgery fellowship there, Jonathan and family moved to Lake Forest, Ill., where Jonathan is a partner in the Bannockburn office of the Illinois Bone and Joint Institute.

Katherine Van Loon, M.D., M.P.H. '02, and **Jonathan G. Steitz**, J.D. '07, were married on November 3 in Sea Island, Ga. Van Loon, who received her medical degree from the Medical College of Georgia, is a second-year resident at Beth Israel Deaconess Medical Center in Boston. Steitz is the son of Joan A. Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry, and Thomas A. Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry and professor of chemistry. Steitz was drafted in 2001 by the Milwaukee Brewers as a pitcher, but his baseball career was ended by rotator cuff tendonitis in his right shoulder. He is now a consultant in Boston for McKinsey & Company, the management consultants.

Christina Yuan, M.P.H. '05, and **Ali Kemal Ozturk**, M.D. '06, were married in Villanova, Penn., on November 3. Yuan is a research associate at the School of Public Health, and Ozturk is a resident in neurosurgery at Yale-New Haven Hospital.

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Norman H. Bass, M.D. '62, a physician-educator, neuroscientist, and child and adult neurologist, died on February 24 at his home in West Falmouth, Mass. He was 71. In 1963 Bass was commissioned as a second lieutenant in the medical corps of the Army National Guard, from which he retired as a major and medical battalion commander. Before beginning a practice in Cape Cod, Bass held professorships at Boston University, the University of Pittsburgh, the University of Maryland, the University of Kentucky and the University of Virginia. His achievements in academic medicine were published in the 2007 edition of *Who's Who in America*.

Malcolm B. Bowers Jr., M.D., HS '65, professor emeritus and senior research scientist in psychiatry, died on January 13 at his home in Branford, Conn. He was 74. Bowers spent 45 years on the Yale faculty, serving as chief of psychiatry at Yale-New Haven Hospital and director of residency training and attending psychiatrist at Yale-New Haven Psychiatric Hospital. He was the author of several books, including *Retreat From Sanity*, *A Psychiatrist Recollects* and *Abetting Madness*. His most recent book, *Men and Poisons: The Edgewood Volunteers and the Army Chemical Warfare Research Program*, was published in 2005.

John C. Carpenter, M.D. '47, died on January 7 in Aventura, Fla. He was 85. Carpenter served as an assistant medical officer in the U.S. Army in Virginia and in Germany. In 1957 he joined Canandaigua Medical Group, in Canandaigua, N.Y., where he practiced until 1987.

Richard H. Cote, M.D. '48, died on November 3 in Santa Rosa, Calif. He was 82. During World War II Cote received a Victory Medal, Good Conduct Medal and American Theater Campaign Ribbon for his service in the U.S. Army 3305th Service Unit. He also served in the U.S. Air Force in a MASH unit in Korea in 1950. He was an orthopaedic surgeon with a practice in Santa Rosa from 1960 until his retirement in 1997. He was a fellow of the American College of Surgeons and the American Academy of Orthopedic Surgeons.

Joseph F.J. Curi, M.D. '64, died in October in Goshen, Conn., of acute myelogenous leukemia. He was 69. A captain in the U.S. Air Force, Curi served in the 392nd Aerospace Medical Group at Vandenberg Air Force Base in California. In 1970, after a fellowship in adolescent medicine at Harvard, he joined the staff of Charlotte Hungerford Hospital in Torrington, Conn. He also had a solo practice in pediatrics and adolescent medicine for 34 years. He was a member of the Connecticut State Medical Society, the Litchfield County Medical Society and the American Academy of Pediatrics. He was class secretary for his medical school class and served on the executive committee of the Association of Yale Alumni in Medicine. Curi received the Distinguished Alumni Service Award in June 2004.

Hillary Blair Stanton Foulkes, M.P.H. '07, died on December 21 in Austin, Texas, of complications from leukemia. She was 25. Born in Natick, Mass., Stanton Foulkes graduated from Massachusetts Institute of Technology in 2005 and took a position as a research assistant at the Harvard School of Public Health before beginning her studies at Yale. After her graduation she received a two-year fellowship from the Centers for Disease Control and Prevention and began working as an epidemiology fellow with the Department of State Health Services in Austin. She was an accomplished musician and dancer, performing with the MIT Wind Ensemble and the MIT Dance Troupe.

Ward S. Jenkins, M.D. '44, died on October 31 in Burlington, Vt. He was 86. After receiving his medical degree Jenkins joined the Army Medical Corps. After eight years as a general practitioner in Salem, N.Y., he studied allergy at the Lahey Clinic in Burlington and joined the Toledo Clinic in 1958. He practiced there until his retirement.

Edna M. Klutas, R.N., M.P.H. '57, died on September 9 in Newville, Penn. She was 89. Klutas was a veteran of the U.S. Army Nurse Corps, serving in Puerto Rico and Virginia from 1942 to 1946. From 1955 to 1956 she was the acting executive director of the American Association of Industrial Nurses and served as one of the organizing board members of the American Board for Occupational Health Nurses (ABOHN) in 1969. In 1975 she served as chair of the ABOHN board.

Joshua Lederberg, PH.D. '47, Nobel laureate, University Professor and president emeritus of The Rockefeller University, died of pneumonia on February 2 in New York City. He was 82. Lederberg began medical school at Columbia's College of Physicians and Surgeons in 1944 but took a leave of absence in 1946 to work in genetics with Edward L. Tatum, PH.D., at Yale. In 1958, at the age of 33, Lederberg shared the Nobel Prize in physiology or medicine with Tatum for their work on the organization of genetic material in bacteria. He advised nine United States presidential administrations, and was a distinguished molecular geneticist whose achievements helped to stimulate the current revolution in molecular biology and biotechnology.

The son of a rabbi, Lederberg was born in Montclair, N.J., in 1925, and graduated from Stuyvesant High School in New York City at the age of 15. He received his bachelor's degree from Columbia College in 1944. He held appointments at the University of Wisconsin and Stanford University School of Medicine before becoming the fifth president of The Rockefeller University in 1978. He retired in 1990.

While at Yale, he made the seminal discovery that a form of sexual reproduction occurs in bacteria, demonstrating that bacteria possess a genetic mechanism called recombination, similar to that of higher organisms, including humans. He later showed that bacterial genetic material is exchanged not only by conjugation, when the entire complement of chromosomes is transferred from one bacterial cell to another, but also by transduction, when only fragments are transferred. More recently, his work addressed the way in which the activation of genes alters their vulnerability to mutagenesis.

Lederberg served in the U.S. Navy during World War II as a medical corpsman in the clinical pathology laboratory of St. Albans

Naval Hospital in Queens, N.Y. After the war he worked on many government advisory committees and boards dealing with research on physical and mental health. He played an active role in the Mariner and Viking missions to Mars sponsored by the U.S. National Aeronautics and Space Administration. He was a consultant to the Arms Control and Disarmament Agency during the negotiation of the biological weapons disarmament treaty, and he continued to advise the federal government on national security issues.

In addition to the Nobel Prize, Lederberg was honored with many awards and prizes, including the National Medal of Science in 1989 and the Presidential Medal of Freedom in 2006. He was also a member of the boards of several foundations, including the Carnegie Corporation and the Revson Foundation, and he served as chair of the scientific advisory board of the Ellison Medical Foundation.

Albert R. Matteson Jr., M.D. '44, died on October 10 in Indianapolis. He was 87. Matteson served in the U.S. Army Medical Corps, completed a residency in otolaryngology at Roosevelt Hospital in New York City and began a practice in Danville, Ill. He retired in 1997.

William F. McKeon, M.P.H. '82, died on December 4 in West Springfield, Mass. Born in 1933, McKeon received his medical degree from the New York College of Medicine before serving as a medical officer in the U.S. Navy. He then practiced urology in Norwich, Conn., for 20 years. After receiving his M.P.H., McKeon pursued a second career in public health, working as The Monsanto Company's medical director in Springfield, Mass.

James W. Needham, M.D. '48, HS '51, died on November 16 in Los Angeles. He was 81. From 1951 to 1955 Needham was a flight surgeon in the U.S. Air Force. He started a practice in Van Nuys, Calif., and joined the faculty at the University of California, Los Angeles. He was a consultant for the March of Dimes and a fellow of the American Geriatrics Society.

Elizabeth D. Robinton, PH.D. '50, died on January 9 in Lenox, Mass. She was 97. A microbiologist with a strong interest in public health, Robinton earned her bachelor's degree at Columbia University's Teachers College and went on to complete a master's at Smith College. She worked at the Kentucky State Public Health Laboratories and the Connecticut Public Health Laboratory, in Hartford, before beginning an academic career in 1944 teaching biology at Smith College. After receiving her doctorate in public health in 1950 from Yale, Robinton became tenured in 1954, and in 1967 became the first chair of Smith's new department of biological science. In 1994, as professor emeritus, Robinton was awarded Smith's Charis Medal "in recognition of academic excellence, loyalty and commitment to teaching and students."

Joseph Ross, M.D. '62, died on December 27 at his home in Wayland, Mass. A psychiatrist for more than 30 years, Ross was a Woodrow Wilson fellow while earning a master's in philosophy at Yale's Graduate School of Arts and Sciences. After attaining his medical degree and completing a residency in psychiatry at University Hospital in Boston, he served as a lieutenant commander with the U.S. Navy at Quantico, Va., where he provided psychiatric care for servicemen and servicewomen and their families. He served as assistant director and then director of Trinity Mental Health Center in Framingham, Mass., and was on the medical staff at MetroWest Medical Center, formerly Framingham Union Hospital. Ross maintained a private practice in Natick, Mass., for more than 20 years and served for more than 25 years as a psychiatric consultant for St. Patrick's Manor, a retirement community in Framingham.

Edwin J. Scott, M.D. '42, died on February 10 in Hawthorne, N.Y. He was 91. Scott served as a medical technician during World War II, stationed in England, France and Iceland and at Walter Reed General Hospital. In 1948 he became an editorial artist at the *Sunday Mirror Magazine* for King Features and was later named art director in the promotion department.

Richmond W. Smith Jr., M.D. '42, died on December 1 in Camden, Maine. He was 90. Smith served for three years as a medical officer in the U.S. Navy during World War II, serving in the battle of Leyte Gulf and early phases of the assault on Okinawa. After the war he completed his residency and a research fellowship at New York Hospital-Cornell Medical Center. After the war he returned to Henry Ford Hospital in Detroit, where he had done his internship. While there he established the Division of Endocrinology and became chair of medicine, publishing articles on obesity research. He also conducted research into osteoporosis and made the first appraisal of the social and economic importance of the disease in the 1960s.

Hilliard Spitz, M.D. '43, died on December 13 in New London, Conn. He was 90. After his graduation Spitz interned at Mount Sinai Hospital in New York City. He then joined the U.S. Navy, serving as a medical officer at the time of the Normandy invasion in 1944. He also served in the Pacific. In 1948 he returned to New London, his hometown, and started a practice in internal medicine. In 1976 and 1977 he served as president of the Connecticut State Medical Society.

Robert W. Wroblewski, M.D. '58, died on December 16. He was 78. Wroblewski began his career as a general surgeon in 1963 in Akron, Ohio. After additional training he switched to oncology and oncological surgery, completing a two-year fellowship in oncology at the Boston University Medical Center in 1974. He was chief of oncology at Akron General Medical Center, director of oncology at Medina Community Hospital in Medina, Ohio, and cancer program director at Good Samaritan Hospital in Vincennes, Ind.

SEND OBITUARY NOTICES TO

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ARIANE KIRTLEY

Public health alumna's water project reaches its first milestone in Niger

Just over a year ago Ariane Kirtley, M.P.H. '04, described in words and photographs her work in the Azawak, a remote region in the western African country of Niger [See "Water is Life," Winter 2007]. Prolonged drought, she found, was threatening the existence of the region's inhabitants, many of whom are nomadic pastoralists. "These people are literally dying of thirst because they do not have access to water," Kirtley said. "This is one of the poorest regions in one of the poorest countries in the world. There are no roads, few schools, little health care and almost no humanitarian assistance."

In this remote area of 80,000 square miles, where it can take two days on the back of a donkey to reach a clinic or school, reliable sources of potable water are essential to survival, Kirtley said. During a visit to New Haven in October, she reported the first success of the organization she founded, Amman Imman, which is dedicated to building boreholes that will draw water from between 600 and 3,000 feet below the surface.

"We have built the first borehole," she said, adding that it is located in the village of Tangarwashane, with a population that fluctuates between 300 and 500. "It serves not only the village but all the communities surrounding the village and all the nomads that come through." The borehole provides water for 5,000 people who live in seven communities within a 10-mile radius. During the dry season as many as 25,000 people and animals will take water from the borehole.

Construction began in January 2007 and was completed in July of that year. The borehole has four animal troughs, a tower that holds up to 5,300 gallons of water, a water fountain with six faucets near the water tower and another fountain with two faucets in the village.

Kirtley's nonprofit organization also created a local committee that will ensure maintenance and financial, environmental and social management of the borehole. And, she added, providing clean water has brought other changes. "They have built a school," she said. "They have started growing subsistence crops. A lot of positive changes are taking place."

—John Curtis

Artificial Kidney to be Purchased

—*Alumni Bulletin*
October 1958

"The School of Medicine has received $5,000 from the United Fund of Middletown, Connecticut, as a contribution in support of basic research. In announcing the gift, Dean Lippard stated that the money will be used for the purchase of an artificial kidney. The equipment for hemodialysis will be set up in a special laboratory adjacent to the Fitkin 2 medical ward and will be under the direction of Dr. Franklin Epstein, assistant professor of medicine. It will be available for treatment of selected patients and for research in renal physiology. One of the research studies will involve investigation of the effects of renal failure on the nervous system."

Mystery of Lyme Disease a Step Closer to Being Solved

—*Yale Medicine*
Spring / Summer 1983

"Scientists at the School of Medicine have isolated for the first time a newly recognized spirochete from the blood, skin or cerebrospinal fluid of patients with Lyme disease. 'The recovery of this organism from patients provides important evidence that the *I. dammini* spirochete is the causative agent of Lyme disease,' according to Dr. Allen C. Steere, principal investigator of the research.

"... The new finding has implications for better diagnosis and treatment of the illness, and may help in the understanding of some other immune-mediated diseases such as rheumatoid arthritis.

"Lyme disease, first recognized in 1975 by Yale medical scientists including Dr. Steere and Dr. Stephen E. Malawista, professor of medicine and head of the Section of Rheumatology, has affected hundreds of people along the Atlantic coast and in some mid- and far-western states. It typically begins in summer with a unique skin lesion, erythema chronicum migrans (ECM), which sometimes expands to a diameter of five inches or more, and may be accompanied by flu-like symptoms. ...

"The first clue that Lyme disease was caused by an infectious agent was the fact that several children with typical symptoms lived in the same neighborhood in Lyme, Connecticut. ..."

STRIKING A CHORD

In mid-December about 90 musicians—students and faculty in medicine and public health—took the stage in Harkness Auditorium with their strings, woodwinds and brass. "It was a fun, lovely, wonderful evening," recalled Lynn T. Tanoue, M.D. '82, HS '85, associate professor of medicine, describing the informal sight reading of music by Vivaldi, Rossini and Beethoven. It was also the first gathering of a group that Tanoue and Thomas P. Duffy, M.D., professor of medicine and director of the Program for Humanities in Medicine, hope will become the Yale Medical Symphony Orchestra.

The orchestra has "clearly tapped into a desire," said Tanoue. She learned to play the violin as a child; as an adult she played in the Yale Symphony and a New Haven community orchestra but had to stop when her children were born. Fifteen years later she was ready to return to an orchestra. "Many of us were very dedicated musicians at another time in our lives," she said, "but there usually aren't any opportunities at the medical school to do this."

Duffy sees the orchestra, which receives financial support from the School of Medicine and Yale-New Haven Hospital, as a way to build bridges among people in the schools and departments of the medical campus. "It's a real opportunity to create a community amidst the community," he said.

—Jennifer Kaylin

JULIE BROWN

About 90 students and faculty members from the medical school gathered in December to play music by Vivaldi, Beethoven and other composers in the first rehearsal of what is hoped will become the Yale Medical Symphony Orchestra. The symphony gave its inaugural concert at the medical school in June.

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