

Yale Medicine

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ON THE COVER

The Smilow Cancer Hospital and related structures are changing the face of the medical center neighborhood.

THIS PAGE

Construction projects at the medical center are bringing safety and traffic improvements to the neighborhood.

Photographs by Robert Lisak

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WINTER 2009

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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.





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President and dean respond to economic downturn

Although the university and the medical school remain strong financially, the economic downturn requires some adjustments, both President Richard C. Levin and Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, cautioned recently in separate messages to faculty and staff.

The economic situation, described as the worst since the Great Depression, had reduced Yale's endowment by \$6 billion, "a decline of 25 percent since June 30, 2008," Levin announced in December. Budget shortfalls of about \$100 million are expected next year and more than \$300 million by 2013-14. Nevertheless, Levin said, "\$17 billion is still a very large endowment."

"In spite of the challenges before us, we shouldn't forget that we entered this period on a very strong footing and we remain strong," Alpern wrote on January 23. The school has seen consistent growth in NIH funding over the past few years, as well as growth of 11 percent in clinical collections during the first half of the current fiscal year. Gifts and pledges have also been rising in recent years.

The university and the medical school, however, must tighten their belts.

Levin said that next year's budgets will be reduced by an

amount equal to 5 percent of the salaries and benefits of all non-faculty and staff, largely through attrition. Budgets for all non-salary and wage expenses will be reduced by 5 percent next year and by an additional 5 percent the following year. Employees in labor unions will receive the increases scheduled for the final year of their contracts, and non-union employees will be eligible for merit increases of up to 2 percent, up to a cap of \$1,500. He urged staff and faculty to save money by spending less on outside consultants, reducing travel, consuming less paper and decreasing energy use. New building and renovation projects under construction will continue, but most new construction will be deferred, although design work will continue.

The medical school will follow these guidelines, Alpern said, while noting that its financial picture is somewhat different. The university budget draws 44 percent of its income from the endowment, but endowment income accounts for only 8 percent of the medical school's \$988.6 million budget, which comes largely from research grants and clinical income. The central administration budget, however, draws 17 percent of its revenues from endowment income. Tuition and philanthropy together account for 5 percent of the medical school's income.

Alpern vowed to try to "protect our employees in these uncertain economic times," while honoring commitments made in recent years.

"We will maintain our commitment to expanded financial

aid," he said, referring to a new financial aid policy that eliminates parental contributions from families making less than \$100,000 per year. Recruitment of faculty and staff will continue, but hiring decisions will be considered carefully by the dean's office and the provost's office. Development of programs for West Campus will also continue.

"This is no time to back off from our core values and goals, and by making well-considered, strategic decisions now, we stand to do well in the future," Alpern said. "We will continue to be a school that seeks new knowledge in the service of humanity, finds new ways of diagnosing and treating illness, and produces new leaders in science and medicine. To reach these goals, I ask all of you to help."

CORRECTION: REUNION REPORTS

Alvin B. Blaustein, M.D. '48, and B. Herold Griffith, M.D. '48, wish to correct references to themselves in the reunion report of the Class of 1948, published in the Autumn 2008 issue of *Yale Medicine*. Blaustein noted that there is more than one member of the class still in practice: he remains active in psychoanalytic practice in New York City. Griffith said that he was a professor of surgery and chief of plastic surgery at Northwestern University, not at the University of Illinois.



Online: Yale Netcasts

Additional content for articles in this issue of *Yale Medicine* is available online at iTunesU, or by pointing your browser to yalemedicine.yale.edu.

Two faculty members move on, but remain close at hand

Eleven years ago when I started as a staff writer here at *Yale Medicine*, one of the first people I met was Michael Kashgarian, M.D. '58, HS '63, whose name appears on our masthead as editor in chief. Since then, over lunches at Mory's, meetings in conference rooms and chats in our offices, we've discussed the direction of the magazine in both generalities and specifics. He's suggested story ideas and people to talk to, as well. What Mike Kashgarian always brings to these conversations is a love of both Yale and *Yale Medicine*. He sees the two as linked, with the magazine providing a way to keep alumni involved with the institution. Mike officially retired as of last July 1, but he's staying on as a researcher until he finishes a few remaining projects, and he remains editor in chief of *Yale Medicine*.

In those days another member of the faculty I came to know was Asghar Rastegar, M.D. Although he plays no direct role in *Yale Medicine*, time and again we turned to him as a source for stories about an eclectic range of topics—collaborations with medical schools in Russia and Uganda, a Yale delegation in Iran, the challenges of implementing the 80-hour work week for residents and, for this issue, the declining art of the physical examination. It wasn't just because of his role as deputy chair of internal medicine or his prominence in setting the direction of medical education at Yale. Nor was it his knowledge of medicine or of Yale that kept leading us to him. His knowledge goes beyond expertise and rises to the plateau of wisdom, which he has shared with us with grace and generosity. Even though he has stepped down from his administrative post in internal medicine, he'll stay on as director of the international health program that sends residents abroad for rotations in underserved settings. As with Mike Kashgarian, it's reassuring to know that Asghar Rastegar will still be close at hand.

John Curtis
Managing Editor

SECOND OPINION BY SIDNEY HARRIS



"OH, OH—THE VACCINES!"

yale medicine

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Reform of premed education under way

Medical educators are taking a fresh look at undergraduate courses that may deter students from medicine.

In 1910, Abraham Flexner's examination of the state of American medical education led to widespread reforms in the way doctors are trained. Today, another evaluation is under way that could have equally far-reaching ramifications for future physicians.

The Committee to Establish the Scientific Foundation for Future Physicians, organized by the Association of American Medical Colleges and the Howard Hughes Medical Institute, is studying the standard premedical curriculum to make it more relevant to the practice of modern medicine.

Robert J. Alpern, M.D., dean and Ensign Professor of Medicine, the committee's co-chair, said it took the

committee only a single meeting to identify the problem: while science and medicine have changed dramatically since the days of Flexner, the premed curriculum has remained static. Organic chemistry, the *bête noire* of almost every premed student, is a required course although the relevance of some components of the course to medicine is marginal. At the same time, such crucial subjects as statistics, biochemistry and genetics aren't required at the undergraduate level.

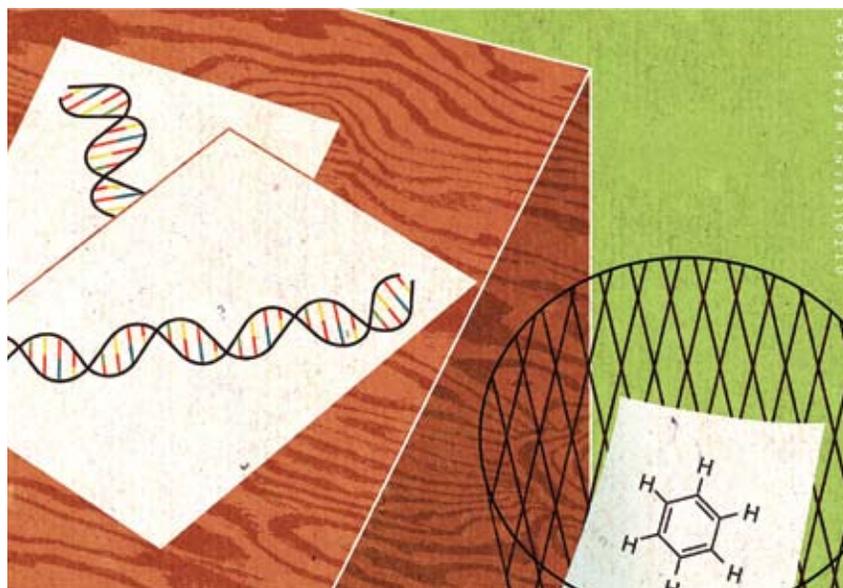
Another problem, Alpern said, is that the premed curriculum often serves as a gatekeeper to weed out students. "I've actually spoken to organic chemistry professors who pride themselves on being the ones who determine who should go into medicine," he said.

The 19-member committee, drawn from both medical schools and undergraduate institutions, has been meeting for about a year and a half. It's

working on recommendations that will be presented in a report this year.

The key proposal, Alpern said, is to replace required courses with "scientific competencies"—the knowledge and habits of thought that a student should have upon entering medical school. "We want to get away from telling colleges, 'You need to have a course in this or a course in that,'" he said. "We want to say, 'These are the competencies someone should have.'"

Alpern anticipates that this approach will reduce the importance of organic chemistry in favor of biochemistry. Similarly, the mathematics curriculum will shift away from calculus and toward statistics. Alpern also hopes that professors will develop interdisciplinary courses that illuminate the medical relevance of premed coursework and that standardizing what new medical students should know will free medical school professors from having to teach to the lowest common denominator.



Dean of Yale College becomes third scientist named as provost

Last fall, during his final freshman address as dean of Yale College, Peter Salovey, PH.D. '83, exhorted members of the Class of 2012 to go their own way, to "say goodbye to what is familiar, even to what we have grown to love, and leave it for uncharted waters."

He could have been giving himself a pep talk in the bathroom mirror. After four years as dean, a job he readily admits he loved, Salovey was offered the job of provost, the university's chief academic officer after the president. "I'm delighted to have this new set of challenges," he said, "but to walk away from something you love is a difficult thing to do."

Salovey, the Chris Argyris Professor of Psychology and professor of epidemiology and public health, is Yale's third consecutive provost to be chosen from the health-related sciences. He succeeds Andrew Hamilton, PH.D., an organic chemist who left Yale to become vice chancellor of the University of Oxford in England, and Susan Hockfield, PH.D., a neurobiologist who is now president of the Massachusetts Institute of Technology.

Salovey doesn't think this is a coincidence. "There is no doubt that for Yale to remain in the top tier of universities, we have to strengthen science and engineering on both sides of campus," he said. "This is an area of priority and has been for some years."

The acquisition of West Campus, a former pharmaceutical company lab and office complex in neighboring West Haven and Orange, is critical to this effort, Salovey said, and he sees it as part of his new job to work with Michael Donoghue, PH.D., the vice president for West Campus Planning and Program Development, to use that facility as an incentive to attract world-class researchers to Yale.

Noting his numerous research collaborations with faculty from the schools of medicine and public health

(he was co-director of the Center for Interdisciplinary Research on AIDS for nine years), Salovey said he understands the challenges faced by the medical school faculty. "My lab has the same pressures," he said. "We look for funding the same way. We share the same struggles."

Salovey joined the Yale faculty in 1986 after receiving his undergraduate degree from Stanford and his PH.D. from Yale. He was appointed dean of the Graduate School of Arts and Sciences in 2003. A year later, he was named dean of Yale College, where he presided over growth in international programs and financial aid changes. His research has focused on human emotion and health psychology. With colleague John D. Mayer, PH.D., he developed a concept called "emotional intelligence," the theory that just as people have a range of intellectual abilities, they also have measurable emotional skills that affect their success in life.

Salovey knows his own emotional intelligence will be tested in his new job. "The stereotype of the provost's office is the guy who says no," he said. "But I think it's a mistake to assume that the role of the provost is to frustrate all good ideas, intentions and creativity of the faculty. I would like to think of it as the office that helps you shape your ideas, clarify your goals and manage your expectations so that we can be saying 'yes' at least as often as we say no."

—J.K.



Peter Salovey

MICHAEL MARSLAND

The impetus for revisiting the premed curriculum came from the National Research Council's 2003 BIO 2010 report, which found that fewer American students are becoming research biologists—in part because of the premed requirements. "When premed students got tortured in organic chemistry, people thinking about careers in research biology got tortured along with them," Alpern said.

Committee members plan to seek feedback from certain medical and undergraduate educators before disseminating the report to the undergraduate and medical school communities. The committee knows it will be easier for wealthy colleges to revise their curriculum to accommodate these changes.

In a parallel effort, a new committee has been formed to revise the MCAT, the aptitude test that students take for admission to medical school. The work of these two committees must be integrated for change to occur as it requires coordinated modifications in premed requirements, the MCAT and the undergraduate curriculum. Alpern predicts it will take some years before students see any changes, because directors of undergraduate programs will need to know how the MCAT will be revised before they can change their curricula.

"It's not going to happen overnight," he said, "but when it does, I think it will represent a major transformation in medical education."

—Jennifer Kaylin



Online: Yale Netcasts

Robert J. Alpern: Vision for the School of Medicine

A physician's gift supports research on pre-eclampsia and prematurity

Shortly before the end of World War II, a dying Albert S. McKern, M.A. '13, M.D., turned to lawyers—fellow prisoners in a Japanese internment camp in Sumatra—and composed his will. His vacant land was to be developed, and property that he owned in Penang, Malaysia, where he had practiced as a physician and surgeon, was to be renovated and rented. Ten years after the death of his last child, the family's holdings were to be sold and the money divided among three universities—Yale, where he had received a degree in engineering; the University of Sydney in Australia, where he had received his bachelor's degree and studied theology;

and the University of Edinburgh in Scotland, where he had received his medical degree.

Born in 1885 in Sydney, McKern came to Yale in September 1911 after deciding that theology was not for him because of his difficulties with public speaking. He earned a master's degree from Yale, followed by a medical degree from Edinburgh in 1917. McKern then moved to Penang, where he built up both a successful medical practice and substantial real estate holdings. During the Japanese invasion in 1942, McKern was captured in Indonesia. He died three years later of dysentery.

Under the terms of McKern's will, his family's estate—\$12 million—was to be used “for the sole and special purpose of establishing medical research scholarships for investigation into the

causes, prevention and treatment of mental and physical pain and distress during pregnancy, labour and the puerperium.” McKern's last surviving beneficiary died in December 1997, and the trust terminated a decade later.

Yale's portion of McKern's gift—about \$4 million—will endow annual grants to those doing promising research on these issues. Charles J. Lockwood, M.D., the Anita O'Keefe Young Professor of Women's Health and chair of obstetrics, gynecology and reproductive sciences, learned about the gift several years ago at a meeting with Andrew A. Calder, M.D., head of reproductive and developmental sciences at Edinburgh. Lockwood's initial reaction was disbelief. “He'd had a few drinks and I thought he was exaggerating,” Lockwood said. Eventually the two began a discussion of joint work that might fulfill McKern's dream.

“They have a very strong program,” he said of ob/gyn research at Edinburgh, citing the work done in prematurity and pre-eclampsia in particular.

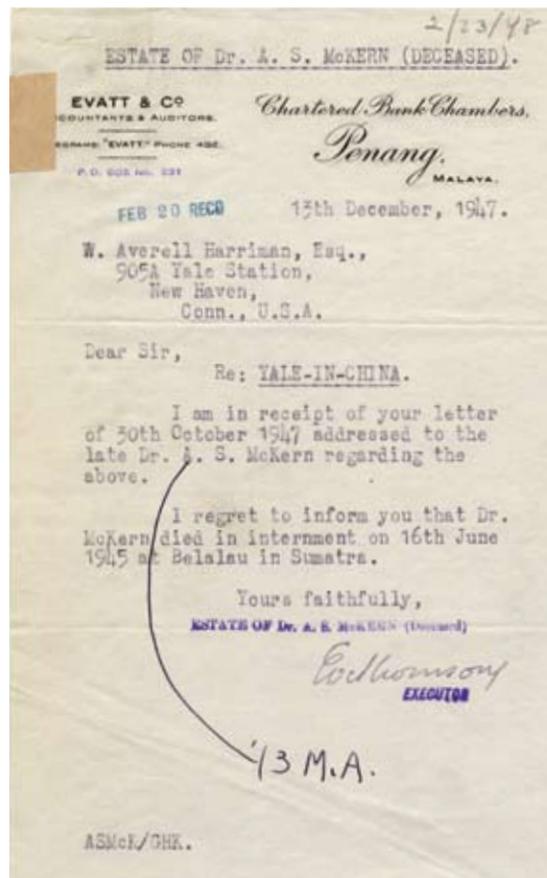
Lockwood hopes to devise a joint strategy for using the money from the bequest during this academic year. Given McKern's desire and the needs of the field, Lockwood sees prematurity research as an area of focus. “[Prematurity] is the leading cause of infant mortality in the United States, the leading cause of mental retardation, the leading cause of childhood blindness. It costs the U.S. economy around \$28 billion a year in terms of health care-related resources. Preterm delivery is a national public health crisis.”

Funds from the bequest may also support a Yale-Sydney-Edinburgh scholarly exchange program and research on postpartum depression in the psychiatry department.

—Charles Gershman



COURTESY OF BILL MCKERN



YALE UNIVERSITY MANUSCRIPTS AND ARCHIVES

Albert McKern in Penang, Malaysia, circa 1937. In 1947, statesman Averell Harriman of the Yale College Class of 1913 sought McKern's help on behalf of the Yale-in-China Association, only to learn of McKern's death.



Online: Yale Netcasts

Charles J. Lockwood : Yale Ob/Gyn—Research Updates and Clinical Advances

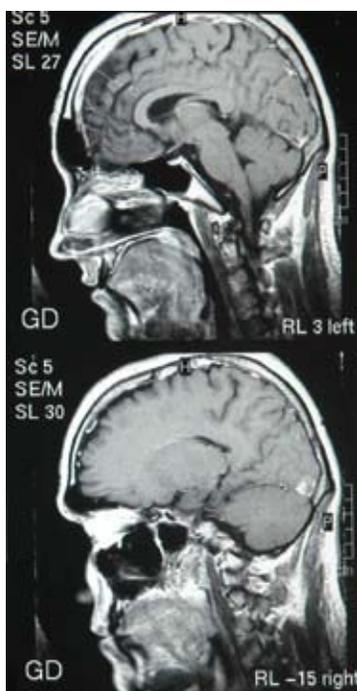
Yale team builds new search engine that retrieves images based on embedded text

In July a team of Yale scientists published a paper describing an innovative search engine with a new way of finding biomedical images. Search engines and websites already allow scientists to search for images based on titles and captions. “We are not aware of a biomedical search engine that can retrieve images by searching the text within biomedical images,” Michael O. Krauthammer, M.D., Ph.D., assistant professor of pathology, and colleagues wrote in their paper published in *Bioinformatics*.

The Yale Image Finder (YIF) lets researchers locate diagrams, graphs and other experimental figures based on text contained in the images. YIF, funded by a grant from the National Library of Medicine and accessible at <http://krauthammerlab.med.yale.edu/imagefinder/>, enables users to access more than 140,000 images from more than 34,000 papers published in open-access biomedical journals.

Krauthammer calls this new technology a major step in biomedical literature retrieval, as most important information exists in places other than image captions, which, until now, have been the primary targets of image search engines.

YIF functions by performing optical character recognition before making the images available for search. Users can restrict image queries to the text within the images, the image caption, the paper title, paper abstract, full text or any combination thereof. After submitting a query, YIF presents users with



Yale scientists have devised a way to search biomedical images based on text contained in the images.

thumbnails of images. Once an image of interest is selected, YIF provides a high-resolution version of the image, along with the abstract, full text and other images from the associated paper.

“The idea is to augment text mining with image mining, with the idea that we can have a better understanding of a research article using automated means,” Krauthammer says. “I’ve felt that images are undervalued in terms of their representative quality and what type of information they can hold. In the future, we should be able to obtain even more information from the images, and get a pretty good understanding of what the paper is about.”

—C.G.

et cetera . . .

TWO GRANTS ADVANCE PUBLIC HEALTH

The School of Public Health has received a twofold boost in the form of an \$11 million grant from the National Institute of Mental Health (NIMH) and a \$10.7 million grant from the National Institute of Child Health and Human Development (NICHD).

The NIMH funding provides five years of support for HIV/AIDS prevention and health services at the school’s Center for Interdisciplinary Research on AIDS (CIRA). The grant from NICHD adds to a \$15 million grant in 2007 to support Yale’s role in a national study that will follow 100,000 children from before birth to age 21 to improve understanding of the factors that contribute to their health and development.

The grant to CIRA follows an October 2008 report from the Centers for Disease Control and Prevention that revealed higher estimates of new HIV infections in the United States than previously calculated and emphasized the need for more rigorous study of interventions for HIV prevention.

—John Curtis

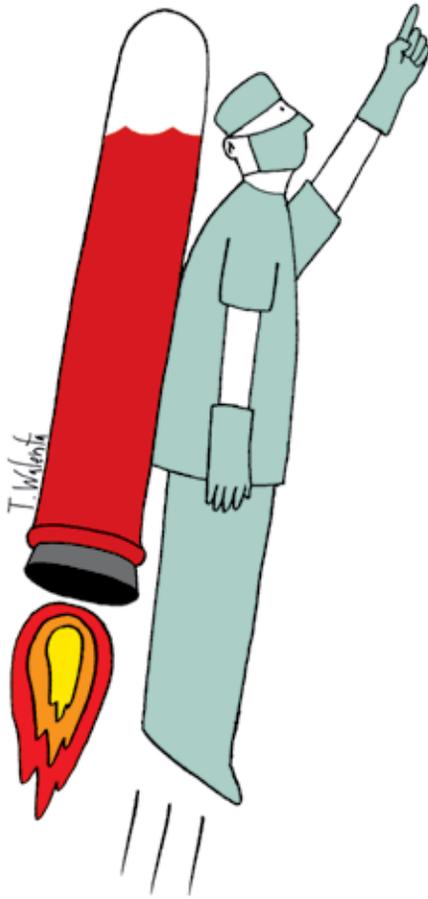
YALE PAYS \$7.6 MILLION IN GRANTS PROBE

Under the terms of a settlement reached in December, Yale will repay the federal government \$7.6 million after an investigation of Yale’s accounting practices for research grants. The probe, which began in June 2006 and covered periods going back to 1999, was led by the U.S. Attorney’s Office on behalf of federal granting agencies, including the Department of Health and Human Services and the National Science Foundation.

President Richard C. Levin said that the university has “a clear obligation to comply with all regulations pertaining to the administration of federal awards.” He also acknowledged that federal regulations are sometimes burdensome, but noted that Yale receives more than \$400 million in federal grants each year.

As a result of the investigation, Yale’s Office of Research Administration has developed training and education programs, published revised policies and procedures, implemented a Web-based reporting system, and designed procedures for the documentation and review of cost transfers.

—J.C.



Blood test in the OR speeds surgery

Measuring hormone levels in hyperparathyroidism on the spot sends patients home faster.

Since Robert Udelsman, M.D., M.B.A., department chair and the William H. Carmalt Professor of Surgery, came to Yale in 2001 to lead the medical school's Department of Surgery, the number of parathyroid operations has risen from about 30 a year to more than 350.

Most of these patients have primary hyperparathyroidism (HPTH)—one or more of the parathyroid glands in the neck begins to enlarge and produce too much hormone. These enlarged glands are called adenomas, and too much parathyroid hormone, or PTH, causes osteoporosis, kidney stones and other health problems. The adenoma needs to be removed, a procedure that usually requires general anesthesia and a stay of several days in the hospital.

Udelsman, however, has combined existing techniques with a simple but radical innovation—placing a laboratory machine to measure hormone levels inside the operating room—to turn this into an outpatient procedure.

“Patients can fly in on Sunday, get a place at the hotel and see us on Monday morning. Tuesday morning they come have surgery,” said Patricia Donovan, R.N., M.B.A., Udelsman’s clinical coordinator. “They return Friday that same week. They might explore New Haven, have their sutures removed ... and fly back.”

Udelsman’s approach, which has been adopted by the other three endocrine surgeons on the team, involves several steps.

First comes pre-op preparation. In addition to the patient’s medical history, the team needs to know where the offending adenoma is located. Most people have four or more parathyroid glands, so figuring out which is the overactive one—or whether there is more than one—can be a challenge. Imaging studies help to localize it. Before the patients arrive for surgery, Donovan gathers relevant records, medical information and scan results, talking by phone with patients and their doctors to make sure that the surgery is appropriate for them.

In the operating room the uniqueness of Yale’s approach becomes evident. Instead of patients being placed under general anesthesia, patients receive a series of injections of local anesthetic in the neck. A small incision is made, the offending adenoma is removed and a blood test is done to check levels of PTH. But rather than sending the blood sample to a laboratory, the technician in the operating room tests hormone levels immediately. The surgical team waits only 12 minutes for the results—about a quarter of the time needed at other institutions, where waiting for results can take longer than the operation itself. If PTH levels have dropped sufficiently, the surgeons can be confident that they removed the adenoma completely. Then it’s time to sew up.

The entire procedure typically takes half an hour, and the patient goes home—or to the hotel—a few hours later, returning to the clinic in three days for a final follow-up visit. Complication rates are low, cure rates are about 98 percent and the surgery is cost-effective. But most of all, patients are satisfied.

—Jenny Blair

As doctors hand off patients, miscommunication at sign-outs can cause errors

“Sign-out,” the conversation at shift change when hospital patients’ information is handed off from one team of doctors to another, is the delicate hinge on which much medical communication turns. But this commonplace event can be fraught with miscommunications that frustrate doctors and pose a hazard to patients.

That’s because doctors don’t have a standard approach for sign-out—unlike those for the formal history and physical presentation—nor are they supervised when first doing it. “We have no training at all; there’s nothing,” said Leora I. Horwitz, M.D., assistant professor of medicine. Instead, residents wing it: they might painstakingly explain the team’s reasoning for each patient’s plan of care—or they might simply read names and diagnoses to a colleague and append a few comments to the list.

Because much of what is known about sign-out is anecdotal, Horwitz decided to study the practice. She and her team studied eight teams’ handoffs over 12 days, audiotaping evening sign-outs and collecting doctors’ print-outs, then asking the covering team in the morning if there had been any sign-out-related problems overnight.

There certainly had been. In 88 sign-out sessions, 24 sign-out-related problems came up. Fifteen related to inefficient care—the covering team had to duplicate work or research—but there were five episodes of delayed diagnosis or care and four close calls. In one case of miscommunication, a patient was transferred to intensive care in part because

the covering team had not been warned about her bronchospasm.

These results, published in the September 8 *Archives of Internal Medicine*, will surprise few physicians who have had to start from scratch while caring for a colleague’s patients. But with reductions in residents’ work hours, a rising hospital census and a national impetus to reduce medical errors, sloppiness at sign-out is evolving from nuisance to pressing concern.

How should clinicians sign out? They might start by looking outside medicine. Other groups involved in high-risk or error-prone work, including the nuclear power, automotive and airline industries, have developed effective methods of handoff. “They teach it, they train it, they concentrate on it—which we don’t do,” Horwitz said. “What you want to hand off in person or on paper is the higher-order stuff, the clinical reasoning part, the synthesis, the judgment. Handoff is about understanding.”

Based on these results, the internal medicine department began a sign-out curriculum for residents that is now in its third year. Horwitz often teaches it, and she has also developed sign-out templates for hospital residents in other specialties. She plans next to study sign-out during hospital discharge.

“We just haven’t thought about [sign-out] as part of our job,” she said. “We don’t prioritize this as a safety issue, and that’s part of what [our team is] trying to change by pointing out what goes wrong.”

—J.B.

et cetera . . .

NEW APPROACH TO THYROID SURGERY

Over the last two years the Yale Pediatric Thyroid Center has treated 30 patients by using a new approach—the pairing of pediatric and adult surgeons in the operating room. The center may be the only facility in the United States exclusively devoted to the care of children with thyroid conditions.

“The right surgical expertise is important for optimizing outcomes, because the area by the neck is delicate, especially in young children,” said Scott Rivkees, M.D., professor of pediatrics and director of the center.

Since far more thyroid surgeries are performed on adults than on children, Yale physicians combined the expertise of Robert Udelsman, M.D., M.B.A., department chair and the William A. Carmalt Professor of Surgery, a high-volume adult endocrine surgeon, with the skills of Christopher Breuer, M.D., a pediatric surgeon versed in the challenges of treating thyroid disorders in young patients.

“We can tell parents, ‘You’re going to have one of the world’s most experienced endocrine surgery teams working on your child,’” Udelsman said.

—Jennifer Kaylin

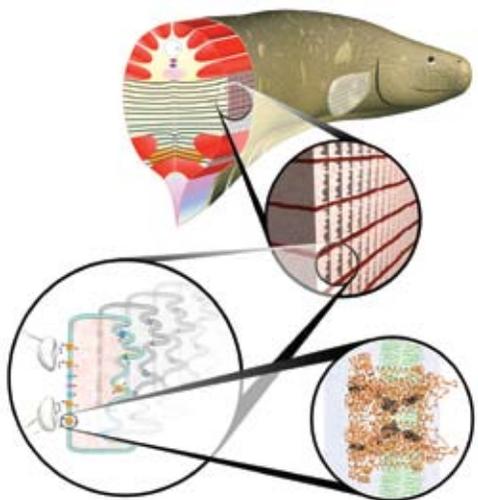
PREVENTING FALLS IN ELDERLY PATIENTS

Teaching clinicians and older patients how to prevent falls can reduce the likelihood—by up to 11 percent—of falls that lead to hospitalization or an emergency room visit, Yale researchers reported in *The New England Journal of Medicine* in July.

The researchers compared injury rates in a 58-zip code area in and around Hartford—where clinicians incorporated fall risk assessment and management into their practices—to those in a control region. Their analysis also showed some 1,800 fewer emergency department visits or hospitalizations; and health care savings estimated at \$21 million over two years.

“The next step is to put [the research] into practice,” said senior author Mary E. Tinetti, M.D., the Gladys Phillips Crofoot Professor of Medicine and professor of epidemiology and of investigative medicine, “by making physicians, nurses and physical therapists everywhere more conscious of fall risks ... and of what can be done to prevent falls.”

—Michael Fitzsosa



DANIEL KUKOWSKI

Yale scientists have designed an artificial version of the energy-generating cells in electric eels that could power medical implants.

Yale scientists model artificial energy cells

Chemical engineers design an artificial electrocyte that could be a power source for medical implants.

Researchers at Yale University have created a blueprint for artificial cells that are more powerful and efficient than the natural cells they mimic and could one day power tiny medical implants. Their findings were published online in *Nature Nanotechnology* on September 21.

The scientists began by exploring whether an artificial version of the electrocyte—the energy-generating cells in electric eels—could be designed as a potential power source. “The electric eel is very efficient at generating electricity,” said Jian Xu, PH.D., a postdoctoral associate in the Department of Chemical Engineering. “It can generate more electricity than a lot of electrical devices.”

Xu came up with the first blueprint that shows how the electrocyte’s different ion channels work together to produce the fish’s electricity while he was a graduate student under David A. LaVan, PH.D., a former assistant professor of mechanical engineering now at the National Institute of Standards and Technology.

But the scientists didn’t stop there. “We’re still trying to understand how the mechanisms in these cells work,” said LaVan. “But we asked ourselves: ‘Do we know enough to sit down and start thinking about how to build these things?’ Nobody had really done that before.”

Using the new blueprint—based on a mathematical model—as a guide, LaVan and Xu set about designing

an artificial cell that could replicate the electrocyte’s energy production. “We wanted to see if nature had already optimized the power output and energy conversion efficiency of this cell,” said Xu. “And we found that an artificial cell could actually outperform a natural cell, which was a very surprising result.”

The artificial cell LaVan and Xu modeled is capable of producing 28 percent more electricity than the eel’s own electrocyte, with 31 percent more efficiency in converting the cell’s chemical energy—derived from the eel’s food—into electricity.

While eels use thousands of electrocytes to produce charges of up to 600 volts, LaVan and Xu have shown that it would be possible to create a smaller “bio-battery” using several dozen artificial cells. The tiny bio-batteries would need to be only about a quarter-inch thick to produce the small voltages used to power such tiny electrical devices as retinal implants or other prostheses.

Although the engineers came up with a design, it will still be some time before the artificial cells can be built—they will still need a power source. LaVan speculates that the cells could be powered in a way similar to their natural counterparts. Bacteria, he suggested, could be employed to recycle ATP—the molecule that transfers energy within cells—using glucose, a common source of chemical energy derived from food.

With an energy source in place, the artificial cells could one day power a medical implant and would provide a big advantage over battery-operated devices. “If it breaks, there are no toxins released into your system,” said Xu. “It would be just like any other cell in your body.”

—Suzanne Taylor Muzzin

A gene that helps blood vessels feed tumor growth also aids in brain plasticity

A gene that typically helps rogue blood vessels feed tumor growth also appears to play a helpful role in the body—in brain development. Slight genetic variations in the vascular endothelial growth factor (VEGF) gene sequence correlate with changes in the size of the hippocampus, the brain structure involved in memory, emotion and learning. These changes may be linked to a slew of neuropsychiatric disorders including major depression, schizophrenia and dementia.

“There may be subsets of individuals, for example with mood disorder or bipolar disorder, who have hippocampal differences, and they may be the ones who carry these variations in VEGF,” explained Hilary Blumberg, M.D., associate professor of psychiatry, director of the Mood Disorders Research Program and lead author of a paper published online in *Biological Psychiatry* on August 14.

The researchers used magnetic resonance imaging to determine hippocampus volumes in a group of healthy volunteers who had slight differences in the VEGF gene encoded in their DNA. They then employed statistical analysis to identify any correlation between hippocampus differences and VEGF differences. The study findings suggest that variations in VEGF might contribute to individual differences in hippocampus size and structure.

These findings build on pioneering work conducted by one of the paper’s co-authors, Ronald S. Duman, Ph.D., Elizabeth Mears and House Jameson Professor of Psychiatry, professor of pharmacology and director of the Division of Molecular Psychiatry and Abraham Ribicoff Research Facilities. Duman recently explored VEGF function in the brain and found that it helped new nerve cells grow, specifically in the hippocampus.

Playing a part in neurogenesis is an unconventional role for VEGF. The gene

is known to help cancers grow by laying down new networks of blood vessels that feed malignant cells. Blocking VEGF function is a main goal in the treatment of breast, lung and colorectal cancers, among others.

Joel E. Gelernter, M.D., professor of psychiatry and director of the Division of Human Genetics in Psychiatry, who was examining genetic variations in VEGF, joined Blumberg and Duman for a collaborative effort.

“We’re trying to understand at a basic level of cell signaling how disruptions or alterations could contribute to the function of the hippocampus and circuits within the hippocampus, and how these disruptions influence behavior and illness,” said Duman. Toward that end, Gelernter offered up his genetic expertise, Duman contributed knowledge about the molecular role of VEGF in the brain from his animal studies and Blumberg brought her brain imaging know-how to bear.

The findings of the current study complement another recent discovery from the research trio. They found that, compared to healthy subjects, adults with bipolar disorder had significantly smaller hippocampus volumes, which were linked to variations in the brain-derived neurotrophic growth factor (BDNF) gene (published online on August 13 in *Neuropsychopharmacology*). Duman predicts that VEGF may behave similarly, in that VEGF variations may make individuals either more or less vulnerable to stress-related mood disorders.

To follow up on this prediction, Blumberg and co-lead author Fei Wang, M.D., Ph.D., plan to study VEGF genetic variations in individuals with mood disorders to understand how these gene changes may influence both brain structure and behavior. Ultimately, identifying genetic variants that predispose individuals to mood disorders could pave the way to patient screening for early disease detection and possibly smarter treatments.

—Kara A. Nyberg

et cetera . . .

FIX-IT KIT FOR FAULTY GENES

School of Medicine researchers led by Peter M. Glazer, M.D. '87, Ph.D. '87, HS '91, department chair and the Robert E. Hunter Professor of Therapeutic Radiology and professor of genetics, have found a new approach to gene therapy, opening up the possibility of new treatments for inherited hematologic diseases.

In the September 9 issue of the *Proceedings of the National Academy of Sciences*, the researchers report that they developed genetic “repair kits” consisting of chemically altered pieces of DNA, which bind to human genes and trigger the cell’s own repair systems to fix such mutated genes as the one that causes thalassemia, an inherited blood disease. The faulty gene was fixed even in human bone marrow cells, meaning that the genetic repair could be inherited by newly generated blood cells.

The new technique employs small pieces of synthetic DNA that are easy to insert into cells and do not require viruses for delivery.

—John Curtis

JUNK DNA AND EVOLUTION

Humans can handle tools and walk upright thanks to a handful of letters in their genome, Yale scientists said in a report published in *Science* in September. Evolution, they suggest, may have been driven not only by changes in genes but also by changes in the sequences that control them.

Some sequences, previously thought of as “junk DNA” because they do not code for proteins, regulate genes that direct human development. With colleagues in California, Singapore and the United Kingdom, the Yale team characterized in mouse embryos a human sequence that had changed since humans and chimpanzees diverged. This sequence drove gene expression at the base of the mouse versions of the primordial “thumb” in the forelimb and the “great toe” in the hind limb.

“The long-term goal is to find many sequences like this and use the mouse to model their effects on the evolution of human development,” said James Noonan, Ph.D., assistant professor of genetics and senior author of the study.

—J.C.

How America can get its groove back

A medical school alumnus argues that the nation is not doing enough to foster innovation.

John J. Kao, M.D. '77, M.B.A. '82, does not even mention his medical degree in the biography for his latest book, *Innovation Nation: How America Is Losing Its Innovation Edge, Why It Matters, and What We Can Do To Get It Back*.

Medical school at Yale and a psychiatry residency at McLean Hospital were just starting points for a career that has earned Kao the designation of “Mr. Creativity” from *The Economist*. Along the way he has played keyboards for Frank Zappa; taught at MIT and at Harvard, where he earned his business degree; started two biotech companies; and was production executive on the Palme d’Or-winning film *sex, lies, and videotape*. Recently he founded a nonprofit, the Institute for Large Scale Innovation.

Despite his distance from hospital corridors, however, Kao said he still draws on what he calls “the implicit curriculum of medicine,” which taught him, “You work hard, and no one works harder than you. You take responsibility and make things happen. And you’re it: when someone comes into the ER at three in the morning, you’re it. I’ve never forgotten those lessons.”

Lately Kao’s hard work has involved advising corporate and government leaders around the world on fostering innovation—and warning Americans that they are not doing enough. *Business Week* called his book “scary, insightful, and ultimately very useful,” and listed it among the top 10 business books for 2007.

Kao believes that Americans lack a cogent vision of where innovation is taking them, even though half of the world’s research and development money is invested within this country. “No country, not even the United States, can afford to be without a strategy,” he said. Kao defines innovation as the ability of individuals, corporations and nations “to continuously create their desired future.” If the United States wants to chart its own course rather than simply reacting to developments elsewhere, it must foster innovation.

Kao cites Singapore’s innovation strategy as instructive. The island nation of 4.5 million has built a huge research complex called Biopolis, paid for talented young people to earn doctorates in the sciences and recruited researchers and advisors from around the world. In his book, Kao quotes former University of

John Kao relies on the “implicit curriculum of medicine” in his career as a consultant on innovation.



Washington President Lee L. Huntsman, who has called Singapore a “venture capital company masquerading as a government.”

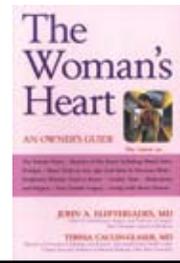
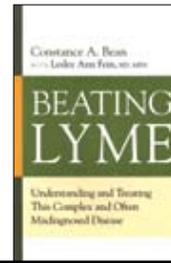
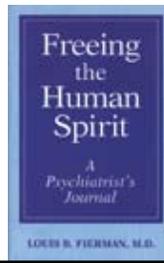
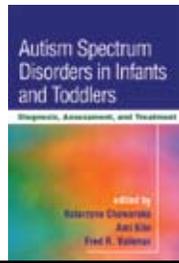
Like Singapore, each nation should foster innovation consistent with its national character and endowments, Kao said. Otherwise, he said, “you don’t make the best use of your opportunities and resources.” The United States, for example, has both strong links between academia and business and a mature venture capital industry willing to take chances on unproven ideas. “And,” said Kao, “we have a very forgiving attitude toward what I would call noble failure. ... If you fail in European countries or Asia, typically you’re out of the game.”

America has also benefited by welcoming immigrants: half of those with doctoral degrees in computer science, for instance, come from abroad. “We’d be stupid to imperil that flow of talent into this country,” Kao said. “Many other countries are stepping up to the plate and making their countries highly desirable to immigrant talent.”

Kao advises physicians who value innovation to seek skills and knowledge beyond medicine. For instance, he recommends that doctors earn master’s degrees in business or in public administration. “These days it’s arguably as important to understand how discoveries get into the marketplace as it is to pursue discovery itself. ... The more we can do a variety of things in addition to having our core skills, the more we can contribute to society.”

—Cathy Shufro

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



Transgenesis and the Management of Vector-Borne Disease

by Serap Aksoy, PH.D., professor of epidemiology (microbial diseases) (Springer) The author explains the reasons for the resurgence and spread of vector-borne disease. No effective vaccines exist for these diseases, and only limited therapeutic interventions are available to treat them in mammalian hosts. Aksoy describes the causes of the spread of these diseases, including habitat change, irrigation practices, atmospheric and climate change, insecticide and drug resistance and increases in global tourism, human traffic and commercial activities. The author also explores the potential of such molecular technologies as transgenesis in developing disease management strategies.

Anemias and Other Red Cell Disorders

by Kenneth R. Bridges, M.D., and Howard A. Pearson, M.D., professor emeritus of pediatrics (hematology/oncology) (McGraw-Hill Professional) This resource provides a practical framework for identifying and managing acute, congenital and chronic anemias as well as other red blood cell disorders. The book describes the principles of anemia evaluation and specific deficiencies in adults and children.

Practical Guide to the Evaluation of Clinical Competence

by Eric S. Holmboe, M.D., HS '93, professor (adjunct) of medicine, and Richard E. Hawkins, M.D. (Mosby) This guide to outcomes-based assessment in clinical education describes evaluation methods, tools and faculty training approaches for all medical educators. The book can serve as a resource in developing, implementing and sustaining effective systems for evaluating clinical competence in medical school, residency and fellowship programs. The book comes with a DVD.

Autism Spectrum Disorders in Infants and Toddlers: Diagnosis, Assessment and Treatment

by Katarzyna Chawarska, PH.D., assistant professor in the Child Study Center, Ami J. Klin, PH.D., Harris Associate Professor of Child Psychiatry in the Child Study Center and associate professor of psychology, Fred R. Volkmar, M.D., the Irving B. Harris Professor of Child Psychiatry, Pediatrics and Psychology in the Child Study Center, and Michael D. Powers, PSY.D., assistant clinical professor in the Child Study Center (The Guilford Press) This book synthesizes research on the diagnosis and treatment of autism spectrum disorders in very young children. The authors examine critical research issues and present innovative approaches to assessing social, cognitive, adaptive, communications and sensorimotor impairments in the first two years of life. The book also addresses ways to support families in coping with an early diagnosis and

in becoming effective advocates for their children. The book includes case studies and discusses popular but controversial treatments for these disorders.

Freeing the Human Spirit: A Psychiatrist's Journal

by Louis B. Fierman, M.D., HS '53 (Blue Dolphin) This book consists primarily of 21 case vignettes intended for readers who are involved in or interested in psychotherapy and psychiatric private practice. The book also includes an essay on the development of nondirective therapy, an approach that the author regards as increasing the effectiveness of treatment.

Beating Lyme: Understanding and Treating This Complex and Often Misdiagnosed Disease

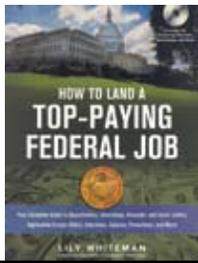
by Constance A. Bean, M.P.H. '50, and Lesley Ann Fein, M.D., M.P.H. (AMACOM) The authors offer readers an understanding of Lyme disease, its history and the controversy surrounding its diagnosis and treatment. Topics include what to do after a tick bite, the consequences of misdiagnosis, how to get the best treatment and what to do if insurance won't cover it.

The Woman's Heart: An Owner's Guide

by John A. Eleftheriades, M.D. '76, HS '81, FW '83, the William W.L. Glenn Professor of Cardiothoracic Surgery, and Teresa Caulin-Glaser, M.D. (Prometheus Books) In this guide, the authors focus on the unique factors affecting women's cardiovascular health. Topics include such diseases of the heart as mitral valve prolapse, symptoms of heart disease that women need to know, cardiac tests, medications and surgery, and the ways in which pregnancy and childbirth affect women's hearts.

Current Diagnosis & Treatment: Psychiatry, 2nd ed.

by Michael H. Ebert, M.D., professor of psychiatry, Peter T. Loosen, M.D., Barry Nurcombe, M.D., and James F. Leckman, M.D., the Neison Harris Professor of Child Psychiatry in the Child Study Center and professor of pediatrics and psychiatry (McGraw-Hill Medical) This reference work addresses day-to-day questions about psychiatric illness in both adults and children. It provides information on psychiatry and the law, psychological testing, emergency psychiatry, evaluation of infants, developmental psychology, neuropsychopharmacology, psychiatric genetics, psychoanalysis and the principles of evaluating and diagnosing patients, as well as treatment strategies.



How to Land a Top-Paying Federal Job: Your Complete Guide to Opportunities, Internships, Resumes and Cover Letters, Application Essays (KSAs), Interviews, Salaries, Promotions and More!

by Lily Whiteman, M.P.H. '90 (AMACOM) This book guides prospective applicants through every stage of their federal job search, giving insight into finding openings and negotiating a top salary as well as suggesting techniques for securing promotions.

Educating Individuals With Disabilities: IDEIA 2004 and Beyond

by Elena L. Grigorenko, Ph.D., associate professor in the Child Study Center and of epidemiology (chronic diseases) (Springer) This volume discusses the identification and assessment of learning-disabled students today in light of the 2004 Individuals With Disabilities Education Improvement Act (IDEIA). Grigorenko describes the IDEIA in its historical, political and legal contexts and considers practical issues for school psychologists, neuropsychologists, speech-language therapists, policy makers and legal professionals who must deal with special education and learning disability issues on a daily basis.



Medical Humanism: Aphorisms From the Bedside Teachings and Writings of Howard M. Spiro, M.D.

edited by Robert E. Kravetz, M.D., FW '65 (The Program for the Humanities in Medicine) This volume gathers many observations, lessons, admonitions, criticisms, witticisms and comments from Spiro's books, essays and papers for the reader's enjoyment and contemplation. Spiro, who served on the School of Medicine's faculty from 1955 until his retirement in 2000, speaks as an experienced clinician and humanist with a broad and visionary outlook on medicine.

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

Expert medical help now available to Connecticut school nurses via new website

School nurse Marcia Wilcox, R.N., didn't have much luck when she used Google to search for information about learning disabilities caused by a rare bone disorder. A teacher at her school in Connecticut needed to know whether a new student would need extra help as a result of the condition.

Wilcox contacted Janene Batten, M.L.S., at the Harvey Cushing/John Hay Whitney Medical Library, who sent Wilcox four journal articles on the condition, "She was able to find something a lot quicker than I would be able to," said Wilcox, the sole nurse for about 400 primary school children. "Sometimes I have time, and sometimes I don't."

This expert help was available on the "Ask a Librarian" feature on a new website for Connecticut school nurses that Batten established with colleagues Jan Glover, M.L.S., and Lynn Sette, M.L.S. They created the site based on a questionnaire they had sent in the fall of 2007 to the nearly 2,000 nurses and nurse practitioners in Connecticut's public schools and school-based clinics. Just under half the nurses who filled out the questionnaire said they were too busy during the school day to use the Internet; 44 percent said they lacked knowledge of electronic resources.

The site gives the nurses easy access to 14 databases, including PubMed, the biomedical database for clinicians, and MedlinePlus. Among other resources is a link to the National Library of Medicine's Drug Information Portal, which provides details about 12,000 medications. The site also provides access to librarians who can help with difficult searches, as Batten helped Wilcox.

The librarians developed the site over two and a half years as part of a \$40,000 grant from the National Library of Medicine. They hope that the site, called Connecticut School Nurses Information Resources, can serve as a model for others. In June, the librarians will present a paper about the project at the annual conference of the National Association of School Nurses.

"Unlike a lot of areas of nursing, school nursing is a very solitary practice," said Joan Cagginello, R.N., M.S., the school nurse administrator of the Milford Health Department. The site is "invaluable," she said.

The site's URL is http://www.med.yale.edu/library/school_nursing/.

—Cathy Shufro

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

**CLAUDIA THOMAS****An orthopaedic surgeon fights for diversity in medicine**

When Claudia L. Thomas, M.D., HS '80, completed her residency 29 years ago, she was the nation's first black woman to become an orthopaedic surgeon—though somebody had to inform her of her achievement. Thomas, who gave the Southwick Lecture for the Department of Orthopaedics in November, has devoted her career to making up for that oversight, fighting for diversity in both color and gender in medical schools and in doctors' offices. Although there has been progress, she said, there's still a long way to go.

African-Americans make up almost 11 percent of the population but just under 2 percent of orthopaedic surgeons, and only 2.3 percent of orthopaedic surgeons are women. And disparities also extend to treatment: Whites, for example, are 2.4 times likelier to get hip replacements than blacks. Race and gender disparities "are killing people," Thomas said.

Thomas, an assistant professor of orthopaedics at The Johns Hopkins University School of Medicine, led a diversification effort there that increased the number of African-American orthopaedic residents to 32 percent. "When you have a diverse program," she said, "it becomes self-perpetuating eventually."

—John Dillon

**MARY PEARL****How climate change affects public health**

In 1967 U.S. Surgeon General William Stewart, M.D., announced that it was time to "close the book" on infectious diseases. There was a hitch to that announcement, said Mary C. Pearl, Ph.D. '72, at a talk in November sponsored by The Elihu Club and Tropical Resources Institute: "No one alerted the bacteria and viruses."

The diseases that have since emerged are deadlier and more expensive to fight, said Pearl, president of the Wildlife Trust, a conservation science group. And more than 61 percent of these diseases—including SARS, avian flu, Lyme disease and West Nile virus—have jumped from animals to humans. They're also, she said, the result of human damage to the environment.

In 2006, the Centers for Disease Control and Prevention declared climate change to be the "largest looming public health challenge we face," she said.

Among its effects are excessive heat that stresses the heart; pollution that attacks the lungs and heart; water- and vector-borne diseases; more frequent floods and drought; and more environmental refugees, leading to overcrowding, civil unrest and ideal conditions for disease proliferation.

"Emerging diseases originate where there are lots of people living in rapidly changing ecosystems," Pearl said. "Biodiversity is a buffer."

—J.D.

**GORDON SCHIFF****A single-payer system is best Rx in a bad economy**

A single-payer system may be the best way to provide health care coverage in the United States, especially when a faltering economy threatens to increase the ranks of the uninsured, an expert said at the Medical Student Council Perspectives on Medicine series in October.

"The employment-based approach is increasingly unworkable," said Gordon D. Schiff, M.D., associate director of the Center for Patient Safety Research and Practice at Harvard's Brigham and Women's Hospital and past president of Physicians for a National Health Program. Roughly 47 million Americans were uninsured in 2007, a figure that will surely rise due to the credit crunch, Schiff said. Half of the nation's 2 million personal bankruptcies were due to medical expenses, even though 76 percent of those filers had health insurance.

It's time "people got over this bogeyman" of government's inefficiency at managing health care, Schiff said. Whereas up to 40 percent of premiums in private plans are spent on nonmedical, largely administrative purposes, Medicare and Medicaid spend only about 2 percent, he said.

While a single-payer plan "isn't perfect," Schiff said, "it is the only approach that ensures universal health insurance for everyone."

—J.D.

**CURTIS PATTON****Noah Webster—from listing definitions to tracking disease**

Noah Webster, a 1778 graduate of Yale College, is best known for his eponymous dictionaries, but his lexicographical work is far from his sole achievement. Webster was also the largely unheralded "father of epidemiology—indeed, father of all public health in America," said Curtis L. Patton, Ph.D., professor emeritus of epidemiology.

Patton, speaking at a celebration marking Webster's 250th birthday in October, said Webster provided "the base upon which modern epidemiology is based, warts and all." The "warts" stemmed from Webster's doubts over the theory of contagion and his belief that meteors and other atmospheric conditions aggravated such outbreaks as the yellow fever epidemics he studied in the 1790s.

"We may laugh at all this, but we didn't have any idea about disease causation at the time," Patton said. Still, Webster knew enough to inoculate himself against smallpox and to warn of the limited benefits of quarantining people.

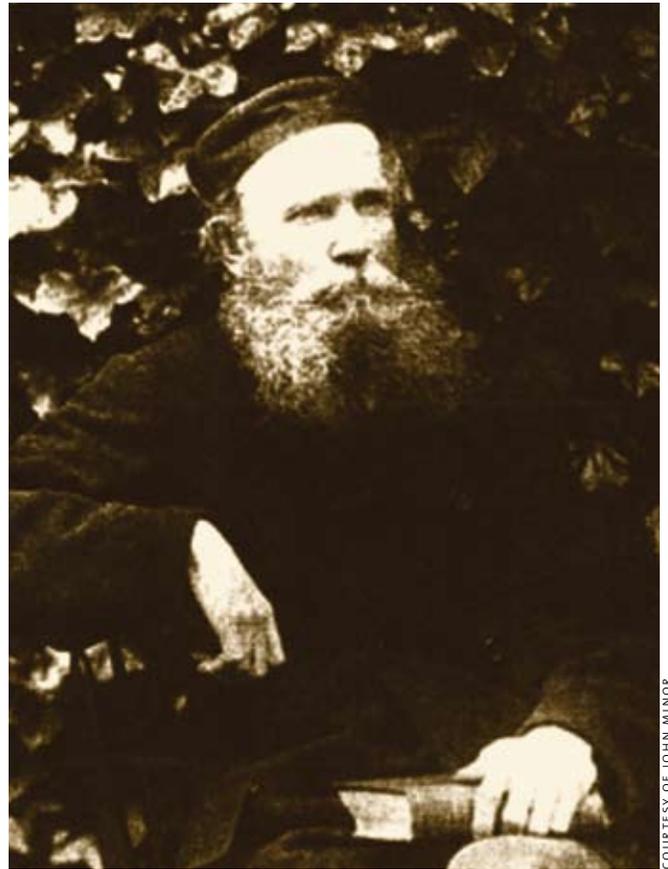
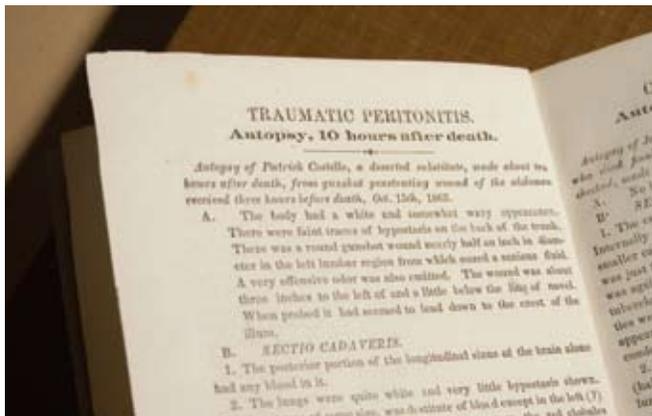
"He didn't get everything right, but he was conscientious and careful" about gathering data, Patton said. Webster assembled enough of that data to write *A Brief History of Epidemic and Pestilential Diseases* (1799), which became a standard text in medical schools in the 19th century.

—J.D.

A tortured soul finds redemption in words

An 1863 graduate of the School of Medicine made his mark as a contributor to the *Oxford English Dictionary* while incarcerated with schizophrenia.

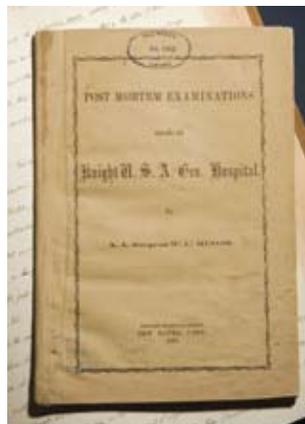
By Jenny Blair

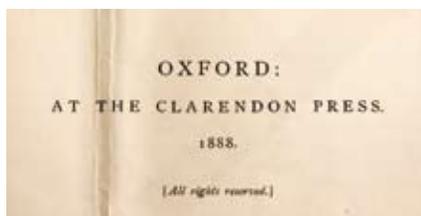


COURTESY OF JOHN MINOR

ABOVE After killing a man in London, William Minor was sentenced to an asylum in Broadmoor, where this undated picture was taken.

ABOVE LEFT AND LEFT After his graduation from medical school, Minor performed autopsies on soldiers at Knight Hospital. He published his reports in a book, a copy of which is in the Medical/Historical Library collection.





TERRY DAGRADI

William Minor contributed to the *Oxford English Dictionary* for years before his editor learned he was incarcerated in an asylum for the insane.

Some alumni of the School of Medicine make groundbreaking medical discoveries. Some become leaders of medical institutions. William C. Minor, M.D. 1863, also left his mark: he developed schizophrenia, killed a man and became a brilliant linguistic scholar while in an asylum for the insane.

Minor graduated from Yale's medical school, which at that time entailed two years' study, as a qualified surgeon. After caring for wounded soldiers in the Civil War, Minor began to suffer from what would much later be defined as paranoid schizophrenia. In 1868 Minor was admitted to a government hospital for the insane in Washington, D.C., and released from the Army in 1870. During a stay in London that was intended to rest his mind, he shot and killed an innocent passerby while in the grip of delusional paranoia. The British courts judged him not guilty by reason of insanity in April 1872; he was then placed in Broadmoor, an asylum in Berkshire, England, where he began to correspond with the editors of the nascent *Oxford English Dictionary*. He soon became an invaluable contributor to that effort. The chief editor did not learn until years into their collaboration that the brilliant and hardworking Minor was a mentally ill prison-hospital inmate. Minor's extraordinary life was the subject of Simon Winchester's 1998 bestselling history, *The Professor and the Madman*, the principal contemporary source of information about Minor.

After graduating from Yale—his handwritten M.D. thesis concerned muscular contraction—Minor performed autopsies on soldiers at New Haven's wartime Knight Hospital. A small book with his detailed and eloquent

reports is still available at the Medical Historical Library along with his thesis. *Post Mortem Examinations Made at Knight U. S. A. General Hospital* reveals haunting glimpses of Minor's time. Most of his autopsy subjects that year had fallen ill in the field with now-unusual lung ailments, including typhus, typhoid pneumonia, pleurisy and "phthisis," or tuberculosis; but others had succumbed to the more familiar "alcoholismus acutus" or even to choking. Minor also published an article in an 1863 issue of Yale's *American Journal of Science and the Arts* regarding the ability of certain worms to regenerate after being cut apart.

Years later his erudition and exactitude would serve him well in Broadmoor. In the early 1880s—perhaps nine or 10 years into his incarceration—Minor came across a pamphlet that would change his life. It had probably been placed in one of the many books brought to him by his victim's widow (amazingly, the two had become friends). The pamphlet called for volunteers to compile what was then called *A New English Dictionary on Historical Principles*. Minor threw himself into the task, combing the rare books in his library, then mailing the editors vast numbers of quotations demonstrating the words' meanings and early appearances in English literature. Though Minor was plagued by vivid hallucinations and delusions, the research suited him well and even seemed to serve as therapy. He worked at it with great success for some 20 years.

In his declining years, Minor was considered less dangerous, and his brother arranged his transfer in 1910 to the same hospital in Washington, D.C., where he had been kept 42 years earlier.

It was there that he finally received the diagnosis of dementia praecox, an early term for schizophrenia. A year before his death from pneumonia at age 85, he was transferred, still delusional, to a home for the elderly in Hartford, Conn. Minor was buried in New Haven's Evergreen Cemetery in March 1920. His obituary in the Yale press made no mention of his crime, stating instead that while in England "he was found to be mentally deranged ... and [in Broadmoor] he remained ... gradually recovering his mental balance, and devoting his time to scholarly pursuits." Though Minor did not in fact recover his mental health, the fruits of his scholarship done in the throes of schizophrenia can be found throughout the *Oxford English Dictionary*, a basic reference work in libraries throughout the English-speaking world.

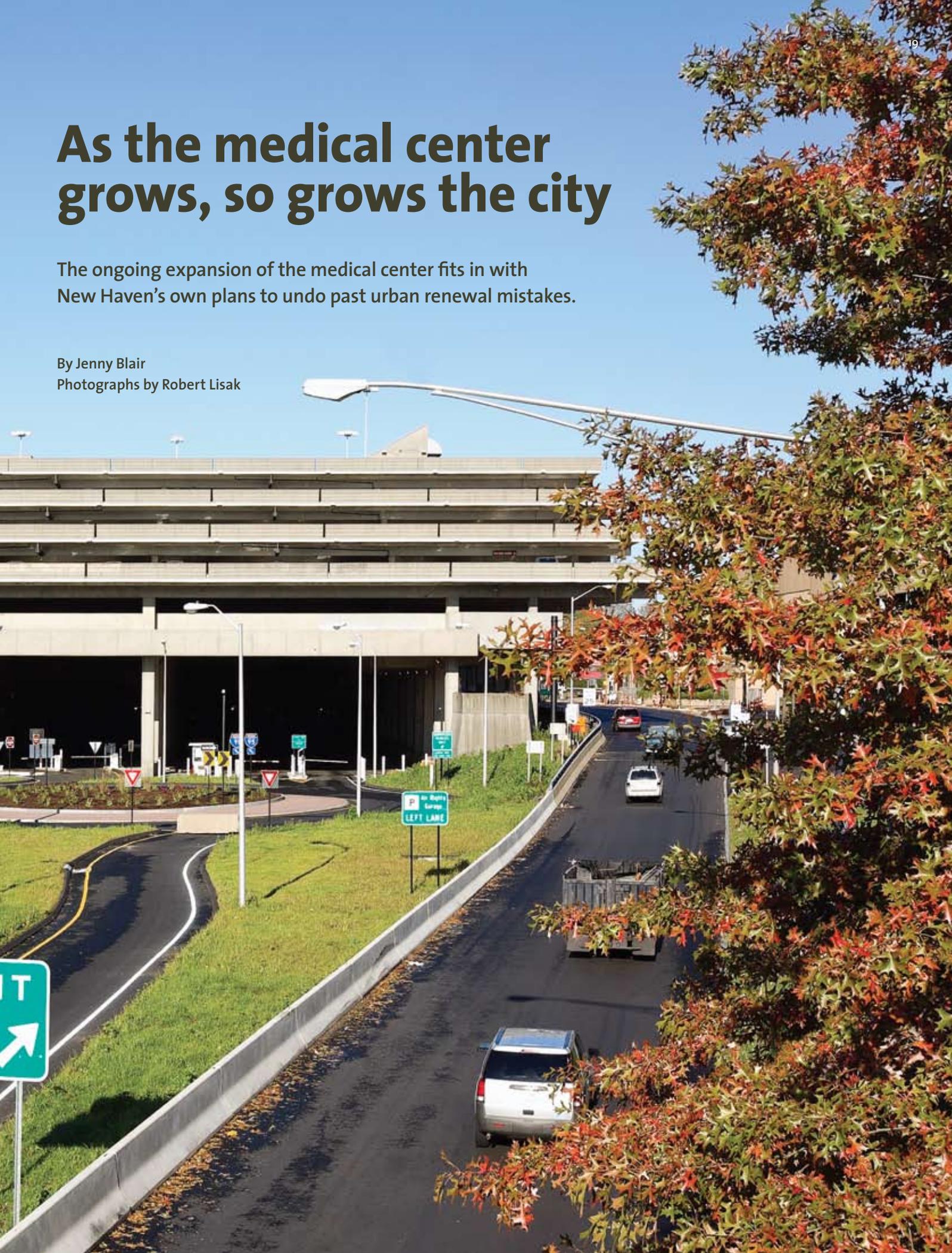
Jenny Blair, M.D. '04, is a physician and writer based in New Haven.



As the medical center grows, so grows the city

The ongoing expansion of the medical center fits in with New Haven's own plans to undo past urban renewal mistakes.

By Jenny Blair
Photographs by Robert Lisak



On Saturday, April 19, 2008, a month before she was to graduate from the School of Medicine, Mila Rainof, M.D. '08, left Harkness Dormitory's exercise room and began walking north on York Street. At South Frontage Road, Rainof began to cross against the light. It probably seemed safe: as often happens at that corner, a large truck was blocking cars on the other side as it crossed South Frontage Road on York Street. As the truck cleared the road, though, cars bound for the expressway burst from behind the truck. Rainof dodged cars in two of the three lanes, but the driver of a sports car in the third lane did not see her in time, and Rainof was struck just a few feet from the curb.

Rainof died of her injuries the next day. She was 27.

The intersection at York and South Frontage is one of several around the medical center notorious for close calls. Located beside the busy Air Rights Garage, its signals are some 40 years old, installed at a time when a very different vision of the medical center's neighborhood prevailed. The intersection serves as a transition point between three lanes of city traffic and an on-ramp to the Oak Street Connector, an expressway leading to Interstates 91 and 95. And its traffic flow is frequently impeded by trucks backing in and out of the hospital's loading dock.

A half-century ago, the intersection would have been almost unrecognizable. In the mid-1950s, South Frontage Road was called Oak Street and marked the boundary between the medical campus and the crowded Oak Street neighborhood—home to poor Jews and Italian-Americans as well as newly arrived immigrants of every nationality. As part of the ambitious urban-renewal agenda pursued by Mayor Richard C. Lee and funded by government grants, the neighborhood was razed in 1957 to make way for an expressway and two frontage roads. The new roads brought more traffic into the city but isolated the medical campus and separated downtown New Haven from the Hill neighborhood.

PREVIOUS PAGE Once thought to be the epitome of urban planning, the Route 34 Connector never completed its planned path as a highway to towns in the Naugatuck Valley. Instead it divided New Haven, separating the Hill neighborhood from downtown and the

School of Medicine from the rest of the university. Now, armed with a fresh vision, New Haven officials are planning to fill in the highway and build mixed-use developments that include retail businesses, office space and housing.

But times have changed. City planners now prefer houses and shops to medians and on-ramps. New Haven has enjoyed an urban renaissance since the mid-1990s, and a series of overhauls proposed by Mayor John DeStefano Jr.—new buildings and roads behind the medical school; garages, restaurants and shopping at Union Station; a redesign of the vast and underutilized Long Wharf area; and a relocation of Gateway Community College from Long Wharf to downtown—will transform the face of the city as completely as Lee's projects did a half-century ago. Bruce D. Alexander, Yale's vice president for New Haven and state affairs and campus development, said of Lee's urban projects, "Unfortunately, as well-intended as those dollars were, they got spent in ways that [mean] we're now undoing virtually all of them. The Coliseum, Chapel Square Mall, the Oak Street Connector—they're all being undone."

A cancer hospital brings change

When Rainof died, plans were already in the works to fix what ails York and South Frontage and 11 other nearby intersections. The catalyst was the Smilow Cancer Hospital. Groundbreaking for the 14-story, \$467 million building on Park Street and South Frontage Road took place in September 2006 after a protracted fight between the city and local unions on one side and Yale-New Haven Hospital on the other. Expected to create 500 jobs and inject \$1 billion into the local economy, it will be the largest health care development in state history, according to Steve Merz, the hospital's vice president for administration. (Previously, the Children's Hospital held that record.)

"The hospital had to expand," said Merz. In the past 10 years, he said, the medical center has seen an increase of approximately 20 percent in the number of patients discharged from the hospital as well as those seen in outpatient clinics. "The demand is unbelievable." In addition to having a higher patient census, the hospital's cancer facilities are spread out over several buildings. Administrators feared that the logistical complexity that presented for patients might be among the problems threatening the hospital's National Cancer Center designation. The result was Smilow, along with two ancillary buildings. At 55 Park Street, a six-story building will house pharmacy and laboratory facilities. And a city-block-sized parking garage called Lot E will be built at 2 Howe Street. Some employees who park at the Air Rights Garage will be asked to park in the new building instead to create space for cancer patients.

Because of the anticipated extra traffic, the streets around the medical center received a significant upgrade. Now a traffic circle, or roundabout, at the end of the Oak Street Connector diverts cars into and out of the Air Rights Garage, keeping traffic off side streets. A loading dock underneath the garage will also direct construction vehicles and delivery trucks directly from the highway into the garage. Twelve pedestrian-friendly traffic lights along the Frontage Road corridors are being installed at intersections, including the one where Rainof died. And an extra lane has been added to the expressway's on-ramp to discourage drivers from jockeying for position while they merge. The changes will also include such measures as improved pavement markings and signage. "We are doing everything we can to make it as safe as possible for pedestrians at the medical center," Merz said at a review of the plans in August; they are expected to be complete in late spring 2010.

The hospital is no stranger to injury prevention strategies. It co-sponsored the New Haven Safe Streets educational campaign, and its trauma center has been named a member site of the Injury Free Coalition for Kids, a National Program of the Robert Wood Johnson Foundation developed to prevent traffic injuries in the hardest-hit areas of the city.

With a higher percentage of residents who walk to work than any other city in New England, New Haven has much at stake, so many residents will be watching the changes closely. They include Rachel Wattier, a medical student in her fifth year and one of Rainof's classmates. Shortly after Rainof's death, Wattier and other grief-stricken medical students formed the Yale Medical Campus Traffic Safety Group. The group brings together university personnel, aldermen, police, bicyclists, students and other citizens to seek ways to address such neighborhood traffic problems as speeding cars, drivers who run red lights and intersections that are inhospitable to pedestrians.

"A lot of people's behavior, both as drivers and as pedestrians, is due to frustration and urgency," Wattier said. "[Traffic] fatalities are preventable if you reduce speed particularly, and educate people, and improve the infrastructure so that it doesn't allow people to speed comfortably."

If the city has its way, the now-forbidding stretch of parking lots, housing projects and such massive institutional buildings as the School of Nursing, the Tower One/Tower East senior housing and the Doctors' Building between the medical school and the train station will soon be unrecognizable too. Offices, residences, retail shops, and parking structures are

planned, as well as a network of new and more pedestrian-friendly streets. Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, says he's pleased by the timing, as the medical school is considering building in that area in a few years. With the street restructuring, he said, the streets will "make more sense."

Perhaps the most drastic change to New Haven's inner city will be the proposed removal of the Oak Street Connector, also known as the Richard C. Lee or the Route 34 Connector. As part of a project called Future Forward, Mayor DeStefano hopes to tear out the expressway—which carries tens of thousands of cars each day into the downtown area and the medical campus—and replace it with an urban boulevard and 10 acres of mixed-use development. Similar changes have taken place in Milwaukee, Portland, Ore., and San Francisco. "We're starting to see market demand to push the highway back to I-95 and bring a street grid back into service," said Michael Piscitelli, director of the city's Department of Transportation, Traffic and Parking. (Alpern applauds the idea, saying that the school looks forward to "being part of a continuous downtown.") The city received a \$5 million federal grant in September to research and implement the change, and studies will begin early this year.

West of the Air Rights Garage, along a corridor where Pfizer built a vast research facility for clinical trials in 2004 and where the Lot E garage will be built, New Haven once again owns what was until recently state land. The city has begun to hold workshops for local would-be retailers as part of its plans to develop what is now mostly a wasteland of grass and parking lots between the two frontage roads.

It wasn't always a wasteland. The Oak Street Connector, the Air Rights Garage and Crown Towers, an apartment building popular with medical students and residents, sit squarely atop what used to be the Oak Street neighborhood. Spreading over 11 square blocks with 326 buildings, it was either a rank slum or a vibrant inner-city quarter, depending on one's point of view. But by the late 1950s it was marked for destruction.

The city was remaking itself because of the rise of the automobile. A post-World War II jump in car ownership meant that people could live far from work; this change, along with a trucking boom that eclipsed rail freight, meant that cities faced vastly increased motor vehicle traffic even as their downtowns lost residents to the suburbs. New Haven was no exception.

When Lee took office in 1954, he and his city planners thought big. Funded by grants—during the mayor's 16-year administration, New Haven received more federal and state





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With very little street-level retail business to draw passers-by, the area around the medical center (6, 7, 10-12) offers few enticements for pedestrians. With both the School of Medicine and Yale-New Haven Hospital contemplating or

implementing new construction, retail is part of the mix, as are upgrades to a dozen intersections not known for being friendly to pedestrians. Among the changes under way are the Smilow Cancer Hospital (3-5) and two ancillary buildings,

a retail corridor along the grassy median that divides Legion Avenue (1-2) and a traffic circle (9) that brings vehicles directly from the Route 34 Connector into the Air Rights Garage (8) and keeps them off side streets.

monies per capita for its urban renewal than any other city in America—the city poured hundreds of millions of dollars into huge projects like the Connector, the Chapel Square Mall and the Coliseum. The dense but threadbare and crime-ridden Oak Street neighborhood and its poor and immigrant residents did not fit the city’s new image. Moreover, it seemed to city leaders that bringing in cars would bring life to downtown New Haven. Named for what it replaced, the Oak Street Connector is a 1.1-mile spike of concrete that protrudes into the city from the two nearby interstates; it was intended to be part of a larger freeway that would have extended down Route 34 all the way to the town of Derby. The first portion (and, as it would turn out, the last) was completed in 1959. In addition to the loss of the Oak Street neighborhood, Orange and Temple Streets were severed, the Hill neighborhood was isolated, and Yale’s medical campus was separated from the main campus. Crossing weedy, glass-strewn sidewalks high above a river of rushing cars has for decades been a fact of life for many people at the medical center.

A new approach to urban planning

The ideas that drove New Haven’s city fathers to replace a neighborhood with a freeway were challenged only a few years after it was built. In 1961, Jane Jacobs, an urban activist who would become perhaps the most influential thinker about city planning in North America, published her landmark book, *The Death and Life of Great American Cities*. In stark contrast to prevailing opinions of the time, Jacobs argued that neighborhoods should be mixed-use; that buildings should vary in age and purpose; that population should be dense; that people walking down sidewalks, sitting on porches and looking out windows are all-important for safety and a sense of community; and that well-intended gargantuan projects actually worsen urban quality of life. Jacobs helped prevent the building of a freeway across lower Manhattan and, later, a similar project in Toronto. Her ideas are at the root of the urban-planning movement known as New Urbanism, whose practitioners include two Yale graduates, Andrés Duany, M.Arch. ’74, and Elizabeth Plater-Zyberk, M.Arch. ’74, co-founders of the Congress for the New Urbanism. The movement began in the early 1980s and gave rise to such model towns as Seaside, Fla. Jacobs’ thinking also helps to explain why Chicago’s Cabrini-Green and similar low-income high-rise housing built in that era later failed so spectacularly.

Inspired by Jacobs’ ideas, many area residents have criticized the medical center’s infrastructure. Anstress Farwell, M.A. ’79, president of the New Haven Urban Design League and a 30-year resident of the city, is one of the most vocal critics. She laments the uninviting nature of the medical campus, with its blank walls, fences along the sidewalk and parking structures. There is little housing and there are almost no inviting street-level retail stores—Cappuccino’s, a sandwich café on Congress and Cedar and the Yale Medical Bookstore, are recent exceptions—and no reason for pedestrians to take a stroll. There is little neighborhood feel. As with many features of the city, this situation can be explained in part by the dominance of the automobile.

In recent decades, Farwell said the hospital has reinforced the lack of a street connection “and an over-reliance on single-occupancy vehicles. All those driveways and aprons define the street as related to cars, with pedestrians as a marginalized presence.”

As an example, Farwell points to the Air Rights Garage, a joint project of the hospital and the city that bookends the terminus of the Oak Street Connector and arches over York Street. The walk beneath the garage overpass is a bleak and noisy stretch of sidewalk lined by fast-food stores, convenience stores, a pharmacy and parked ambulances. Built in 1982, the garage was intended to be a partial solution to congestion in the surrounding neighborhood and was considered a model for mixed-use development in its time. The Temple Street Parking Garage, built on similar principles, soon followed.

“The Air Rights Garage was really the only thing that made sense,” said Philetus Holt, a lawyer who shepherded the Air Rights Garage to completion. A vanpooling initiative by the hospital had had few takers, he said. And the region and city lacked a strong public transportation system. “People did not want to give up their cars.”

Merz maintains that the hospital is committed to mixed-use development, pointing out that more pedestrian-friendly features are planned for its newer buildings. “These LEED-certified, brownfield-redevelopment, mixed-use projects are bringing tremendous economic benefit to the city and medical center,” he said.

In recent years, New Haven builders and residents alike have learned from the past. The simultaneous accessions to power in 1993 of both Yale’s President Richard C. Levin and New Haven’s Mayor DeStefano marked the beginning of a warmer town-gown relationship that would transform the city

yet again. In an era of reduced city prosperity and slipping prestige on the part of the university—it was losing money and faculty, its physical plant was in disrepair, and undergraduate Christian Prince had recently been murdered during a robbery—Yale began to act as a community developer, initiating a homebuyer's assistance program for its employees and buying up distressed retail properties on Chapel Street and Broadway. This change touched off what the media has called the New Haven renaissance. Alexander joined Yale in 1998 after having worked at the Rouse Corp. on such revitalizing projects as Faneuil Hall in Boston and Harborplace in Baltimore. Asked to locate the epicenter of the renaissance, he points to 15 Broadway, where the New York-style 24-hour delicatessen Gourmet Heaven set up shop in 2000 at his invitation. Barnes & Noble and the clothing stores J. Crew and Urban Outfitters soon followed. To encourage lively sidewalk traffic, Yale stipulated that retail tenants remain open until 9 p.m. “We now have life and activity and a very comfortable environment for shopping,” Alexander said. “Whenever we have the chance to put shops or restaurants on the ground plane of buildings that are on city streets where the campus interfaces with the community, we try to build in that retail space.”

The high-end tenants stayed, and developers elsewhere took notice. According to Alexander, Yale's aggressive retail-development policies have had the unintended consequence of demonstrating to developers that upscale retail and housing could succeed in New Haven. Firms are now bidding on the chance to develop, for example, the Shartenberg site, a planned mixed-use luxury housing development at the corner of State and Chapel streets downtown—a dramatic contrast with the beginning of the Levin/DeStefano era, when the city had to entice developers with perks.

“We have a really good partnership with the mayor, the city administrators and the Board of Aldermen. There's so much power in Yale and the city working together on projects—virtually everyone's come to that recognition,” said Alexander.

New Haven has also benefited from the biotech boom. Investment in Science Park, a former industrial site, and the refitting of the former telephone company building at 300 George Street with wet labs has ensured that many fledgling biotech companies born of Yale research have stayed in the city.

The replacement of the Oak Street Connector with boulevards is expected to bring more life to an already revitalized

downtown. Such a change would reconnect Yale's medical and main campuses for the first time in a half-century. More people may be walking or biking to work, and efforts to reduce motor traffic are under way. Under a process called transportation demand management, the hospital offers incentives to employees not to drive to work, including vanpools and subsidies for public transport. Some 3 percent of employees participate, removing hundreds of cars from the road. The hospital aims to bring the total to 10 percent. The hospital's new buildings will contain street-level retail stores to encourage pedestrian life on the sidewalks. Even the planned Lot E garage, whose primary purpose is to house 845 cars, will contain not only retail and commercial space but also housing. “These are all part of our commitment to responsible, smart development,” Merz said. “We're trying to interact with the fabric of the city a little bit better.”

The city and the medical center will continue their dialogue, it seems certain, for decades to come. The hospital's satellite Long Wharf Medical Center opened in 2000, in a part of town that will change drastically if DeStefano's plans go into effect. Some employees commute by public transportation, and many more might do so if the commute is simplified. Most of all, the city's plans for Route 34, known as Legion Avenue west of the Air Rights Garage, will directly affect the medical center, and the gradual change of philosophy in urban planning has begun to affect the medical center's vision of itself.

“Does this vision of us just [building new facilities] down Route 34 make sense—having a long corridor of institutional medical services? That was kind of the old vision,” said Merz. But the mayor's dream of a dense mixed-use inner city has advantages for the medical center, he said. The reasons for that are straight out of Jane Jacobs: fewer cars; more retail enterprises; a livelier human presence on the sidewalk; and better relations with out-of-town visitors and community dwellers alike, who will see a pleasant downtown rather than a grim expressway as their welcome to the medical center. **YM**

Jenny Blair, M.D. '04, is a physician and writer based in New Haven.



CB

Science and culture in a strange land

As the world gets smaller, the Committee on International Health asks whether Downs fellows can find a foreign experience at home.

By John Dillon

Illustration by Calef Brown

In 1966, when the medical school first began offering international fellowships to medical and public health students, the typical fellow was a young man getting his first passport. Today's fellows are much more diverse—they are as likely to be female as male, six of the 20 fellows who went abroad in 2008 weren't native-born Americans, and because they came of age in the era of affordable air travel, all have previously visited a foreign country.

“The profile of the student now interested in getting the fellowship has changed,” said Kaveh Khoshnood, M.P.H. '89, Ph.D. '95, assistant professor of epidemiology (microbial diseases) and chair of the Committee on International Health (CIH), which administers the Downs International Health Student Travel Fellowship. “Forty years ago, it was a lot of white kids from Kansas who'd never been outside the United States.”

As the student body changes, the fellowship program faces an emerging challenge: balancing the relative importance of taking a culture versus taking in a culture. As more people come to the United States as refugees or immigrants, do students have to travel abroad to gain foreign experience?

The late Wilbur G. Downs, M.D., M.P.H., a renowned Yale virologist, started the fellowship program with the idea that students should have a chance to do research in the Third World, where their work could do the most good. His experiences in Africa had left him with the deep understanding that poverty, malnutrition and infectious diseases, combined with the corruption often seen in single-party nation-states, lead to

grave health consequences. Students would find a Yale mentor and a mentor in the host country, travel somewhere they'd never been—typically to Asia, Africa or Latin America—and conduct rigorous and ethical scientific research. Downs felt that they should immerse themselves in the culture during their stay, but the program's new director, Khoshnood, wants to take a fresh look at what it means to explore a different culture.

A longstanding foreign imprint

Yale alumni, faculty and students have embarked on international health missions since 1834, when Peter Parker, M.D., a medical school graduate and missionary, established the Ophthalmic Hospital in Canton (now known as Guangzhou), the first Western hospital in China. In 1915 the Yale-China Association opened another hospital in Changsha. After World War II, medical school faculty were active in the Atomic Bomb Casualty Commission's epidemiological studies in Japan. When Yale President Kingman Brewster established a program to send students abroad in 1965, Downs secured a \$5,000 grant from the Rockefeller Foundation to launch the fellowship. Since then the program has sent 444 Yale students to scores of resource-poor nations and has expanded to include nursing and physician associate students as well as those from the schools of medicine and public health.

Downs fellows have studied diseases spread by sand flies in Peru, HIV transmission among drug users in Vietnam, the eating disorder pica among Haitian women of childbearing

age, and post-traumatic stress disorder (PTSD) among survivors of war in East Timor. Though he retired as a professor of epidemiology and public health in 1972, Downs remained committed to the program until his death in 1991. Curtis L. Patton, PH.D., professor emeritus of epidemiology, longtime friend, colleague and traveling companion of Downs, took over as CIH chair until his retirement in 2006.

“We like to think of it as one of our flagship programs,” said Paul D. Cleary, PH.D., dean of public health. “We’re proud of it, and we try to bolster and promote it.”

According to Khoshnood, however, the program needs to adjust to the changing demographics of the students. As an Iranian-American, he personifies the change not just in the program, but also in Yale and in academia, where minorities make up an increasing portion of the student body.

“Global health could mean practicing outside the United States, but it could also mean working with the immigrant population in the United States,” he said.

He also thinks that the fellowship needn’t be limited to developing countries. “We’re not going to send you to the capitals of Europe,” he said, but he sees nothing wrong with, say, a Downs fellow working with North African refugees in Spain.

“I tell the students that this is a great project if you have five years and \$500,000, but you have three months and \$5,000.”

“What if a student wants to go live among them to see if they have health issues? These scenarios were raised. We decided to table that this year because we couldn’t reach an agreement.”

And Khoshnood hopes to rethink the program’s reluctance to send students to ancestral homelands or countries they already know. “The fact that they are familiar with the culture and language is a good thing,” Khoshnood said. “Their research would benefit from this existing knowledge.”

One of Khoshnood’s students, Farnoosh Hashemian, M.P.H. ’05, a 2004 Downs fellow, convinced the CIH to let her travel to her native Iran to study the mental health of Kurds exposed to chemical weapons during the Iran-Iraq war of 1980-1988, noting that she would benefit culturally because she grew up in Tehran and her work was in the rural Kurdish region, a far cry from the life she knew. “Iran is not a homogeneous country,” she said. Her work, which found high levels of PTSD among those exposed to chemical weapons even 16 years after the war ended, was published in 2006 in *JAMA: The Journal of the American Medical Association*—a rare feat, Khoshnood said, for a project done in only two months and on a shoestring budget.

Tim Mercer, an M.P.H. candidate and 2008 Downs fellow, argued that his two previous trips to Kenya would help him to do research there on the lives of street children. “The more you visit a foreign place, the more you learn about the culture, the more entrenched in it you become,” he said.

Patton acknowledged that familiarity can help, but added, “This is not a fellowship to visit aunts or uncles.”

The debate continues. Some longtime committee members regard the cultural experience as sacrosanct. According to Herbert S. Sacks, M.D. ’52, HS ’56, clinical professor in the Child Study Center, and a founding member of the CIH, one goal of the program is to get students out of what he called “academic lockstep.”

“We give them an opportunity to start looking at themselves and to reflect about their goals,” Sacks said. “What better opportunity to do this but in a contrasting culture? One of the questions is, ‘Why do you have to go to Zambia? Why not just go to the ghetto areas in New Haven, Bridgeport or Hartford?’ I think it’s too easy to go to these areas and work eight hours a day and return to your buddies and the routine of everyday academic life.”

Nicole Britten, an M.P.H. candidate whose 2008 Downs fellowship took her to Colombia to study tuberculosis transmission among family members, said a balance is crucial. “It would be wrong to sacrifice scientific rigor for cultural experience, but it would be disappointing to have a rigorous project with no cultural experience,” she said. Britten said she was struck by the hospitality of even her most destitute subjects in Colombia. While she required an interpreter for her research, “I have also learned how far body language and facial expressions can go in putting a person at ease when talking about sensitive issues.”

Sending students to do research in resource-poor countries also helps them learn to think on their feet in the face of power failures or inadequate water and medical supplies. Erik Hett, M.P.H. ’00, who studied disease transmission by tsetse flies in Kenya in 1999, learned to trap the flies by putting jars near water buffalos, whose scent attracted the insects. He and a colleague were extracting DNA from the flies with a centrifuge when the electricity in their village failed, threatening to wipe out their entire day’s work. They drove 20 minutes before finding the only working generator in town, at a beauty salon. “There were four hairdressers and a few patrons, and we had a centrifuge on their only table,” he recalled.

“We can’t imagine the things they have to deal with,” Patton said. “Research has been done on the hood of a car. They have to be resourceful.”

Safety and culture shock

Each trip by a Downs fellow starts with a research proposal submitted in January and reviewed by a Yale mentor. The Human Investigation Committee then reviews the proposal to ensure that it meets criteria for protecting research subjects.

Proposals must also pass muster with institutional review boards in the host country, which provides yet another lesson, this time on how to navigate a foreign bureaucracy. Then the Downs committee interviews the student. “They’re not going to get exposed to stressful interviews, but the questions are designed to help them further refine their proposals and clarify their motivations,” Sacks said.

Khoshnood notes that the final proposals are often far removed from the original submissions. “I tell the students that this is a great project if you have five years and \$500,000,” he said, “but you have three months and \$5,000.”

“As young people, we have grand ideas of what we’re capable of doing,” said Patton.

The awardees are announced in early March; last year 27 students applied for the 20 available fellowships.

The student must also find a mentor at an academic institution or organization in the host country. Often the on-site mentor is found through personal relationships with Yale faculty, and sometimes at the last minute. Khoshnood would like to develop “more sustained and long-term partnerships with a few institutions rather than one-time student projects.”

Funding for the fellows’ two- to three-month stays comes not just from the Downs fellowship—an endowment that covers travel expenses, visas, insurance, immunizations and medications and provides a modest stipend—but also from the School of Medicine’s Office of Student Research, which provides an additional \$5,000 for research expenses. [See “Downs Fellows Cover the World,” p. 39.]

In 2008 the CIH had all applicants take the extra step of filling out a one-page statement about how they would protect themselves. They needed to learn not only about the political climate and the history of the country but also whether there were any disease outbreaks that could affect them. They also needed an alternate plan in case their first proposal doesn’t work out. “We’re not hovering parents, to say the least, but we want to make sure we’re not putting anyone in the lion’s mouth,” Sacks said.

“We put them through the hoops of attending to their own affairs,” Patton said. “There are things they may not have thought of when they first applied, like how to protect yourself with words.”

Food riots in Haiti last summer diverted nursing student Eden Garber from her plan to conduct nutritional assessments of children there. “It was a bit frustrating,” said Garber, who had been studying Creole for two years. After some last-minute revisions to her application, she was off to Uganda.

“Uganda wasn’t on my list of places I want to go before I die,” Garber said. Still, she fell in love with the country and with the people she worked with.

Safety is not the only issue confronting Downs fellows. Among the elements of culture shock is the realization that they often stand apart from the local population. “I was constantly hissed at in the street and received a lot of attention from men,”

said nursing student Jessica Pettigrew, who worked with Haitian refugees in the Dominican Republic after the food riots stymied her plans to go to Haiti. “Everyone turned and stared at me, so I was constantly riddled with a certain self-consciousness. When I was doing my fieldwork in the sugar cane fields, there was this assumption that we could heal and help everyone.”

Hett didn’t enjoy being gawked at while he studied tsetse flies in Kenya, but he recognized its sometimes discomfiting

“We can’t imagine the things they have to deal with. ... Research has been done on the hood of a car.”

perks. “You get treated like royalty for no reason. Just the color of your skin opens up doors,” he said. “It puts you in sort of an awkward position. You want to try to get to know people, but I guess you could never cross that barrier to get to *really* know them.”

Although Rosha Forman, a nursing student who studied the practices of midwives in Zambia in 2008, found friends quickly in the expatriate community, that wasn’t why she’d gone there. “My challenge was to not fall into easy friendships with foreigners, but instead to work at my friendships with Zambians, as those were the people I was coming to get to know,” she said.

The complexities of foreign research are nothing new. One of the earliest Downs fellows, Leonard M. Milstone, M.D. ’70, HS ’77, research scientist and professor emeritus of dermatology, went to Trinidad in 1967 to trap mosquitoes and isolate arboviruses. Because English was the common language and the Caribbean island was not as poor as other developing nations, Milstone said he didn’t experience the disorientation other Downs fellows have described. The next summer, however, Milstone traveled to a Native American reservation in New Mexico for a non-Downs research project. Although in both locations he lived in Western-style housing and ate Western food, he found the Trinidad experience less culturally challenging in a way that presages Khoshnood’s approach to cultural immersion. “I found the culture on the Indian reservation in New Mexico far more foreign than the culture I experienced in Trinidad,” Milstone said. **YM**

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Online: Yale Netcasts

Paul Cleary: The Public’s Health: Challenges in the 21st Century





The lost art of the physical exam

Physicians once relied on seeing, hearing and touching a patient to make a diagnosis. Technology has enhanced and sometimes replaced those skills, but many doctors lament their decline.

By Jill Max

Photographs by John Curtis

It was a perplexing case: An otherwise healthy 23-year-old man was hospitalized with a life-threatening pulmonary embolism, but doctors had no clue as to what had caused it. The patient underwent every diagnostic study they could think of—CT scan, consultation with a hematologist, a coagulation work-up—but all were negative. Mystified, his doctors recommended anticoagulation medication, but it would mean an end to the weight lifting, swimming and running that he enjoyed. Still, because he didn't want to risk another serious blood clot, he was faced with taking anticoagulants for the rest of his life. Luckily, a light bulb went off when Thomas P. Duffy, M.D., examined the young man. Noticing that his patient was very muscular, Duffy, professor of medicine (hematology), had an idea what the problem might be. To confirm his suspicions, he performed a simple test known as Adson's maneuver: With the patient's arm straightened, Duffy placed a finger over the pulse at the wrist and then moved the arm behind the young man's back. When he asked the patient to turn his head, the pulse disappeared; when he looked forward, the pulse returned.

During a preclinical clerkship, "Learning the Physical Exam," in January 2007, Allison Campbell, then a first-year student, peered

into the ear of classmate Tyler Dodds. The course takes students through various forms of the physical examination.

Duffy deduced that the man was suffering from thoracic outlet syndrome, a compression of the blood vessels beneath the collarbone that cuts off blood flow to the arm. Surgery repaired the problem, and a few months later the young man suspended anticoagulation therapy and resumed his workouts.

By all accounts, such maneuvers as the one Duffy performed are becoming a rarity in medicine. Time pressures, an increasing reliance on technology and limited opportunities for bedside teaching have contributed to the demise of the physical exam. “Diagnosis time has been reduced to the time it takes to order an X-ray,” said Lisa Sanders, M.D. ’97, HS ’01, assistant clinical professor of medicine and author of “Diagnosis,” a monthly column in *The New York Times Magazine*. “The physical exam will die completely or it will be resuscitated.”

Bedside diagnosis in Western medicine

Clinical observation has been a part of medicine since Egyptian, Babylonian, Chinese and Indian physicians began examining the body thousands of years ago. Clinical reasoning and bedside diagnosis first played a role in ancient Greece when Hippocrates began measuring body temperature, evaluating the patient’s pulse and palpating the abdomen. But it wasn’t until the 19th century that physical diagnosis exploded, with such developments as percussion and auscultation—the tapping and listening that physicians still practice. Sir William Osler, M.D., often described as the father of modern medicine, told his students: “He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all.” Medical school faculty continue to dole out such advice to their students today.

Although certain diagnostic skills have been under fire since a paper presented to the American Medical Association in the 1950s discussed the inability of doctors to recognize some clinically relevant heart sounds, during the last two decades or so physical exam skills have fallen by the wayside. “We have technology that allows us to see things we could never see before, hear things we could never hear before. So in a sense technology has expanded our ability to replace a certain sector of the examination with either visual data or other kinds of data that weren’t available to us,” said Asghar Rastegar, M.D., professor of medicine, who recently stepped down as associate chair of medicine after 15 years. ICU patients, for example, get daily chest X-rays because it’s

difficult for them to sit up, cough and participate in other maneuvers that are necessary for a complete chest exam.

Although new technologies allow doctors to explore parts of the body that they can’t examine any other way, they don’t give the whole picture. They can’t feel where an abdomen is tender, discern clues from the look on a patient’s face or focus on a particular area because of how it feels or what the patient says. “The ability to decide by touching the patient and examining carefully what the appropriate technologies are to diagnose the patient allows technology to become an extension of what I’m doing rather than a replacement,” said Rastegar.

The problem with technology arises when doctors rush to order tests without first performing a thorough physical exam. Rastegar noted that patients presenting with a change in mental status in the emergency department frequently undergo a CT scan, which turns out to be normal, only for the doctors to find out later that the patients had overdosed on a prescribed medication. Doctors may be overly reliant on tests because they have confidence in the results; however, tests aren’t always accurate. Lyme disease patients, for example, often have the classic signs of rash, fever and muscle aches, yet the blood test is often negative. “Everyone wants to just turn to the back of the book and look up the answer,” said Sanders. Tests, she added, are just one more piece of evidence that has to be interpreted by a doctor.

Physical exams and other tests

Doctors like Duffy and Sanders, who are experts in the physical exam and use it regularly, suggest that it can be a valuable guide in deciding which tests to order and letting specialists know where to concentrate their efforts. “However,” said Aldo Peixoto, M.D., associate professor of medicine (nephrology) and co-author of *Bedside Diagnosis: An Annotated Bibliography of Literature on Physical Examination and Interviewing*, “it’s important to identify items of the exam that are relevant, ask questions and use technology to answer the questions about how valid and how valuable these maneuvers are.” This, he added, allows for optimal use of the physical exam and more selective use of technology. Studies have consistently shown that the patient’s history and physical are the most important factors in arriving at a correct diagnosis, whereas lab tests and imaging studies play complementary roles, and that excessive reliance on technology hasn’t necessarily improved the quality of patient care.

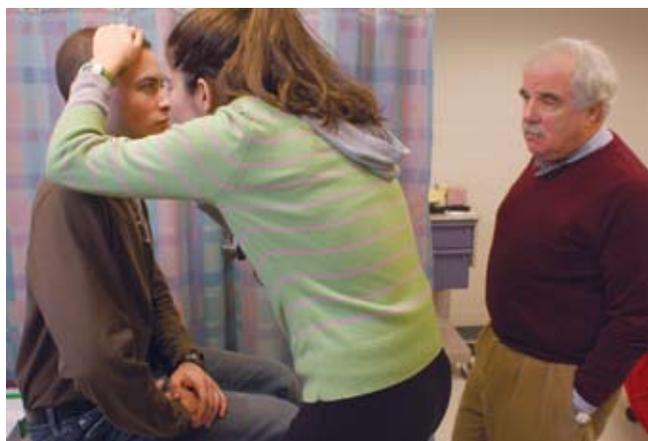
The tendency to order a series of diagnostic tests, however, may be a symptom of a larger problem—namely, the lack



of time physicians have to devote to their patients. Doctors are under pressure from insurance companies to keep exams brief. Moreover, the 80-hour work week for residents means that attendings have more clinical responsibilities and less time for individual patient care. Ever-shorter hospital stays also affect the amount of time doctors spend with each patient. Those who were trained before 1980 remember that longer hospital stays meant more exposure to patients and unhurried examinations of patients for both residents and physicians. “In my generation a patient might be in the hospital for two weeks and might educate an entire group of students,” said Duffy.

Doctors are further removed from their patients because rounds have virtually disappeared from the bedside. Patients are often discussed at “chart rounds” around conference tables due to both a concern for efficiency and respect for patients’ privacy. But that change translates to a generation of physicians who have not been as widely exposed to the physical exam and are less accustomed to using it. “In an ideal world you would be expected to use what you find on a physical exam to make clinical decisions, but in practice we very rarely do,” said Allison Arwady, M.D. ’08, a resident in medicine and pediatrics. Arwady learned the value of the physical exam during a clinical rotation at Mulago Hospital in Kampala, Uganda, between her third and fourth years of medical school. She saw patients given blood transfusions based on their pallor alone, without ever having a complete blood count. “We’ve lost a lot of skill here for finding and acting on these things,” she said.

About 13 years ago, Andre N. Sofair, M.D., HS ’90, M.P.H. ’97, associate professor of medicine, realized that the teaching that had stuck with him most had taken place at the bedside, not at the blackboard. So he initiated weekly physical diagnosis rounds for residents and medical students at Waterbury Hospital. Sessions take place at the bedside with everyone participating, including the patient. Sofair hopes to prepare his students for those times in the middle of the night when they won’t be able to ask an attending’s advice or depend on technology for a diagnosis. For Samit Joshi, D.O., M.P.H., HS ’08, an infectious-disease fellow who did his residency in Yale’s primary care program and was in Uganda with Arwady, being able to identify a problem when you don’t have access to a CT scanner or transthoracic echocardiography machine highlights why it’s so important to gain proficiency in the physical exam. “You have to rely on a detailed neurological or cardiovascular exam or just putting your



Clinical instructor Jon Fessel guided first-year students Isaac Benowitz and Nicole Cabbad in the eye examination in January 2007. The School of Medicine has taken several steps to reinforce the importance of the physical exam—a survey of graduates in 2002 found that many had never been observed taking a history and doing a physical.



Instruction in the physical exam starts in the gross anatomy course taken by all first-year students. Working with instructors in the physical exam course, students learn the body's external landmarks that will guide them when working with patients. In the fall of 2008, students Ferrin Ruiz and Anant Vasudevan received instruction from Harry Briggs and Cheryl Walters, director of the physical exam training course.

hands on the patient," he said. "That's faster than getting a test result back."

It's also less expensive. Insurance companies are beginning to clamp down on such costly tests as MRIs unless a physical exam or some other finding justifies them. It's a position that's hard to argue with: it's been estimated that approximately 80 to 85 percent of diagnoses can be reached via the history and physical. But economics aside, there is an intangible benefit to the contact afforded by the physical exam. A physician might spend two hours looking at a peripheral blood smear or one hour discussing a patient's case during chart rounds, but the patient isn't aware of those efforts. "Just putting your hands on the patient—talking to them while examining them—can go a long way in establishing and building a good doctor-patient relationship, because the patient thinks you're more attentive to who they are as a person and what their underlying diagnosis is," said Joshi.

Learning the physical exam

Medical school would seem the logical place to learn the art of the physical exam, but until the late 19th century, most U.S. medical schools included virtually no instruction in clinical medicine. It was in 1893, with the opening of The Johns Hopkins Hospital in Baltimore, that clinical instruction was established as a formal component of medical school curricula. Osler was a pioneer in this area, advocating clinical demonstrations in the third year of medical school and clinical clerkships in the fourth. The current model came into use in the 1950s, with schools moving the clerkships to the third year and the fourth year devoted to hospital rotations. But because these experiences varied so much from institution to institution, clinical education came under closer scrutiny. Between the 1980s and the early 1990s, five major reports focusing on the quality of medical education were issued—three by the Association of American Medical Colleges (AAMC), one by the American Medical Association and one by the Josiah Macy, Jr. Foundation—all of which highlighted the need to improve clinical skills education.

Curriculum reform has indeed taken place, although it is mostly limited to the first two years of medical school, which has traditionally focused on basic science. In 2002, about 24 percent of U.S. medical schools included formal clinical skills courses, while only 4 percent included such courses in the clinical years. During the last five years, there

has been a trend toward integrating clinical skills into the medical school curriculum, to the point where physical exam courses are now required at virtually every medical school in the United States, according to M. Brownell Anderson, M.Ed., senior director for educational affairs at the AAMC. “There’s a much earlier interaction with patients, trying to make what is being learned in the basic science courses correspond to physical findings,” she said. Students at some schools interact with patients in the first few weeks of medical school, while others are assigned to patients or families whom they follow throughout their four years. Medical schools are also using standardized patients (individuals who are trained to follow a scripted clinical scenario), a practice that allows students the opportunity to learn communication skills along with physical exam skills.

Yale is trying to reinforce physical exam skills in a number of ways, especially after a survey of graduates in 2002 revealed that many had never been observed while they took a patient history and performed a physical. “A lot of them felt ill-equipped, specifically in the focused physical exam, focusing in on an area based on a patient’s chief complaint or chief symptom,” said Cheryl A. Walters, M.D., assistant clinical professor of medicine and director of the physical exam training course, in which pairs of students work with an instructor. Students learn how to perform focused exams of organ systems and a sequential head-to-toe, or comprehensive, physical examination. Walters also directs the Clinical Skills Assessment Program begun in 2003, which evaluates students’ skills at the end of their third year in 20-minute visits with seven standardized patients. “We have come a long way since the teaching model of presenting cases in a conference room,” Walters said. “It’s like learning to drive a car. Would you show learners complicated skills once, send them out alone to practice, and then have them report back on how they thought they did?” The students’ comments echoed the results of a study Walters published in 2001 that evaluated the physical exam skills of more than 2,000 third-year students from eight medical schools. Most students, the study found, omitted three out of 10 maneuvers critical in evaluating a patient with shortness of breath and chest pain. Walters’ course and the assessment program were developed as part of a revamped clinical skills program that also includes medical interviewing and such courses as end-of-life care and psychosocial skills. These courses have moved away from a lecture format to small-group, hands-on sessions that give the students an opportunity to practice what they are learning. “We have to work hard to reinforce both the approach to patient care and the specific physical exam skills that are taught in the preclinical years

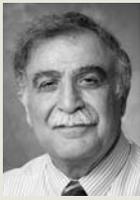
to show students their usefulness and effectiveness at the bedside,” said Richard Belitsky, M.D., deputy dean for education and the Harold W. Jockers Associate Professor of Medical Education. In fact, clinical skills education begins with the first anatomy lab, when students work with instructors from the physical exam course to locate external landmarks that will ultimately help them when they examine patients.

In a cohort study she completed in 2006, Walters found that students in all four years of medical school reliably perform the maneuvers on the comprehensive physical examination. But by the time they enter their clinical years, students aren’t as good at employing additional maneuvers that can rule in or rule out specific diagnoses. Teaching and learning, Walters suggests, may be improved by stressing in the third and fourth years the importance of these maneuvers.

During the first two years of medical school, students are a captive audience, but once they begin clerkships and elective rotations, it is harder to incorporate formal clinical instruction into their training. Yale has expanded its clinical skills program into the third year with such courses as “Breaking Difficult News” and “Counseling for Behavioral Change.” At the same time, Belitsky is looking for ways to bring more of the skills program into the clerkship, including direct observation of students taking histories and physicals during their clinical years of medical school.

Efforts to ramp up medical students’ clinical skills training are well timed. After a 40-year hiatus, the United States Medical Licensing Exam (USMLE) in 2004 added a clinical skills component, which had been discontinued in the 1960s. The one-day test involving 10 standardized patients is meant to reflect a doctor’s typical workday and aims to measure the ability of medical students to deal with a variety of patients in clinical settings.

Whether efforts by the USMLE, Yale and other academic institutions will have an impact on reviving physical exam skills remains to be seen. But it’s hard to deny the importance of learning those skills and having an opportunity to practice them again and again if they are to remain useful. “Medicine is learned by the bedside and not in the classroom. Let not your conceptions of disease come from words heard in the lecture room or read from the book. See, and then reason and compare and control,” Osler told his students. “But see first.” **YM**



Asghar
Rastegar

A master clinician takes on new post

When Stephen J. Huot, M.D., professor of medicine, decided to organize a symposium in honor of ASGHAR RASTEGAR, M.D., he had to fight fierce resistance from the honoree himself. "I got an e-mail, a phone call [asking me not to]," Huot said of the famously humble nephrologist, who is stepping down as associate chair of medicine to serve as co-director of the international health program.

In the end, though, Rastegar acquiesced. The result was a series of tributes from fellow physicians celebrating his life, character and achievements, with accolades ranging from "master clinician" to "humanist extraordinaire."

Huot, who replaced Rastegar as associate chair, traced Rastegar's career from college and medical school in Wisconsin and residency in Pennsylvania to leadership roles at the medical school of Pahlavi (now Shiraz) University in his hometown of Shiraz, Iran, to Yale.

Majid Sadigh, M.D., associate professor of medicine, who trained under Rastegar at Shiraz, said that Rastegar's "boundless energy" was among the reasons the university's prestige skyrocketed in the 1970s. Sadigh then gave a spellbinding account of not only the complexities of practicing medicine in resource-poor Iran, but also the violence and strife during the Iranian Revolution. Rastegar, a democracy activist, left Iran in 1982 after having been jailed briefly. "Why," Sadigh asked upon seeing his mentor imprisoned, "are they taking a hero to jail?" Two years later, Sadigh and his family were refugees themselves, living in a camp in Rome, when Rastegar secured him an internship in the United States.

Since joining Yale, Rastegar has made wide-ranging contributions to residency training, medical student education and the education of physician associates. "He is passionate about his commitment to improving the educational environment and comfortable undertaking the political conversations that need to happen in order for that to occur," said Huot. Gary V. Desir, M.D., professor of medicine, added that Rastegar's "unyielding desire to help those who are less privileged ... will be his most long-lasting legacy."

At the symposium's close, Rastegar said that he has led a "phenomenally privileged life." When he returns to the city of Shiraz, he said, he always visits the man who ignited his love for reading—a bookseller, now 85, who allowed the 8-year-old Asghar to borrow books. He acknowledged Donna McCurdy, M.D., his mentor at the University of Pennsylvania, who allowed him to "imagine what I could be"; Samuel O. Thier, M.D., former chair of medicine, who urged him to come to Yale; and Frank Bia, M.D., a former professor of medicine, and Margaret Bia, M.D., professor of medicine, who were his interns when he was chief resident in Pennsylvania, and who helped him build a new life in the United States. "My career is indebted to people," he said, "who took a chance on me."



Michael
Kashgarian

Pathologist honored with symposium

MICHAEL KASHGARIAN, M.D. '58, HS '63, was the centerpiece of a Yale symposium in October, but the words of praise for him wouldn't have been out of place at a fête in Hollywood or Cooperstown: "a real icon," a "Renaissance man equally at home in town or country" and "a triple threat."

Kashgarian, professor emeritus of and senior research scientist in pathology, was honored for his 50 years at the forefront of research on kidney disease. At Yale he established a diagnostic renal pathology and electron microscopy laboratory that bears his name. Kashgarian was also a pioneer in understanding the process of organ rejection.

Jon S. Morrow, PH.D., M.D. '76, HS '77, department chair and the Raymond Yesner Professor of Pathology and professor of molecular, cellular and developmental biology, and a colleague of Kashgarian for 30 years, said that his "infectious" fascination with renal disease inspired others. "He's been a real icon," Morrow said. "He's profoundly affected the practice of physiology."

Echoing Morrow, former Dean Gerard N. Burrow, M.D. '58, called Kashgarian "really a pathological triple threat" as a clinician, investigator and teacher. A skilled fisherman, wine expert and bridge player, Kashgarian was also a beacon outside the classroom. "The New York City background disappeared into a Yale country gentleman," said Burrow, a friend since medical school.

Although Kashgarian retired in July, he continues to work, completing his remaining research grants. He will also continue to serve as editor in chief of *Yale Medicine*.



Arthur
Horwich

Genetics professor named to IOM

ARTHUR L. HORWICH, M.D., HS '78, the Eugene Higgins Professor of Genetics and professor of pediatrics at the School of Medicine and a Howard Hughes Medical Institute investigator, was elected to the Institute of Medicine (IOM), the National Academy of Sciences announced in October. He was one of 65 people recognized last year by the academy for outstanding professional achievements in the fields of health and medicine.

Horwich is an expert on the molecular mechanisms of protein folding, a process crucial to the maintenance of life. When proteins misfold, they can aggregate into plaques and lead to a variety of diseases. More than 20 diseases, including such neurodegenerative disorders as Alzheimer disease, have been linked to misfolded proteins.

The IOM election was the second major honor in a week for Horwich, who was also awarded the 2008 Louisa Gross Horwitz Prize by Columbia University for outstanding contributions in biology and biochemistry. Horwich shared the prize with F. Ulrich Hartl, M.D., PH.D., of the Max Planck Institute of Biochemistry in Germany, and Rosalind Franklin, PH.D., who was honored posthumously for her work on the discovery of the structure of DNA. Horwich and Hartl were honored for their contributions to the understanding of the molecular mechanisms of protein folding.



**Benjamin
Bunney**

Portrait of psychiatry chair unveiled

BENJAMIN S. "STEVE" BUNNEY, M.D., professor emeritus and former chair of psychiatry, returned to Yale in October from his home in coastal Maine for the unveiling of his portrait and a celebration of his 20 years as chair.

"Steve was always a voice of clarity and rationality and steadiness," said William H. Sledge, M.D., the George D. and Esther S. Gross Professor of Psychiatry, recalling a tumultuous time in the department some 21 years ago when Bunney assumed leadership. With Bunney as chair, Sledge said, "we continued to progress and evolve into truly one of the most outstanding departments of psychiatry in the nation and the world."

After remarks by John H. Krystal, M.D. '84, the Robert L. McNeil Jr. Professor of Psychiatry, who called Bunney a "wonderful mentor," the cloth over the painting was removed to gasps and applause.

"This department has been blessed with the most amazing people," said Bunney, "so my job was very, very easy. ... I want to thank everyone here for giving me such a wonderful career."

The portrait by Gerald P. York depicts him sitting on a laboratory table flanked by scientific images, a stethoscope, and a model sailboat—symbols of his wide-ranging interests. The Sterling Hall of Medicine appears over Bunney's shoulder. In keeping with tradition, the portrait will hang in the departmental offices at 300 George Street alongside those of previous chairs of psychiatry.

Since retiring in early 2008, Bunney has made his home in Newbury Neck, a peninsula in Maine near Acadia National Park.



**Roslyn
Meyer**

Alumna receives Yale Medal

ROSLYN MILSTEIN MEYER, PH.D. '77, assistant clinical professor in psychiatry, is one of five recipients of the 2008 Yale Medal, the most prestigious award given by the Association of Yale Alumni. Meyer is well-known in the New Haven area for her leadership of a wide array of programs and her longstanding commitment to Yale and the university's environs. Most recently, Meyer has supported research and treatment programs at Yale for melanoma, one of the fastest-growing and deadliest forms of cancer. With a gift of \$10 million to the school last spring, she and her husband, Jerome H. Meyer, M.D. '72, HS '77, lecturer in psychiatry, are helping to establish the Milstein Meyer Center for Melanoma Research and Treatment, which will enable the development of more investigator-initiated clinical trials and improve Yale's ability to design new treatments for the often fatal illness. Meyer is a trustee of Yale-New Haven Hospital, a patient advocate for Yale's NIH-funded Specialized Program of Research Excellence in Skin Cancer and a co-founder of both New Haven's International Festival of Arts and Ideas and the Leadership, Education, and Athletics in Partnership program. She has served as a member of the Volunteer Council for Women's Health Research at Yale, a board member of the Yale University Art Gallery and a trustee of Yale's Joseph Slifka Center for Jewish Life.



**Robert
Alpern**

Robert J. Alpern, M.D., dean and Ensign Professor of Medicine, received the John P. Peters Award from the American Society of Nephrology (ASN) in November in recognition of his career of research and leadership. The award "recognizes individuals who have made substantial research contributions to the discipline of nephrology and have sustained achievements in one or more domains of academic medicine including clinical care, education and leadership." Alpern, a former president of the ASN, is the second Yale faculty member to receive the award. Gerhard H. Giebisch, M.D., was honored in 2006. Established in 1983, this annual award is named for a leader in the discipline of nephrology who spent his entire faculty career at Yale; Peters was chief of the metabolic division in the Department of Internal Medicine from 1922 until 1955.

Michael J. Donoghue, PH.D., the G. Evelyn Hutchinson Professor of Ecology and Evolutionary Biology, has been named the first Vice President for West Campus Planning and Program Development. Donoghue recently completed a five-year term as the director of the Yale Peabody Museum of Natural History.

Donoghue will work with faculty to develop specific details of new research programs and core facilities and will coordinate the program for library, museum and other initiatives there.

Yale's 2007 acquisition of the West Campus, formerly the Bayer HealthCare complex, is part of a \$1 billion commitment to strengthening science and



**Michael
Donoghue**



**John
Elefteriades**

medical research at the university. The 136-acre facility in nearby Orange and West Haven features 17 buildings with more than 500,000 square feet of state-of-the-art laboratory space, in addition to offices, warehouses and other facilities.

Donoghue joined the Yale faculty in 2000, serving as chair of the Department of Ecology and Evolutionary Biology from 2001 to 2002. He also holds faculty appointments in Yale's Department of Geology and Geophysics and in the School of Forestry and Environmental Studies. Donoghue has served on dozens of scientific committees and has also served on the board of directors of New Haven's International Festival of Arts and Ideas.

John A. Elefteriades, M.D. '76, HS '81, FW '83, the William W.L. Glenn Professor of Cardiothoracic Surgery and chief of cardiac surgery, was given the Distinguished Fellowship Award by the International Academy of Cardiology at the XIV World Congress on Heart Disease in July in Toronto. The award was conferred in recognition of "profound contributions to the field of cardiovascular medicine."

Robert J. Levine, M.D., HS '63, immediate past co-director of Yale University's Interdisciplinary Center for Bioethics, received The George Washington University Distinguished Alumni Scholar Award for 2008. This award was presented at a ceremony in Washington, D.C., in April. Levine is professor of medicine, lecturer in pharmacology and director of the law, policy and ethics core at the Center for Interdisciplinary Research in AIDS.



Carolyn Mazure

Carolyn M. Mazure, PH.D., associate dean for faculty affairs and professor of psychiatry and psychology, is the 2008 recipient of the American Psychological Association's Distinguished Leadership Award. This award recognizes innovative research accomplishment and leadership that improve women's lives and advance health outcomes. She is the founding director of Women's Health Research at Yale, which was started in 1998 in response to the need for gender-based research. Mazure was also the 2007 recipient of the Marion Spencer Fay Award, given by the National Board for Women in Medicine.

Charles A. Morgan III, M.D., associate clinical professor of psychiatry, has received the Patriotic Civilian Service Award for his service to the John F. Kennedy Special Warfare Center and School at Fort Bragg in North Carolina. Since 1989, Morgan has been researching the factors that increase vulnerability to



Marcella Nunez-Smith



Erik Shapiro

developing post-traumatic stress disorder during Special Forces training and other stressful situations and working to develop preventive strategies that could benefit civilians as well as military personnel.

Marcella Nunez-Smith, M.D., assistant professor of medicine, has received the 2008 Herbert W. Nickens Faculty Fellowship from the American Association of Medical Colleges. The \$15,000 fellowship recognizes a junior faculty member who leads efforts to remedy inequities in medical education and health care. Nunez-Smith is assistant director of the School of Medicine's Robert Wood Johnson Clinical Scholars Program, which prepares physician leaders to improve the nation's health and health care system by translating research into action at the local, state and national levels.

Erik M. Shapiro, PH.D., assistant professor of diagnostic radiology and biomedical engineering, has received a \$1.5 million Director's New Innovator Award from the National Institutes of Health. Shapiro, who arrived at Yale in 2006 and directs the Molecular and Cellular Magnetic Resonance Imaging Laboratory in the Department of Diagnostic Radiology, is developing new ways to enhance cellular and molecular magnetic resonance imaging technology.



Michael Simons



Edward Zigler

These technical advances will allow scientists to detect, measure and manipulate cell migration in living tissue.

Michael Simons, M.D. '84, a distinguished heart researcher and physician, has been named section chief of cardiovascular medicine at the School of Medicine and Yale-New Haven Hospital.

Simons comes to Yale from Dartmouth-Hitchcock Medical Center, where he served as chief of cardiology, director of the cardiovascular center and the angiogenesis research center, and on the medical center's board of governors. He was also professor of medicine and of pharmacology and toxicology at Dartmouth Medical School. While at Dartmouth, Simons received the department of medicine's Excellence in Teaching Award. Simons previously served as an associate professor of medicine at Harvard Medical School and attending cardiologist at Beth

Israel Hospital in Boston. He was also director of Beth Israel's coronary care unit.

Simons' research interests include fibroblast growth factor signaling in the vascular system, regulation of arterial development, and branching and endothelial signaling.

Edward Zigler, PH.D., Sterling Professor of Psychology emeritus, has been selected as the 2008 recipient of the American Psychological Association's (APA) Award for Outstanding Lifetime Contribution to Psychology. Zigler received the award at the APA annual convention in Boston in August. Known as the "Father of Head Start," Zigler is one of the principal architects of the federal Head Start program and the founder of the School of the 21st Century (21C) initiative.

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Downs fellows cover the world

On topics ranging from nutrition to contraception, students presented their research in October.

For the first half of his 10-week stay in Eldoret, Kenya, last summer, Timothy Mercer just hung out. “I had to earn some credibility and trust,” said Mercer, a 2008 Downs fellow who was studying street children in the western Kenyan city. His hanging out paid off. “I never felt so privileged to be let into a social group.”

Mercer, a public health student, described his research in an oral presentation at the annual fall symposium of The Committee on International Health—which awards the Downs International Health Student Travel Fellowship. Eighteen students in nursing, medicine, public health and the Physician Associate Program spent the summer conducting research abroad. Two other Downs fellows were planning to travel early this year. The students’ projects explored such topics as nutrition and food security in Uganda, barriers to drug treatment in Cairo, emergency contraception in South Africa, circumcision as a means of preventing HIV/AIDS infection in Peru, and patients’ attitudes toward health care in Indonesia.

In Eldoret, Mercer’s local faculty advisor at Moi University, David Ayuku, M.D., had found that about two-thirds of the city’s estimated 2,000 street children go home at night. Most find it easier to get food and money on the street than at home. But on the street they are at high risk for HIV/AIDS infection and

drug addiction. “Just being a street child places you at a greater health disadvantage,” Mercer said.

Rosha Forman, a student in nursing and midwifery, also spent time getting to know her subjects as she studied how Zambian midwives handled the third stage of labor—the period between delivery and expulsion of the placenta. “You want the placenta to come out and you want it to come out quickly—otherwise you are at risk of hemorrhage,” Forman said, adding that postpartum hemorrhaging is a leading cause of maternal death in the developing world. Forman visited four hospitals and seven clinics and interviewed 14 midwives. “I did a lot of sitting and chatting with the midwives,” she said.

Lauren Graber, a medical student, traveled to Kampala, Uganda, at the request of a physician there who was concerned that a local landfill might be the source of high blood lead levels in children. “This is a perfect example of partnered research, answering a question that your host country asks,” said Michele Barry, M.D., HS ’77, professor of medicine and public health and former director of the Yale/Johnson & Johnson Physician Scholars in International Health Program. Graber, working with five Ugandan medical students and a medical student from Mount Sinai Medical Center in New York, tested 165 children and visited 122 homes. High blood lead levels, the students found, were correlated less with proximity to the landfill than with consumption of canned foods and living along busy roads. “We really need to learn more about how kids are being exposed to lead in Kampala,” Graber said.

—John Curtis



JOHN CURTIS (2)



TOP Medical student Lauren Graber presented the results of her research on lead exposure in Kampala, Uganda, in October at the annual poster session by Downs fellows. The fellows, students in medicine, public health, nursing and the Physician Associate Program, spend a summer abroad conducting research.

ABOVE At the poster session in the Jane Ellen Hope Building, students reported on their research in Africa, Asia and Latin America. Topics included nutrition and food security in Uganda, barriers to drug treatment in Cairo, the health risks faced by street children in Kenya and tuberculosis transmission in Colombia.

For more on the Downs fellowship, see “Science and Culture in a Strange Land,” p. 26.



JOHN CURTIS (3)

Auction raises \$32,000 for New Haven-area charities for the hungry and homeless

“Girls’ Night Out: Join Drs. Bia, Angoff, Vining and Hansson to enjoy a dinner and the sharing of gossip and wisdom. No Y Chromosomes, please.”

A group of second-year students, including auction co-chair Marie A. Rymut, bought this evening with four female faculty for \$650 at the 16th Annual Hunger & Homelessness Auction on November 13. The auction, a traditional blend of fun and charity,

raised \$32,000 for several charitable organizations in the New Haven area.

“This is about giving back,” said auctioneer Wade Brubacher, a professional from Kansas and father of third-year medical student Jacob Brubacher, in his third appearance at the event. “You won’t make much money at it, but you’ll feel good.”

Since its inauguration as an afternoon event in Harkness Auditorium, the auction has expanded to include a week of activities that include a football game between first- and second-year medical students, a performance of chamber music, a panel discussion on hunger and homelessness and film screenings. The week ends with silent and live auctions in Harkness Ballroom and Marigold’s.

Among the available items at the silent auction were works of art, services by students and faculty, dinners at homes and restaurants, quilts, jewelry, “Mediterranean Dinner & Debauchery,” concert tickets and homemade brownies.

The live auction opened with a perennial favorite, bidding on a bow tie (“Smells faintly of formaldehyde”) contributed by William B. Stewart, PH.D., associate professor of surgery (gross anatomy), who has taught the basics of anatomy to first-year students for decades. The tie fetched \$500 from the first-year class in the Physician Associate Program, who outbid their medical school rivals.

This year’s proceeds will be donated to Christian Community Action, Columbus House, Community Soup Kitchen, Domestic Violence Services, Junta for Progressive Action, Loaves and Fishes, New Haven Home Recovery and Youth Continuum.

—John Curtis



TOP Nancy Angoff, associate dean for student affairs, entered a bid on a blanket made by first-year medical students.

ABOVE Medical student John Binford also bid on the blanket, to which many of his first-year classmates contributed hand-knit squares.

RIGHT Medical students Nupur Garg and Janice Man, right, looked over a list of items at the silent auction.





TERRY DAGRADI (3)

At annual White Coat Ceremony, students kick off their medical careers

The 100 students in the Class of 2012 include 51 women and 49 men, 24 graduates of Harvard and Yale, 24 members of ethnic or racial groups underrepresented in medicine and 26 who were born outside of the United States. They were selected from 4,139 applicants, and 46 took time off after college to pursue advanced degrees or research, health care consulting, teaching or volunteer work. “Many have been involved with health care programs in various parts of the country or other parts of the world,” said Richard A. Silverman, director of admissions. “This class has real depth of experience and a lot of talent. ... It’s a pretty hard class to beat.”

At this year’s White Coat Ceremony in August, Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, welcomed the new students with thoughts on the Yale system of medical education, whose tenets include no grades in the first two years or class rankings. “Were we trying to make it easier for you as students?” he asked. “The answer is that we expect greater things from you than grades could ever engender. We expect you to become leaders in the medical world of tomorrow.”

Frederick D. Haeseler, M.D., director of primary care clerkships and associate clinical professor of medicine, reflected on the art of medicine in the ceremony’s keynote speech. Defining medicine as having both human and scientific components, he said, “When physicians connect these two, they are practicing the art of medicine.”

Why did students choose the School of Medicine? For Ken Hui, who received



his undergraduate degree at Yale, it was the people. “I thought they’d be really nice and really interesting and that’s definitely turned out to be the case since I’ve been here,” he said.

Sounok Sen, a graduate of the University of Pennsylvania, said it was the Yale system, which emphasizes a unique student-faculty collegiality and individual responsibility. “I wanted to use those values to learn medicine,” Sen said. Smiling, he added, “I think we have a good group. It’ll be a fun time.”

—Charles Gershman



TOP The Class of 2012, shown here after donning their white coats in Harkness Auditorium, includes 51 women and 49 men.

MIDDLE Esther Lee donning her white coat at the annual rite of entry into medicine.

ABOVE Almost half the class took time off between college and medical school for research, study, teaching or volunteer work.



TERRY DAGRADI

Jocelyn Malkin decided to pursue psychiatry, despite barriers to women in medicine at the time. “I just thought [psychiatry] was the living end,” she said.

The long view of psychoanalysis

Tracing her professional lineage to Freud, alumni leader Jocelyn Malkin still sees a place for the couch.

As a high school student in Manhattan, **Jocelyn Schoen Malkin**, M.D. '52, found her calling during a lecture by the prominent psychoanalyst Lawrence S. Kubie, M.D. Though Malkin had long been interested in emotional issues, she said, something clicked that day. “I just thought [psychiatry] was the living end,” she recalled, using a colloquialism of the day. Despite the era’s formidable barriers to women in medicine, she made up her mind to become an analyst. More than 60 years after that decision, she continues to practice, teach and advocate for psychoanalysis.

Malkin, who was elected president of the Association of Yale Alumni in Medicine in 2007, has long done things her own way. She grew up in Rockaway Beach, N.Y. Both her mother, who had been admitted to law school but discouraged from entering by Malkin’s grandfather, and her father, an insurance salesman, strongly valued education.

Studying medicine at Yale, though, had not been in Malkin’s plans; it was the unintended consequence of a lark. While an undergraduate at Barnard College, she intended to join her then-boyfriend at Columbia University’s College of Physicians and Surgeons. When Yale invited her for an interview, she decided to have some fun. “I dressed like I was going to a football game. ... like an ‘import,’” she said, using Yale slang from the mostly male era for a woman brought to campus as

a date. “Instead of looking like a frump, I ... wore a fur coat.” Fritz Redlich, M.D., then head of the Department of Psychiatry and later dean of the School of Medicine, asked her why she would make a good medical student. “I said I had a sense of humor, so I could tolerate an interview like this. ... He loved it!” Yale offered her early admission to the Class of 1951.

Malkin’s acceptance may have surprised her undergraduate advisor at Barnard, a female chemistry professor who had advised Malkin during her freshman year to forget about medical school. Fond of dating and partygoing, Malkin had earned subpar grades that year. But she suspects her appearance was also part of the problem. “I didn’t look the type,” she said. “In those days, you had to look like an old frump, and I was having a wonderful time. I thanked her and never saw her again.” Malkin raised her grades, and by the time she was pulling on a fur coat for her Yale interview, she was poised to graduate from Barnard a year early, Phi Beta Kappa and cum laude.

In 1948, at the end of her first year of medical school, after parting from her Columbia boyfriend, Malkin married Myron S. Malkin, PH.D. '52, a former Marine and a senior in Yale College. Unlike most other men she dated, he was thrilled that Malkin planned to practice medicine. The women in his home town, he said, just “sit and play mah-jongg.”

The Malkins graduated in 1952, he with a PH.D. in physics and she with an M.D., after taking a fifth year.

In those days eligibility for psychoanalytic training required completion of a medical school internship and a

psychiatric residency. After completing a pediatric internship, two years of psychiatric residency and a two-year public health fellowship at the Child Study Center, she applied for a position at the newly established Western New England Psychoanalytic Institute in New Haven. The young mother was advised to “wait until you finish having children—you have enough to do.”

With no positions open to her in New Haven, the Malkins agreed that any move would have to benefit them both. Malkin, her husband and, by then, two children moved to Philadelphia in 1960, where Malkin began training with the Philadelphia Association for Psychoanalysis and her husband worked on a secret project developing re-entry space vehicles.

Malkin and her husband ultimately settled in Bethesda, Md., where she has practiced, taught and supervised trainees for decades. (While there, Myron Malkin went on to head the United States’ first space shuttle program from 1973 to 1980.)

Malkin traces her psychoanalytic pedigree straight back to Sigmund Freud via her Philadelphia supervisor, Robert Waelder, PH.D., who had undergone analysis by Freud, and her Washington mentor, Jenny Waelder-Hall, M.D., who had undergone analysis by Freud’s daughter Anna.

Malkin presently chairs a biennial seminar in Aspen, Colo., that is attended by psychoanalysts from around the world. She became active in the Association of Yale Alumni in Medicine in 1996 at her 45th reunion, when she asked why there were no women on the executive committee’s nominating slate; she was offered a spot on the committee

then and there. Her term as president ends in June.

After a 2006 house fire in which many of her and her late husband’s documents and belongings were destroyed, Malkin began preparations to move to New Haven. She expects to arrive this summer and looks forward to continuing active involvement with the psychoanalytic community and the alumni association as well as spending time with her children, Martha and Peter, who live in Westchester County, N.Y., with their families. Malkin’s granddaughter is a sophomore in Yale College.

Despite the waning reputation of psychoanalysis and the rise of other therapies, Malkin said the older approach has a place in modern psychiatry. It was, she suggests, greatly oversold in the past.

“[Psychoanalysis] is like an appendectomy. It’s a great operation, but you don’t do it on everybody,” Malkin said. “Analysis is the treatment of choice for certain kinds of patients, and [for them] there’s no better treatment.” She is concerned, though, about the future of psychoanalysis. “There are fewer and fewer people going into it, and the analytic organizations are lowering standards to be able to do anything to get bodies. ... [But] I think analysis will survive, and should survive, as one important part of the whole armamentarium available for the treatment of mental illness.”

—*Jenny Blair*

Save the date!

June 5-6, 2009

Reunion Weekend

Yale School of Medicine

From art to medicine and back—how one physician pursued her dreams

As a high school student in New Britain, Conn., **Sophie Trent-Stevens**, M.D. ’43, made up her mind to see and paint the far-flung places she saw in exotic landscape paintings at the local art museum. “I thought that if you were an artist you’d go out and see this magnificent scenery,” she said. A half-century later, after a prestigious medical career, she did.

While the 17-year-old knew that she wanted to become an artist, her mother had other ideas. “Artists starve. You can either be a teacher or be a nurse,” her mother told her. Neither option suited Trent-Stevens, so she decided to go to Brown University after a teacher told her she could take art classes while earning her degree there.

At Brown, though, she developed different ambitions. “Marie Curie was a hero at that time. ... I wanted to be another Madame Curie,” she said. She spent a summer as an animal technician at a cancer research institute in Maine. Back at Brown, an advisor told her that if she wanted to make her mark in medicine, she ought to pursue an M.D. instead of a PH.D.

During her years at the School of Medicine, the United States became involved in World War II. With servicemen falling ill in the South Pacific, Trent-Stevens decided to pursue tropical medicine. After an internship at Vanderbilt University, she went to the School of Tropical Medicine in Puerto Rico. “They had the mosquitoes, they had the germs, they had the bugs,” she said. Art became, for the moment,

Early in her medical career, Sophie Trent-Stevens studied tropical medicine in the Caribbean—she made house calls in the Virgin Islands by sailboat and on the backs of donkeys.



JOHN CURTIS

less important, though she sketched when she could—mostly skulls and patients—and occasionally painted with a mixture of watercolors and white shoe polish.

After a research fellowship in tropical diseases at the National Institutes of Health and a residency in internal medicine in Jacksonville, Fla., Trent-Stevens became chief of medicine at St. Thomas General Hospital in the U.S. Virgin Islands. For nine months, she traveled between St. Thomas and neighboring St. John by sailboat and made house calls on the backs of donkeys. She used an old Navy brig on St. Thomas as a quiet room for a violent patient. She remembers the scene of a suicide by hanging; no one had thought to cut the victim down, which might have saved him. And she remembers seeing a priest in full habit riding on the back of a donkey, with his Bible propped open on the beast's neck. "You saw things that were so different from everyday life that you felt you were living in a dream," she said. The vivid images have remained in her mind for decades.

Trent-Stevens returned to Connecticut in 1949 and pursued a career in internal medicine. She had a private practice as well as an associate professorship at the University of Connecticut, and she served as senior ward physician at a tuberculosis sanatorium in Norwich, the Meriden-Wallingford Hospital and the Veterans Affairs hospitals in Meriden and Newington. She was a founding member of the American Society of Tropical Medicine and Hygiene and played important roles in the American Medical Women's Association and the Pan-American Medical Women's Alliance, among many other organizations.

Once she retired from medicine, though, Trent-Stevens returned to art. In 1982, at the age of 65, she earned a master's degree in art from Central Connecticut State University. (She noticed that the young art students spent a lot of time seeking out free food at campus events, and noted, "My mother was right.") She became a docent at the New Britain Museum of American Art—where she'd seen landscape paintings as a child—and published reproductions of her paintings in *Connecticut Medicine*, the magazine of the Connecticut State Medical Society.

And—at long last—she began to paint the faraway places of her childhood fantasies. She painted her former workplace, the stunningly beautiful island of St. Thomas. She traveled to Bora Bora and painted the Pacific island's mountains and the fish she saw from a glass-bottomed boat. She painted tropical flowers in Hawaii, the Matterhorn in Europe and a harbor in Maine, where her interest in medicine began.

The large oils and acrylics adorn the walls of Trent-Stevens' home in Meriden, which she and her late husband, Ronald Stevens, a colonel in the U.S. Air Force, designed and built decades ago. Thanks to medicine, Sophie Trent-Stevens got her wish and became an artist, and she didn't have to starve.

—Jenny Blair

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 yymm@yale.edu or write to Faces, *Yale Medicine*, 300 George Street, Suite 773, New Haven, CT 06511.



Robert Johnson



Leonard Banco



Cleve Killingsworth



Ross Tonkens



Holly Ardito



Robert Higgins

1960s

Robert L. Johnson, M.D., HS '64, and his wife, Barbara Johnson, R.N., have formed a nonprofit organization called Village Relief Foundation to supply medical drugs, books, tapes and instruments to such developing countries as Liberia, Zimbabwe, Myanmar, New Guinea and Chad. Any suggestions for networking for gifts and donations to these countries are appreciated. "We are a hands-on, grass-roots organization and make personal trips to these countries. Next stop: Indonesia."

1970s

Leonard I. Banco, M.D. '74, has been appointed senior vice president and chief medical officer at Bristol Hospital in Connecticut. Banco previously spent 12 years at Connecticut Children's Medical Center in Hartford.

Cleve L. Killingsworth, M.P.H. '76, has been appointed to the board of trustees of the MITRE Corporation, a nonprofit organization that provides systems engineering, research and development, and information technology support to the federal government. Killingsworth is chair and CEO of Blue Cross Blue Shield of Massachusetts as well as a faculty member at the Harvard School of Public Health.

Ross M. Tonkens, M.D. '74, has been hired by MDS Pharma Services, a provider of drug

discovery and development solutions based in King of Prussia, Pa., to provide medical oversight for its Phase IIa clinical research activities and to direct the medical and clinical activities of its development and regulatory services. Prior to joining MDS, Tonkens was chief medical officer of Regado Biosciences, a Duke University biotechnology spinoff founded in 2003, and was global head of cardiovascular therapeutics at Quintiles Inc., a transnational contract research organization.

1980s

Holly Ardito, M.P.H. '89, has been named director of fee schedule and business configuration at Network Health in Medford, Mass. Ardito previously served as the director of client services for MedVentive, Inc., a health care information technology company also based in Medford.

Sandra C. Castro, M.D. '84, has been named medical director of the Children's Emergency Department at Johnson City Medical Center in Tennessee. Castro was previously the medical director of pediatric emergency services at Joe DiMaggio Children's Hospital in Hollywood, Fla.

Robert S.D. Higgins, M.D. '85, surgical director of the heart failure and cardiac transplant program and professor and chair of the department of cardiovascular and thoracic surgery at Rush University Medical Center in Chicago, is president of the Organ Procurement and Transplantation Network/United Network for Organ Sharing board of directors. He is serving a one-year term that ends in June.

Donald E. Ingber, M.D. '84, PH.D. '84, Judah Folkman Professor of Vascular Biology at Harvard Medical School and Children's Hospital Boston, was named director of the new Hansjörg Wyss Institute for Biologically Inspired Engineering at Harvard in October. The institute was founded with the largest individual gift in Harvard's history, a \$125 million donation from Wyss, an engineer who led the Swiss medical device company Synthes for three decades. The institute will bring together engineers, scientists and clinicians across disciplines and will focus on synthetic biology, a "living materials program," and biological control.

Joseph J. Napolitano, M.P.H. '87, PH.D., R.N., was appointed to the Pennsylvania State Board of Nursing in April 2008. Napolitano is a program officer at The Dorothy Rider Pool Health Care Trust in Allentown, Pa., which is committed to improving the health of the citizens of the Lehigh Valley.

1990s

Marc Agronin, M.D. '91, was named the 2008 recipient of the Clinician of the Year Award by the American Association for Geriatric Psychiatry for demonstrating a "profound commitment to the field of clinical geriatric psychiatry." Agronin was also recently promoted to associate professor of psychiatry in the voluntary faculty of the Miller School of Medicine at the University of Miami. Agronin is currently the director of mental health services at the Miami Jewish Home and Hospital at Douglas Gardens.

Jeffrey M. Dembner, M.D. '96, has been named chair of the department of neurosurgery at Hoag Memorial Hospital Presbyterian in Newport Beach, Calif. He continues to be director of Newport Neurosurgery, a multi-subspecialty neurosurgical practice in Newport Beach.

Jean Hee Park, M.P.H. '98, J.D., was married in September to Albert S. Cho, J.D., at Riverside Church in Manhattan. She is a law clerk in Brooklyn to Marilyn Dolan Go, a United States magistrate judge for the Eastern District of New York. Her husband is a partner in the Chicago law firm Kirkland & Ellis and works in the corporate department of the firm's New York office.

2000s

David F. Jeng, M.D. '07, HS '08, has begun a three-year ophthalmology residency at Doheny Eye Institute, Keck School of Medicine of the University of Southern California in Los Angeles.

Benjamin Negin, M.D. '04, and his wife, Brina, announced the birth of healthy twin boys, Aaron Isaac Negin and Zachary Evan Negin, on July 20. Negin is a second-year medical oncology fellow at Fox Chase Cancer Center in Philadelphia.

SEND ALUMNI NEWS TO
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Franklin H. Epstein, M.D. '47, HS '49, William Applebaum Professor of Medicine at Harvard Medical School, considered one of the giants of metabolism and nephrology, died in Brookline, Mass., on November 5. He was 84 and actively engaged in biomedical research, teaching and clinical care until early October.

During his residency Epstein came under the influence of John P. Peters, M.D., regarded by many as the leading American physician/scientist of that time. Epstein eventually succeeded Peters as chief of the Division of Metabolism at Yale.

After a fellowship at Boston University Medical School in cardiology and a period of time in the United States Army, Epstein returned to the Division of Metabolism and the Department of Medicine. Epstein was one of the first recipients of the Francis Gilman Blake Award for outstanding teaching in the biomedical sciences. In 1972 he moved to head the Thorndike Memorial Laboratory and the Harvard Medical Unit of Boston City Hospital. One year later he joined the Beth Israel Hospital as chair and physician-in-chief of its Department of Medicine. He remained at Beth Israel, now the Beth Israel-Deaconess Medical Center, until his death. Epstein was also a longstanding editor of *Harrison's Principles of Internal Medicine* and of *The New England Journal of Medicine*.

Epstein received many national and international honors for his accomplishments in nephrology.

Roland H. Ingram Jr., M.D. '60, HS '65, died on July 7 in Atlanta, Ga. He was 73. Born in Birmingham, Ala., Ingram attended the University of Alabama before coming to the School of Medicine. After his

internship at Peter Bent Brigham Hospital in Boston, he spent two years in Japan with the Atomic Bomb Casualty Commission before returning to Yale to complete his training in internal medicine. Following a fellowship in pulmonary diseases at Columbia, Ingram joined the faculty of the Emory University School of Medicine, where he received an award as the outstanding clinical teacher from the Class of 1969. He became professor and director of the pulmonary division at Emory before returning to Brigham Hospital in Boston. He also joined the Harvard faculty, teaching in both the medical school and the school of public health. In 1992 Ingram returned to Emory as chief of internal medicine and director of the pulmonary division for all Emory hospitals.

Frank M. Isbell, M.P.H. '63, died on October 6 in Cooperstown, N.Y. He was 81. Born in Roanoke, Va., Isbell served in the Air Force during the Vietnam War. He earned the Bronze Star Medal for his accomplishments at the onset of the Tet offensive. After returning from Vietnam, Isbell was assigned to the Department of Defense, Surgeon General's Office at the Pentagon in Washington, D.C. He retired from the Air Force in 1970. After serving as an administrator at Yale-New Haven Hospital, Isbell moved to Oneonta, N.Y., in 1973 to become president of A.O. Fox Memorial Hospital.

Michael W. Lau, M.D. '45, died on August 12 at his home in Los Angeles. He was 88. Lau, a urologist, surgeon and former Navy captain, grew up in Bronxville, N.Y. When his father died in 1931, Lau, then 11, helped his mother raise his young sister. As a teenager he washed dishes on a Great Lakes

freighter. After graduating from Washington and Lee University in 1941, Lau joined the U.S. Navy before attending the School of Medicine. Upon graduation he joined the Navy Reserve Medical Corps and visited the Far East as the ship's surgeon on the USS Columbus. After his marriage in 1952 he practiced urology in White Plains, N.Y., but soon moved to Beverly Hills. Lau was on the medical faculty at the University of Southern California.

José J. Miranda, M.P.H., M.D. '02, died on September 29 in Fayetteville, N.C., where he was stationed as a major in the U.S. Army. He was 33. Born in Puerto Rico, Miranda graduated from the University of Kansas with distinction in 1997. The same year Miranda entered the School of Medicine on the United States Army Health Professions Scholarship Program. He completed his degree in public health at Harvard in 2001. After graduating from the School of Medicine, Miranda completed an internship and residency in orthopaedic surgery at Eisenhower Army Medical Center in 2006.

George E. Palade, M.D., a Nobel laureate who served on the Yale faculty and founded the Section of Cell Biology, died on October 7 in San Diego of complications of Parkinson disease. He was 95.

Palade earned his Nobel in 1974 for his discoveries about the inner workings of cells, findings that helped launch the field of cell biology. He was a pioneer in the use of electron microscopy to discover and elucidate the functions of such tiny structures as the ribosome.

Born in Jassy, Romania, Palade received his medical degree from the University of Bucharest in 1940. He was a member of the

faculty of that school until 1946, when he came to the United States for postdoctoral studies. Palade came to Yale in 1973, and held the Sterling Professorship of Cell Biology from 1975 to 1983, when the section became the Department of Cell Biology upon his retirement as chair.

Palade was elected to membership in the National Academy of Sciences, the Institute of Medicine and the American Academy of Arts and Sciences. In 1974, he shared the Nobel Prize in physiology or medicine with Albert Claude, M.D., and Christian de Duve, M.D.

Palade left Yale in 1990 for the University of California, San Diego, as professor of medicine in residence and dean for scientific affairs.

Rose Papac, M.D., a longtime faculty member of the Section of Medical Oncology in the Department of Internal Medicine and one of the early female pioneers in medical oncology, died on May 10 of cancer. She was 80. Born in Montesano, Wash., Papac attended Reed College in Portland, Ore., and studied chemistry at Seattle University, where she graduated summa cum laude. In 1949 she was one of the first women to be admitted to St. Louis University Medical School, and she became the first woman to complete an internship in the department of medicine there. In 1954 she moved to Stanford University to complete her internal medicine residency. It was there that she developed her interest in and passion for oncology; following her residency, she was the first American to take an oncology fellowship at the Chester Beatty Institute in London. She continued her fellowship at Memorial Sloan-Kettering

Cancer Center in New York City. In 1963, she joined the Department of Medicine at Yale, where she stayed until her retirement in 2006. Papac was one of the first women to receive tenure in the School of Medicine and the first woman to be awarded tenure in the Department of Medicine. She played a pivotal role in developing contemporary concepts of cancer chemotherapy.

Marc G. Pypaert, PH.D., director of Yale's Electron Microscopy Core Facility and a research scientist in the Department of Cell Biology, died at Connecticut Hospice on July 28 of brain cancer. He was 45. Pypaert had a diverse and prolific scientific career, developing a high level of expertise in membrane cell biology and, in particular, in electron microscopy of a variety of cells, especially those undergoing mitosis. He was an enthusiastic and creative photographer who exhibited his work at local galleries in the City-Wide Open Studios program. Born in Ath, Belgium, Pypaert received his bachelor's degree in zoology in 1985 from the Facultés Universitaires Notre-Dame de la Paix in Namur. In 1991, he received his PH.D. in biochemistry from the University of Dundee in Scotland. Following postdoctoral work in the United Kingdom, Switzerland and Belgium, Pypaert was recognized as one of the world's leading experts in quantitative immunoelectron microscopy. He was recruited by Yale in 1999. He expanded the scope and technical capability of the Electron Microscopy Core Facility, a component of the Yale Center for Cellular and Molecular Imaging.

J. Murdoch Ritchie, PH.D., Eugene Higgins Professor Emeritus of

Pharmacology, died on July 10 in Hamden, Conn., after a long illness. He was 83. Born in Aberdeen, Scotland, Ritchie graduated with a degree in math and physics from the University of Aberdeen in 1944. During World War II, he served on a team that was instrumental in the development of radar. After the war, Ritchie earned another bachelor's degree, in physiology, from University College London (UCL) in 1949, a PH.D. in biophysics in 1952, and a D.Sc. in biophysics in 1960. While at UCL, he met and married his wife, Brenda, a physiologist. In the early 1950s Ritchie joined Alfred Gilman's department of pharmacology at Albert Einstein College of Medicine. In 1968 he came to Yale as chair of pharmacology. Ritchie made several major contributions to improved understanding of the conduction of impulses in peripheral nerves, in particular the distribution of sodium and potassium channels in both myelinated and unmyelinated fibers. This research led to a better understanding of the disease process involved in multiple sclerosis.

Daniel Rowe, M.D., of Hamden, Conn., professor emeritus of pediatrics and of epidemiology and public health and founding director of the Yale Health Plan, died on July 8. Rowe was a 1948 graduate of Thomas Jefferson Medical College in Philadelphia and served in the Army during World War II and the Navy during the Korean conflict. Rowe came to the School of Medicine as the director of pediatric outpatient services in 1966. While director he developed the domestic abuse response team program for the detection and reporting of child abuse, which is still the model

for child protection in the United States. He was the recipient of the Francis Gilman Blake Award for excellence in teaching in 1968. Rowe was named a full professor of pediatrics in 1970, the year he also became director of Yale University Health Services. The Yale Health Plan was the first university HMO in the country.

Julian A. Sachs, M.D. '46, died on September 1, in the emergency room at the Hospital of Central Connecticut in New Britain, where he had worked for 25 years. He was 86. Sachs was one of the hospital's original emergency room physicians in 1968. He retired in 1992. He was a veteran of the U.S. Army, serving as chief of radiology at Fort Totten General Hospital in New York City and as a transport surgeon on a Victory ship.

Gaston Leonard Schmir, PH.D. '58, professor emeritus of molecular biophysics and biochemistry, died on July 2 of Parkinson disease. He was 75. Schmir was born in Metz, France, in 1933 and spent his childhood in hiding during World War II as his father sought safe havens for his Jewish family. He arrived in the United States in 1946 and joined the Yale biochemistry faculty in 1960. His research emphasis was in the area of enzyme mechanisms and related physical-organic chemistry.

Cornell Scott, M.P.H. '68, chief executive officer of the Hill Health Corporation in New Haven, died on August 25. He was 73. Scott came to the Hill Health Center in 1968 as director of training and education and became executive director in 1972. His 40-year tenure was marked by the steady development of sites, services

and programs for the low-income population of the New Haven area. He received the National Association of Community Health Centers Lifetime Achievement Award in 2002 for his "lifelong dedication and exceptional service to the American people."

Florence S. Wald, R.N. '41, M.N., M.S. '56, dean emerita of the Yale School of Nursing and founder of hospice in the United States, died on November 8 at her home in Branford, Conn. She was 91. Born Florence Schorske in New York City in 1917, Wald graduated from Mount Holyoke College in 1938. After World War II, she became an instructor in the school of nursing of Rutgers University.

After joining the faculty of the School of Nursing in 1956, Wald served as the school's fourth dean from 1959 to 1966. She married Henry Wald, an engineer, in 1959. She is credited with bringing the hospice movement to the United States from England and establishing the first American hospice in Branford in 1971.

A world-renowned leader in nursing research, Wald was awarded an honorary doctor of law degree from the University of Bridgeport in 1967, an honorary doctor of humane letters degree from Mount Holyoke in 1978 and an honorary doctor of medical sciences degree from Yale in 1995.

SEND OBITUARY NOTICES TO Claire M. Bessinger, *Yale Medicine*, 300 George Street, Suite 773, New Haven, CT 06511, or via e-mail to claire.bessinger@yale.edu



ROBERT LISAK

One year later, transplant program is thriving

On a crisp fall afternoon, Sukru Emre, M.D., chief of organ transplantation and immunology, had just looked in on a 7-month-old boy recovering from a lifesaving liver transplant—the surgeon's 51st such surgery in less than 14 months. "He's doing very well now and hopefully will go home soon," Emre said.

Since Emre came to Yale last year to revitalize the organ transplantation section [See "Putting the Fire Back into Yale's Transplant Program," Autumn 2007], he has also raised the number of kidney transplants—the section has done 101 in the past year, the highest number in its history—while the liver program boasts a best-in-the-nation survival rate of 100 percent six months after surgery. Although infection rates after transplants are typically 17 to 25 percent, at Yale the infection rate is less than 3 percent. "The credit should go to the nurses working on those units," said Emre. Emre and his team were also the first in Connecticut to perform such cutting-edge liver transplant surgeries as split- and living-donor liver transplantations in both adult and pediatric patients. In split-liver transplant, a single liver is sectioned to serve more than one recipient. Both procedures allow surgeons to overcome the shortage of organs from deceased donors. According to the federal Department of Health and Human Services, 19 people across the United States die each day awaiting transplants. To encourage organ donations, Emre gives talks most weekends at hospitals and events sponsored by donorship foundations, an outreach that has increased the number of organs available and identified Yale as a leader in transplant surgery.

Emre believes strongly in the team concept; he lists individuals and departments throughout the hospital and medical school who contributed to his section's renaissance. He also thanks team members' families for making their success possible. The section has grown with the addition of six physicians, six nurse-coordinators and a nurse-manager. Along with growth has come a reorganization that has increased the section's responsiveness to patient needs, Emre said.

—Colleen Shaddox



Hunter Radiation Therapy Center Dedicated

—*Alumni Bulletin*
January 1959

"The new Hunter Radiation Therapy Center was dedicated on Friday afternoon, October 10. Officials of the University and of the Grace-New Haven Community Hospital, faculty, staff, and guests attended the dedication ceremony, which was held in Fitkin Amphitheater with Dean Lippard presiding.

"The program was opened with a welcome by George S. Stevenson, president of the hospital. President A. Whitney Griswold spoke briefly on "The Medical Center and Yale." This was followed by the introduction of Mr. Robert E. Hunter of Santa Barbara, California, who had made a generous gift to Yale for this building. Mr. Hunter is a Yale alumnus, Class of 1911 (Sheffield Scientific School). The new center is named in memory of his parents, the late Mr. and Mrs. Edward S. Hunter. ...

"The four-story, brick-faced structure has its entrance on Davenport Avenue, and corridors connect with the adjoining hospital units. High-voltage equipment is below ground level. The two-million electron volt Van de Graaff deep therapy machine was given by the Donner Foundation. Three other radiation machines of lesser voltage are also available, and there are facilities for eventual inclusion of additional high-voltage equipment which may be developed in the future."



Program for Humanities in Medicine

—*Yale Medicine*
Spring 1984

"The School of Medicine recently received a grant from the Connecticut Council for the Humanities in support of a new program for humanities in medicine. Directed by Dr. Howard M. Spiro, professor of medicine, the program is presenting a series of twelve semi-monthly lectures throughout the spring and fall to bring together scholars in the humanities and members of the medical profession in discussions about the influence of the arts and letters on medicine and health.

"Speakers include Dr. Robert Coles, professor of psychiatry and medical humanities at Harvard University; Arnold Rampersad, professor of English at Rutgers University; Arthur Caplan, associate for the humanities at the Hastings Center; and Dr. Martin Carey, associate professor of medicine, physiology and biophysics at Harvard University. They will discuss topics as diverse as the physician as a writer; the effects of health and well-being on art and visa versa; ethical issues in organ transplantation, and creativity and illness.

"The purpose of the series, according to Dr. Spiro, is to encourage medical students and professionals to expand their definitions of health and disease through a better understanding of the cultural and intellectual influences on health and well-being, as well as to stimulate scholars in the humanities to take a greater interest in health related issues. The lectures are open to the public without charge."

A LIFELONG LOVE OF YALE

The relationship between Nicholas P.R. Spinelli, M.D. '44, and Yale began in 1937, when he entered Yale College as a freshman. This early acquaintance blossomed through his years at the School of Medicine; in his career as a physician and educator; in his role as a leader of alumni; and in his later years, in philanthropy.

Those who knew him say the same thing: No one loved the Yale School of Medicine more than Nick Spinelli. That love was expressed in many ways, most recently with a \$4.5 million bequest that will support a professorship in neurology and a scholarship fund for medical students.

Spinelli, who died in November 2007 at the age of 86, endowed the faculty position in the name of Harry M. Zimmerman, M.D., a neuropathologist during Spinelli's student days who became the founding director of the Albert Einstein College of Medicine in the Bronx, N.Y. Spinelli funded the scholarships in keeping with his long practice of helping medical students. "He used to worry about how much it cost students to become a doctor, and said he didn't know how they did it," said his sister, Viola J. Spinelli, M.P.H. '65.

Spinelli graduated from Yale College in 1941, began medical school later that year and, along with his classmates, was inducted into the Army. Upon his graduation in 1944, Spinelli served as an Army physician in Germany. In 1968 a heart condition forced Spinelli to give up his career as an internist, but he continued working as director of medical education at Bridgeport Hospital. He retired at age 65 and served as alumni director at the School of Medicine from 1985 to 1990.

He received numerous awards, including the Yale Medal, the university's highest honor, and both the Distinguished Alumni Service Award and the Peter Parker Medal from the School of Medicine. But no award could match the satisfaction Spinelli received from his interactions with students and residents, said his sister Viola.

—*Michael Fitzsosa*



Nicholas Spinelli sponsored many students at the medical school, including several from Thailand. Kanya Suphapeetiporn graduated from the medical school in 2002 with both an M.D. and a Ph.D. After a residency in Brooklyn, N.Y., she returned to Thailand.

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