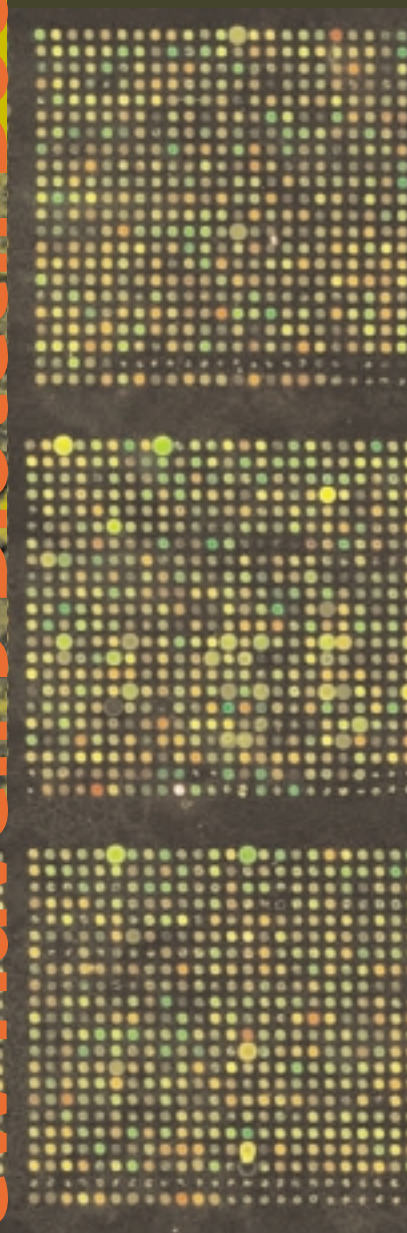


Yale Medicine

Fall 2000 | Winter 2001



New Haven's Biotech Boom



Yale Medicine Fall 2000 | Winter 2001

On the cover

Already home to five publicly traded biotechnology companies, greater New Haven has seen the formation of eight new startups as the result of the University's recent efforts to promote application of its technology and encourage growth in the city's biotech sector. Close to a dozen more companies are being formed around Yale discoveries. This emerging industry is increasingly information-driven, using massive computing power and microarray technology (right), for example, to harness genetic information in the search for new diagnostic tests and therapies. Page 32.

Cover Illustrations

Aerial view of New Haven:
United States Geological Survey

DNA microarray:
Kevin White/Department of Genetics

Yale Medicine

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Yale University School of Medicine
Fall 2000 | Winter 2001
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The medical school's efforts to bring its intellectual property to market have given the New Haven economy a boost.
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The year 2000 brought the working-draft version of the human genome and new hopes for medicine and the understanding of human biology. Genetics Chair Richard Lifton talks about what that means for research, at Yale and around the world.
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GALE ZUCKER

You've come a long way, Eli, in accommodating disability

To the editor:

Cathy Shufro's piece on graduate student Matthew Weed ["Bringing Science Into Focus," Summer 2000] was inspiring. I was particularly pleased to read it as my husband works with a man who was denied entry to Yale College many years ago because he had suffered a wrestling accident in his senior year of high school and was a paraplegic. Yale could not accommodate him and revoked his acceptance. As a graduate, this story has always saddened me. Now, I am heartened to read about the advances Yale has made in accommodating the disabled, both from a physical and technological standpoint, as well as from a humanistic one.

Thank you for your continued efforts to make *Yale Medicine* interesting and fresh.

Natalie P. Silverstein, M.P.H. '96
New York, N.Y.

A new gloss on magazine's design

To the editor:

I have long enjoyed and valued the copies of *Yale Medicine* that have come to me in the mail. However, the glossy paper that is used in printing the magazine makes it almost impossible to read. Is there any possibility that a matte

finish could be used? Since I actually treasure each issue of *Yale Medicine* and am sure others must be affected as I am, I hope you can find a solution to this devastating problem.

Esther A. Savage, YUSN '39
Midland, Mich.

As it happens, the paper *Yale Medicine* is printed on is changing this issue along with other aspects of our design (See From the Editor, opposite page.) *The glare is gone!*

Debate on Lyme therapy should continue

To the editor:

The Lyme disease article on page 12 of the summer edition ["Conventional Lyme Treatment Found Effective," Summer 2000] appears to denigrate physicians who use longer-term antibiotic therapy, with the strong message given that "a short-term regimen of antibiotics is adequate to treat the disease." However, the 30-day limit has been found to be unrealistic, especially when diagnosis and treatment are delayed. Patients and physicians will not accept that continuing symptoms are due to "post-Lyme syndrome."

Nationwide evidence supports longer-term therapy for many patients. The study described in the article does not address several questions, including elapsed time between symptoms and diagnosis. The difficulties presented by Lyme disease include uncertainties about test results with resultant delayed diagnosis, penetration of the spirochete into cells, the changing forms of *Borrelia*

burgdorferi, and its ability to cloak itself in DNA of the host.

Evidence of long-term disability from inadequate treatment of Lyme disease is documented. And because of the potential for serious disability, I believe CDC treatment guidelines need to be re-examined. I would also like to see Yale involved in the development of more effective antibiotics for Lyme disease.

Your article states that "Lyme disease has been a lightning rod for controversy for years." My expectation is that Yale will provide accurate and balanced information on both viewpoints regarding short-term and long-term treatment.

Constance A. Bean, M.P.H. '50
Wayland, Mass.

Through the pages of *Yale Medicine*, a colorful past

To the editor:

Having also read *Connecticut Medicine* for many years, I enjoyed the section entitled "50 years ago in *Connecticut Medicine*." The thought occurred, "Why not a brief note each issue about '50 years ago in *Yale Medicine*'?"

After reviewing my stacks of *Yale Medicine* I found Vol. 1, No. 1 (May 1953) of its predecessor, the *Alumni Bulletin*—but alas! That is only 47 years ago. Nevertheless, some of our gray-haired alumni might enjoy hearing about some of the names and events of our school 47 years ago (as I may not be writing letters in 2003.) So below are items of interest from that first volume.

- Communications were to be sent to Dr. Herbert Thoms, but as I recall Dr. Arthur Ebbert was the editor.
- The new dean, Vernon Lipard, was featured, as well as the alumni association. Our

own Sam Kushlan is shown in a group photograph. The new dean announced that there would be a new medical dormitory built between the medical school and the new Memorial Unit of the hospital. There was a memorable photo of the Betsy Ross tea room.

- Former Dean George Blumer gave a greeting to the new *Bulletin* (with his photo).
- Markle Foundation awards were announced to Drs. Don Shedd and Bill Anlyan.
- At the memorial service for Dean Francis Blake (June 15, 1952) the first scholarship in his name was awarded to Gerald Klatskin.

R. W. Breck, M.D. '45M
Wallingford, Conn.

Dr. Breck's suggestion coincides with our own recent exploration of the back issues of *Yale Medicine* and a new department in the magazine, Archives, which appears for the first time on page 80 of this issue. The School of Medicine Alumni Bulletin, which made its debut in 1953 under the editorship of Arthur Ebbert, M.D., was succeeded by *Yale Medicine* in the fall of 1966. We will mine both sources for interesting nuggets from the school's past.



Change is in the air

Last year, as we began the process of fine-tuning *Yale Medicine's* content and design to create a more interesting and better-organized magazine, we asked readers for their suggestions. Your responses have been an enormous help to us as we've reviewed both what we report and how we present it within these pages.

On the content side, we learned that readers want to know more about the lives of medical students today and more about what their fellow alumni are doing across the country, the continent and the globe. They are also interested in the past. By far, the greatest number of letters from readers has come in response to articles about the history of medicine at Yale—for example, the early use of penicillin that was the subject of a recent article.

As a result of the comments we received, we are shedding more light on student life and educational issues today—as well as on the school's past. We've devoted extra space to stories about teaching and have started a regular historical department, *Capsule*, which in this issue explores medicine in New Haven during the Civil War years. We're also launching a new department, *Archives*, peeking into the magazine's early issues. See page 80 for the first installment.

In addition, *Yale Medicine* will continue its focus on alumni, with 14 pages this issue devoted to alumni and reunion news. It is our goal to help classmates and old friends stay in touch and to spotlight the ways in which they are changing medicine and the wider world. Please let us know what you and your Yale School of Medicine colleagues are doing by writing to us at one of the addresses below.

On the design side, readers say they find *Yale Medicine* appealing, engaging and easy to navigate, both in print and on the Web at <http://info.med.yale.edu/yymm>. We've taken steps to improve the easy readability of the magazine while keeping the design lively. Readers will notice a new paper stock this issue, and the overall design of *Yale Medicine* has been modified to be consistent with the school's new printed materials for the offices of Admissions and Development (See page 10). A few changes in format will be apparent in this issue and in the Spring 2001 edition of *Yale Medicine*.

We hope you enjoy your alumni magazine and that you will stay in touch with us, your classmates and your Yale colleagues.

Michael Fitzsosa
Editor

How to reach us

Yale Medicine welcomes news and commentary. Please send letters to the editor and news items to *Yale Medicine*, P.O. Box 7612, New Haven, CT 06519-0612, or via electronic mail to yymm@yale.edu, and include a daytime telephone number. Submissions may be edited for length, style and content.

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Yale's M.D./Ph.D. Program celebrates a birthday and 188 promising careers

When Donald E. Ingber graduated from Yale College in 1977, he had definite ideas about what he wanted to do in life. He was either going to write comedy and raise the standard of the television sitcom or else make his contribution to humanity through science. He admits it wasn't a conventional career dilemma.

Unfortunately perhaps for prime-time viewers, science won out. Ingber enrolled in the M.D./PH.D. Program at Yale, spent seven more years in

New Haven, then went on to discover the angiogenesis inhibitor *TNP470*, one of the first in a promising class of compounds that physicians hope will provide effective anti-cancer therapies. Ingber did his postdoc with angiogenesis pioneer Judah Folkman, M.D., at Harvard Medical School, where today he is a professor of pathology and an explorer in the largely uncharted field of "mechanobiology," studying the role of mechanical forces in cell regulation.

Ingber says that it was a mindset cultivated at Yale that allowed him to connect the basic science of angiogenesis to the clinical relevance of an agent that might starve quickly multiplying tumor cells of their essential blood supply. With one foot planted firmly in the basic sciences and the other in clinical medicine, he was able to see each realm from a more practical perspective.

"By combining them, you really are able to understand what the problems in medicine are and to frame the relevant questions," he says. "And because you're trained by the best scientists around, you learn the procedure of attacking the problem and reducing it down to its minimum variables."

Yale's M.D./PH.D. Program, also known as the Medical Scientist Training Program (MSTP),

turned 30 last year and celebrated the anniversary with a reunion in November. Graduates of the program, Ingber among them, returned to New Haven to attend a symposium and mix with classmates, professors and many of the 80 currently enrolled students.

The program's five-year renewal was approved this past summer with a study section recommendation of \$12.4 million in funding over that period. An additional slot each year has also been recommended, which could raise the number of participants in the program to as many as 85 by 2005 when additional funding from the medical school and other sources is taken into account.

Nationally, the MSTP traces its roots to 1964 when three schools—NYU, Einstein and

continued on page 8

Oscar Colegio was one of 32 students who presented a research poster at a reunion in November celebrating 30 years of the M.D./Ph.D. Program at Yale.



TERRY DAGRADI



Children who visited the medical school during the Tercentennial year kickoff in October were treated to a special photo opportunity. Dressed in surgical garb, they posed against the backdrop of an operating room and took home a Polaroid photo. More than 500 people visited the medical school.

BERNIE STAGGERS

Med school invites neighbors to join in Tercentennial celebration

The doors of the School of Medicine have always been open to those seeking medical care. On a Saturday in October the school opened its doors to its neighbors as part of the University's year-long celebration of its 300th birthday.

More than 500 people toured the medical school, which offered a lesson in virtual anatomy and, for children, the chance to dress up in medical gowns and pose for a snapshot with a 6-foot square photograph of an operating room as a backdrop. Throughout the University, more than 35,000 people attended the open house.

Celebrations started the day before, Friday, Oct. 20, with a community service award to Mayor John DeStefano Jr.

from the School of Public Health. DeStefano was honored for his support of the Community Health Care Van, which provides medical services in underserved areas. The ceremony continued that day with the opening at the Sterling Hall of Medicine of *Neighbors: Working Together for a Healthy New Haven*, an exhibit of photographs by John Curtis showing students and faculty from the health professions working with local schools and community groups on a variety of projects, ranging from conflict resolution workshops to organizing a library at a shelter for women. (A photographic essay based on the exhibit appears in this issue of *Yale Medicine*, starting

New research effort will target hypoglycemia

"Everything about diabetes cuts two ways," says William Tamborlane, M.D., professor of pediatrics at the School of Medicine. "There are good parts and there are negative parts." Take insulin, the heart of treatment regimens for the 1 million people in the United States who have type 1, or juvenile onset, diabetes. Even as it controls the level of sugar in the blood, insulin can increase

the frequency and severity of bouts of hypoglycemia. Because it denies the brain a normal supply of its primary fuel, glucose, hypoglycemia can cause seizures, confusion and abnormal behavior. In severe cases it can damage the brain and nervous system and can occur even under a regimen of blood sugar monitoring, careful diet, exercise and insulin injections.

on page 22.) Inside the Cushing/Whitney Medical Library, the medical school's Web designer, Patrick Lynch, opened an exhibit of his art. And the library rotunda was the site of an exhibit chronicling *Medicine at Yale 1701-1865*. Joining Dean David A. Kessler, M.D., in launching the open house were Michael H. Merson, M.D., dean of public health, and Catherine L. Gilliss, D.N.Sc., R.N., dean of the School of Nursing. Public service, Merson noted, is the force that drives public health. Gilliss recalled growing up in New Haven and the links between the University and the city. The medical school, Kessler said, is proud to be in such a vibrant community as New Haven.

Now, with a \$5 million, five-year grant from the Juvenile Diabetes Research Foundation International (JDRFI), researchers at Yale have launched a new effort to study hypoglycemia and seek ways to prevent it. At a press conference and luncheon in early November, researchers at Yale and JDRFI officials announced the formation of the Center for the Study of Hypoglycemia

continued on page 11

Giving to YSM hits a record high
 Gifts and new pledges to the School of Medicine jumped to a record \$63.5 million for fiscal year 2000 that ended June 30. That's 57 percent higher than the 1999 total of \$40 million and 34 percent higher than the previous record, \$47 million in fiscal 1998. Associate Dean Jane E. Reynolds attributed the record number to the robust stock market, a more aggressive development operation and "the extremely high caliber of faculty proposals that were funded by gifts during the year." The \$63.5 million figure—which is included in the record University-wide total of \$358 million for fiscal 2000—includes \$29.2 million from foundations, \$15.5 million from individuals, \$13 million from agencies and \$5.8 million from corporations. Says Reynolds, "I think the best is yet to come."

A new generation of diabetics?
 Rising rates of obesity among children may point to a coming surge in type 2 diabetes and a pressing need to find ways of staving off the disease's clinical development, according to data reported at the American Diabetes Association meeting in June by Sonia Caprio, M.D., associate professor of pediatrics. She tested 110 obese children and found that 19 percent had elevated blood sugar, a condition known as impaired glucose tolerance, putting them at risk for the most common form of diabetes. Says Caprio: "We know there is borderline type 2 diabetes in these kids. Do we try to treat them to prevent it?" She has begun to look at what effect medical therapy, nutritional counseling and exercise may have in warding off the disease in obese children.



New Haven high school students spent three weeks on the Yale campus last summer, studying chemistry and biology in SCHOLAR, a three-week residential program that also takes them into laboratories on Science Hill for experiments.

JOHN CURTIS

New Haven's young SCHOLARs take to the labs, and dorms

In a fourth-floor laboratory in the Farnam Memorial Building, G'Nee Herbert uses a pipette to prepare samples of mouse DNA for analysis. Her task is to ensure that a certain gene, PKC theta, has been eliminated from the mouse's genome. Working under the supervision of research technician Crystal Bussey, she prepares an array of DNA for testing. "There are so many steps," Bussey tells Herbert. "From start to finish it will take you a solid week."

Unlike the others in the lab, Herbert is not a graduate student, postdoctoral fellow or medical student. About to enter her senior year at Hill Regional Career High School a few blocks from the medical center, she's one of 65 students from the high school who spent three weeks this past summer living on the Yale campus while studying biology and chemistry. Herbert, 17, joined the program in its

first year, three years ago, and has watched it expand from a two-week program with 15 students. "It prepares you for the next year," Herbert says of the summer program, which is integrated into the science curriculum at Career. "You already have a step up when you get to chemistry."

A longstanding relationship between the two schools has for several years brought Career students to the medical school and Yale-New Haven Hospital for classes and internships. The summer program, called SCHOLAR, for Science Collaborative Hands-On Learning and Research, allows students to sustain their interest in science and follow Career's health professions education track.

Originally funded by the National Institutes of Health, last year the program received additional support from the Howard Hughes Medical Institute.

"It prepares you for the next year. You already have a step up when you get to chemistry."

— High school student G'Nee Herbert

Career students who have just completed their freshman, sophomore or junior years live in Yale dormitories and study genetics, cellular and developmental biology, chemistry and biotechnology. The students also enjoy activities such as a picnic in East Rock Park in New Haven or a field trip to Branford's Thimble Islands.

In classrooms and laboratories, the students try to solve problems such as this: A young camper has been brought to an emergency room suffering from headaches, a temperature and a rash, followed by a seizure. Students must suggest reasons for his symptoms, questions to ask his fellow campers and possible tests. As more information becomes

available, students answer new sets of questions until they go to the laboratory to test samples of water. "After they have gone through the labs, they come up with a final presentation of what it is they think is going on with this problem," says Liza Cariaga-Lo, PH.D., until recently the director of multicultural affairs and SCHOLAR's program director.

Career Principal Charles Williams says students return to school in the fall far more comfortable with critical thinking and problem-based learning. "It is very, very necessary for them to be exposed to some of the strategies that are promoted in the summer program," Williams says.



JOHN CURTIS

Joseph Warshaw shared a laugh with pediatric residents who led grand rounds this past spring.

Pediatrics chair Warshaw moves north to become dean

When Joseph Warshaw, M.D., returned to Yale in 1987 after a five-year stint at the University of Texas, he was already an internationally renowned expert in newborn care and development. While serving as chair of the Department of Pediatrics, he also emerged as a well-respected leader within the School of Medicine. On Aug. 1, he moved north once again to become the 15th dean of the University of Vermont College of Medicine in Burlington.

As chair of the Department of Pediatrics for 13 years, Warshaw built it into one of the nation's foremost centers for research into childhood disorders. Yale is now the leading recipient of NIH

funding among medical school pediatrics departments in the country. The department has added facilities to handle the demands of the growing scientific program, including the Child Health Research Center on Congress Avenue. He also played a key role in the construction of the Yale-New Haven Children's Hospital.

Over the past five years, he guided clinical academic programs for the medical school as deputy dean for clinical affairs. In that role, he oversaw major changes in the organization of the Yale Faculty Practice, worked on the 1999 affiliation agreement with the Yale New Haven Health

System and enhanced several clinical programs.

Warshaw first came to Yale from Harvard in 1973 and went to the University of Texas Southwestern Medical Center in Dallas in 1982, where he served as professor and chair of pediatrics until his return to Yale. He has published more than 100 scientific papers and six books on developmental medicine and other child-health topics. He said, "I've never in my life more enjoyed working with and for a group of people than the people in pediatrics at Yale."

To recognize Warshaw's contribution, the medical school held a symposium in his honor in early December.

Congress Avenue Building reaches skyward

Structural steel began arriving at the site for the Congress Avenue Building in early fall and began to transform the landscape immediately. "In the next month and a half, everyone will begin to understand how large this building is," project leader John Bollier said in early September. (The photo at left was taken November 3.) The project, one of the largest in Connecticut, remains on schedule with steel work scheduled for completion by March. The construction force of 60 increased to 80 with the arrival of the steel and will rise to between 500 and 600 during the coming year. By January 2002, the building should be completely enclosed. Detailed renderings of the building as well as updates on the project may be accessed at <http://info.med.yale.edu/cab>.



JOHN CURTIS

In the soap dispenser, a lurking danger

Adding antimicrobials to consumer products such as hand lotions and soaps may not add to their effectiveness and could contribute harmfully to antibiotic resistance. According to Yale pediatrician Myron Genel, M.D., acquired resistance to antimicrobials may predispose bacteria to resistance against therapeutic antibiotics as well. Genel chaired the American Medical Association Council on Scientific Affairs, which issued a report on antibiotics in June. Antimicrobials, which kill disease-causing bacteria, are commonly used in hospitals and other health care settings to reduce surface colonization of bacteria, but the AMA council found no evidence to support their addition to household cleansing agents. The report encouraged the FDA to expedite its regulation of antimicrobial use in consumer products.

A new showcase for art

There's an art to medicine, and some medical practitioners are also artists in their own right. Visitors to the Yale Physicians Building can now view artwork by Yale doctors and others associated with the School of Medicine. Last June, a gallery area that recently became part of the New Haven artSPACE program began showcasing work by Yale faculty and staff, and other artists from greater New Haven. Featured artwork in the inaugural show included photographs by Amy L. Friedman Meguire, M.D., assistant professor of surgery; a bronze sculpture by Wayne O. Southwick, M.D., professor emeritus of orthopaedics and rehabilitation; and oil paintings by Barry L. Zaret, M.D., Robert W. Berliner Professor of Medicine and chief of the section of cardiovascular medicine. The gallery's second show, photographs by Burim Myftiu of Kosovo, opened in September.

M.D./Ph.D. Program

continued from page 4

Northwestern—received money from the federal government to encourage the training of physician-scientists who would be able to leap nimbly from bench to bedside and back again. Yale joined the ranks in 1969 and is one of 39 MSTPS currently funded by the National Institute of General Medical Sciences (NIGMS), according to Bert Shapiro, PH.D., the director of the MSTP at NIGMS and chief of the institute's branch of cell biology. The MSTP got off to a slow start and almost vanished entirely in the early 1970s, when then-President Nixon impounded training funding amid concerns that much of the NIH training program was

ineffective. "It funded a lot of residents and they weren't going into research," says Shapiro, who says that more than 90 percent of current alumni are in research. In 1974, Congress passed a new act authorizing training grants on a much smaller scale; all the previous programs disappeared and were reformulated. MSTP was one of only a few to survive and grow.

The Yale program has 188 graduates, "98 percent of whom are doing funded research," according to Director James D. Jamieson, M.D., PH.D., professor of cell biology. "So the program is doing what it set out to accomplish, which was to train physician-scientists to carry out basic research that would be applicable to medicine."

The roster of M.D./PH.D. alumni includes Yale professors Susan J. Baserga and Michael J. Caplan, who administer the program along with Jamieson and Gerald I. Shulman. Others on the Yale faculty include Michael P. DiGiovanna, Peter M. Glazer, Robert J. Homer, Barry M. Kacinski, William L. Krinsky, Richard R. Pelker, Jordan S. Pober, Marc Potenza and Sandra L. Wolin, as well as a half-dozen recent graduates who are fellows and residents at Yale.

These younger graduates are much more likely to pursue careers in research because of the funding provided by MSTP, said Baserga, one of the three associate directors of the Yale program and an associate professor of therapeutic radiology and genetics. Tuition and other academic expenses are covered, and students receive a stipend for six or more years, allowing them to keep their level of debt relatively low and thus resist financial pressures to enter private practice or industry. (According to Shapiro at the NIH, MSTP graduates leave with an average debt of about \$10,000, compared to \$120,000 for other medical graduates.) "The program was set up to encourage students

to go into academic medicine," says Baserga. "It's been extremely successful in fulfilling that mandate."

Although the national program has grown dramatically, from \$372,000 in annual funding in 1964 to \$31.2 million today, some feel it isn't large enough to counter a documented decline in the percentage of physician-scientists in the United States. "The size of the program should be doubled or tripled," says Leon E. Rosenberg, M.D., who served as dean of the School of Medicine from 1984 to 1991 and is a highly vocal advocate of bolstering the ranks of the physician-scientist.

"The NIH budget has risen hundreds of percents over the last 20 years. The size of the MSTP has gone up much more slowly and I think that's shortsighted," says Rosenberg, now adjunct professor of genetics at Yale and a professor at Princeton. "If we are to decipher the information from the human genome, if we're going to find out what that book means, we're going to have to have medically trained scientists involved at the core. If we don't have them, there's going to be great difficulty in translating this fundamental information for the benefit of sick people."



Nursing student Courtney Marsh makes regular visits to Tasha Aaron and her new daughter Aurora as part of Bright Beginnings.

Bright Beginnings initiative helps mothers, infants at the start of life

It started with a simple statistic. Eight years ago members of the Friends of the Children's Hospital at Yale-New Haven learned that only 55 percent of the children in New Haven were receiving all their necessary immunizations by age 2. Over the next two years members of the Friends board, pediatric staff and people from the community identified other problems common to young mothers.

The solution was Bright Beginnings, a mentoring program that has matched volunteers one-on-one with 164 young mothers since its inception in 1994. Medical Director John Leventhal, M.D., says it was designed to ensure that the mother and her child had timely prenatal visits and well-baby checkups, to reduce the incidence of childhood injuries and to encourage early intellectual and social stimulation.

None of the young mothers in the program, who range in age from 15 to 24, are in an extremely high-risk group. They were matched with mentors, 40 percent of whom are health care professionals or students in a health field. Most of the mentors are parents who have raised their own children.

"They are people who have extra energy to give support to a

young mother," says program coordinator Lyla Johnson, R.N. After training, the mentors sign on to guide young mothers from the last trimester of their pregnancy through the child's first birthday.

One of the 164 mentors is Courtney Marsh, a 24-year-old nursing student at Yale who plans to become a nurse-midwife. Since January she has made a weekly visit and several weekly phone calls to Tasha Aaron, who gave birth to her daughter Aurora on March 11. Aaron, 23, has a background in health care—she is certified as a nurse's aide and an EKG technician—and is well aware of the need for checkups. Aaron credits Marsh with "being there for me when I needed someone to talk to. She was with me when I was admitted to the hospital."

"Having someone who is just a friend for her is a big part of it," Marsh says of their relationship. "A lot of it is about plugging her into resources that can help her." At their weekly meetings they may go out to lunch, visit a midwife, fill out forms or simply talk.

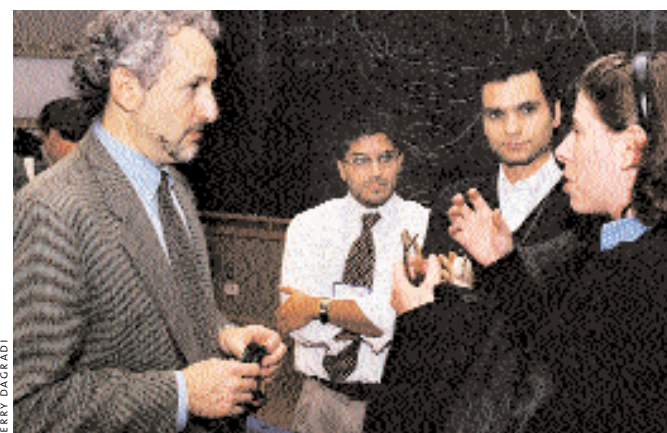
A recent pilot study of the program found that 99 percent of the infants had up-to-date immunizations at 12

"Our ultimate goal would be to see if we could expand this program throughout Connecticut."

—Medical Director John Leventhal

months, compared to 80 percent of children in the hospital's primary care population. Only 4.5 percent of teen mothers were pregnant again within one year, compared to 45 percent of the hospital's Women's Center teen population. Successfully matched mothers also missed fewer pediatric appointments and made better use of the health care system.

Although Leventhal has embarked on a more detailed study involving 200 young mothers, half of whom will be assigned prenatally to Bright Beginnings and half of whom will receive standard care, he is encouraged by the pilot findings. "Our ultimate goal would be to see if we could expand this program throughout the state of Connecticut," Leventhal says.



Alumnus Donald Ingber, left, talks with M.D./Ph.D. students during the program's 30th anniversary celebration in November.



Art and medicine

During the first Tercentennial celebration weekend in late October, physicians and artists explored common ground during a symposium sponsored by the Program for Humanities in Medicine in conjunction with the New Haven arts organization artSPACE. Physicians Thomas Duffy and Irwin Braverman, along with students from the schools of medicine and nursing, joined artists represented in the companion exhibit "Foreign Bodies: Art, Medicine, Technology" at the untitled (space) gallery on College Street. The exhibit, curated by Marianne Bernstein, included works by 17 artists who incorporate medical technology or imagery into their work. At left: "Yellow Microorganisms" by Eve Andrée Laramée.

Hero to nitpickers everywhere After dealing with an epidemic of head lice at a New Haven day-care center, Sydney Z. Spiesel, M.D. '75, Ph.D., assistant clinical professor of pediatrics, came up with a shampoo that makes the louse eggs, or nits, visible under ultraviolet light. The shampoo contains a nontoxic fluorescent dye that causes the nits to glow brightly on the hairshaft when viewed under ultraviolet light. Spiesel, whose invention landed him on the pages of *The New York Times*, the local press and *Time* magazine, said that his shampoo will not kill the eggs, but it makes them easy to see and eliminate.

Blacking out behind the wheel Fainting spells are behind an increasing number of automobile collisions, particularly among the elderly. A cardiac cause of that fainting can often go undetected and should be considered by physicians, according to Mark H. Schoenfeld, M.D., associate clinical professor of medicine. He and his colleagues studied 54 patients who had lost consciousness for unknown reasons while driving and then been referred to the Yale cardiac electrophysiology service over a 14-year period. They discovered that 78 percent were found to have cardiac irregularities. None of those who received treatment experienced another fainting spell while driving. Schoenfeld presented his findings in May at the meeting of the North American Society of Pacing and Electrophysiology. He advised colleagues to look at possible cardiac disorders when unexplained fainting spells occur.

For a group of first-year students, an intense week in the lab

Exposure to some of the best minds in science has long been a benefit of studying medicine at Yale. For a group of 24 first-year students last spring, that experience was intensified during a week-long immersion in bench research and discussion of the broader themes in science. “The goal was to pick a topic and convey two things—how you come up with strategies to test a hypothesis and how you see the project through its successive steps,” said John N. Forrest Jr., M.D., HS ’67, who along with four other faculty members accom-

panied the students to the Mount Desert Island Biological Laboratory in Bar Harbor, Maine, in May. “It was a very intensive week in the lab. They worked morning, noon and night. [Dean] David Kessler had proposed that we give students this intense pedagogical experience and it was successful beyond anyone’s expectations.”

Working with shark tissue, the students focused their investigation on the structure and function of polarized epithelial cells, examining the topic with techniques from

several disciplines, including physiology, biochemistry, cell biology and molecular biology. The faculty included Forrest, director of the Office of Student Research, and colleagues Michael J. Caplan, M.D. ’87, PH.D. ’87, Bliss Forbush III, PH.D., and Mark S. Mooseker, PH.D.

“It was a perfect environment for learning to take place,” said Nancy R. Angoff, M.P.H. ’81, M.D. ’90, HS ’93, associate dean for student affairs, who accompanied the group. Angoff, who wrote her own medical school thesis

not on basic science but on an ethics topic, took the Bar Harbor course along with the students in order to bridge some gaps in her knowledge. “I ran my first gel, did PCR, cloned a gene. It was just a great learning experience,” said Angoff. “For the students who haven’t had that introduction to laboratory techniques and how to think scientifically, I think it was especially terrific.”

The school plans to repeat the course in May for interested members of the Class of 2004.



Steven Marans, left, leads the Child Development-Community Policing Program at Yale. Deputy Attorney General Eric Holder Jr., right, came to the medical school in May to announce the creation of a national program based on the local model.

Anti-violence partnership chosen as model for national program

For nine years the mental health professionals at the Child Study Center have engaged in an unusual collaboration with New Haven’s police department. Psychologists and psychiatrists rode in squad cars to learn how police worked. Police officers came to the medical school for training in child development. Since then, center staff have been on call 24 hours a day, seven days a week, to help children who witness or are victims of violence. “It is a real triumph of collaboration,” says Mayor John DeStefano Jr.

Since the program started, it has intervened in the lives of more than 3,000 children and families. The U.S. Department

of Justice has supported the collaboration project for the past six years, and this year chose to apply the model around the country. In addition, the department created the National Center for Children Exposed to Violence (NCCEV), based at the Child Study Center. Deputy Attorney General Eric H. Holder Jr. came to Yale in May for the dedication of the national center.

Over the next five years, Holder said, the NCCEV will provide \$7 million to similar partnerships in nine communities around the country. “The Child Development-Community Policing Program will remain at the heart of the national center,” Holder told

local police, government officials, pediatricians and faculty in Harkness Auditorium. The program, Holder said, is one of the first in the nation to recognize that such a partnership is a key element of successful treatment. The Child Development-Community Policing Program and the NCCEV are led by Steven Marans, PH.D., Harris Associate Clinical Professor of Child Psychoanalysis in the Child Study Center.

The national center’s three objectives are to find ways to prevent exposure to violence, to intervene early and effectively in cases of violence and to ensure that perpetrators of violence against children are brought to justice.



24/7: Medicine at Yale looks at a week in the life of the school.

A closer look at the medical school, from a new angle

Nearly every college and university admissions office in the country produces a glossy book introducing the school to prospective students with the aim of attracting ever-higher numbers of highly qualified applicants. Medical school viewbooks adopt much the same format, organizing their presentation around the three primary missions of research, patient care and medical education.

This year, Yale is breaking that mold, choosing instead to

examine itself in a series of vignettes that make up a typical week at the medical school. *24/7: Medicine at Yale*, published in August, takes a photographic look at the life that fills Yale’s laboratories, classrooms and clinical spaces, as well as its involvement with the rest of Yale, the New Haven community and the wider world. Black-and-white photographs and accompanying text explore the world of medicine at Yale over the course of seven days,

from a difficult childbirth on a Saturday morning to a discussion among faculty and students the following Friday afternoon. Altogether, more than 40 glimpses of medical school life, accompanied by sidebars of facts and figures, occupy the book’s 52 pages.

“We wanted to do something a little different and not just tell the typical story,” says Associate Dean Jane E. Reynolds, who directed the book project and collaborated

with Director of Admissions Richard A. Silverman, writer Catherine Iino, photographer François Robert, the *Yale Medicine* staff and the design firm Pentagram. The book will be mailed to several thousand prospective applicants each year and was sent to alumni and friends of the school in October.

Hypoglycemia
continued from page 5

at Yale University. Building on 25 years of hypoglycemia research at Yale, the center will draw on the talents of 16 investigators in internal medicine, pediatrics, diagnostic radiology, neurosurgery, psychiatry, neurology and nursing. “You need to bring together people with different perspectives and different knowledge bases to tackle the

problem,” says Robert Sherwin, M.D., the C.N.H. Long Professor of Medicine, who will lead the new center and is the president of the American Diabetes Association.

A clinical trial led by Tamborlane and Margaret Grey, PH.D., associate dean for research at the School of Nursing, will gauge whether new technologies in glucose sensing and insulin delivery can reduce the risk of severe hypoglycemia in children receiving insulin

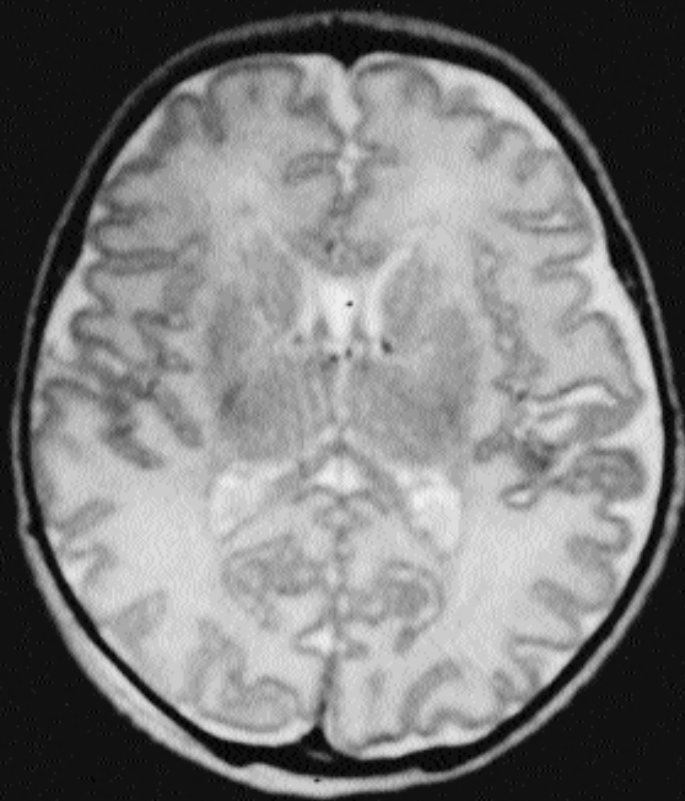
for type 1 diabetes. Three research projects will use microdialysis, nuclear magnetic resonance and functional magnetic resonance imaging to monitor the effects of hypoglycemia on the brain. The project leaders are Sherwin, John C. Gore, PH.D., professor of diagnostic radiology and applied physics, and Douglas L. Rothman, PH.D., associate professor of diagnostic radiology and director of the Magnetic Resonance Center.

A potential boost for transplanted hearts
Heart transplants often fail because the donor heart is not strong enough to overcome the lung damage common in people with chronic heart failure. Recognizing that in most cases only the left side of the heart fails, chief of cardiothoracic surgery John A. Elefteriades, M.D. ’76, HS ’83, and colleagues have come up with a novel technique for retaining the healthy right half. They aim to give a transplant patient the pumping power of a heart-and-a-half to overcome the lung damage. So far the technique has been attempted only in dogs, but the surgeons hope to apply it to humans soon. A description of the method was published in the June issue of *The Annals of Thoracic Surgery*. The technique could reduce the number of deaths following transplant and allow the use of weaker donor hearts to increase the currently limited number of donor hearts available.

Interdisciplinary journal debuts at Yale
The schools of medicine, public health and law have joined forces to launch the *Yale Journal of Health Policy, Law, and Ethics*. The biannual journal will be peer-reviewed by a board of national experts; more than 70 students from Yale graduate and professional schools will edit the publication and oversee its production. It will publish articles on legal, ethical and policy issues in health care and related areas, including case studies of specific current policy questions and recent court decisions. Publication of the first issue will coincide with a symposium on racial and ethnic disparities in health to be held at the law school in February.



CHARLES C. DUNCAN



Drug offers hope for a brighter start for premature babies

Magnetic resonance images show a marked difference between the brain of an infant born prematurely, left, and one born at term. Researchers at Yale have found that a drug commonly used to treat arthritis, when administered to premature infants, results in less brain atrophy and fewer long-term intellectual deficits. Ongoing studies of brain volume in newborn infants and older preterm infants are exploring the adaptive mechanisms of the developing brain.

Prematurely born babies score lower on intelligence tests than their healthy, full-term siblings and frequently require special educational services and other assistance. One suspected cause of the problems they face later in life is bleeding into tissues of the brain, which often occurs during premature births. Giving them an anti-inflammatory drug that reduces the bleeding at birth, however, has raised hope that fewer prematurely born children will suffer significant long-term intellectual and emotional problems.

Investigators in a multicenter study directed by Yale pediatric neurologist Laura R. Ment, M.D., administered the non-steroidal drug indomethacin,

which is generally used for treating adults with arthritis, to 431 very-low-birth-weight premature babies shortly after birth. In follow-up ultrasound studies, the infants who had been treated with the drug bled less and had less brain atrophy than babies treated with a placebo. In assessments at 6 and 8 years of age, they appeared to have suffered fewer long-term intellectual deficits and required significantly fewer special services than those children who had been given the placebo. Almost three times the number of children who received the placebo required speech and language therapy when compared to those who received the medication. The placebo group also scored lower on intelligence tests and tests of communication skills and emotional status.

The findings of the study were presented at the joint meeting of the Pediatric Academic Societies and the American Academy of Pediatrics in May. Ment said, "Almost all other studies of protective agents in the newborn period do not have long-lasting effects. This drug does, in fact, appear to protect the developing brain."

According to Ment, approximately 25 percent of neonatal intensive care units in the country use indomethacin as the standard of care for very-low-birth-weight preterm infants. She hopes to see that percentage increase so that all premature babies can benefit from the drug.

Combination therapy, acupuncture shown effective in curbing cocaine cravings

Many heroin addicts also abuse cocaine and continue taking the drug even after they stop using heroin. Currently available medications that help them stop using heroin do little to reduce their appetite for cocaine. Yale investigators have found that combining a drug used to treat alcoholism with an experimental drug to treat heroin addiction can help users abstain from using cocaine as well. Another study showed that acupuncture in combination with a heroin drug treatment regimen may also effectively diminish the desire for cocaine.

Past studies had shown that buprenorphine, an experimental alternative to methadone for treating opiate addiction, is effective in reducing heroin use, but no currently used medication treatment is effective in reducing an addict's concurrent cocaine use. When buprenorphine was combined with disulfiram—a drug for treating alcoholism marketed as Antabuse—the combination worked better than buprenorphine alone in promoting three weeks of abstinence from cocaine use in

persons with dual heroin and cocaine addictions. The early-stage study of 20 addicts appeared in the Spring 2000 issue of *Biological Psychiatry*. Tony P. George, M.D., assistant professor of psychiatry and an investigator for the study, said, "Addiction to heroin along with cocaine abuse is a horrible problem. Disulfiram can actually reduce cocaine use in these patients."

Principal investigator Richard S. Schottenfeld, M.D., '76, a professor of psychiatry, is now directing a trial of the drugs with a larger group of subjects and other studies of the combination treatment. He and colleagues are also working to correlate the medications' mechanism of action with the genetics of drug addiction. "Even if disulfiram proves effective, it's not an ideal treatment," he said. "It has all sorts of associated problems. By finding its mechanism of action, we'll be able to design a new drug that refines its effect."

The acupuncture study tested 82 subjects in three groups. Among those who had needles inserted in acupuncture

regions of the outer ear five times a week—a protocol already widely used in addiction treatment facilities—54.8 percent tested free of cocaine at the end of the eight-week study. The second group of subjects received treatment with acupuncture needles that were inserted into four points in the ear not thought to have a therapeutic effect. Among this group, 23.5 percent of the subjects managed to remain free of cocaine during the study. Only 9 percent of the third group, who watched relaxation videos, abstained for the eight-week period. Arthur Margolin, Ph.D., a research scientist in psychiatry and director of the study, said, "This was one of the most stringent tests of acupuncture to date, insofar as it compared the experimental treatment to two relatively 'active' control groups. However, further research is needed to replicate these findings, as well as to understand the mechanism of acupuncture in this application." The study was published in the August issue of *Archives of Internal Medicine*.

New clue to cocaine addiction

"A lot of people try drugs, but only some of them become addicted," says David Self, M.D., an assistant professor of psychiatry at Yale. He and his colleagues have set out to discover why this is so, and their most recent study points to a possible red flag for cocaine addiction. Unlike other users who experiment and then move on, prospective addicts tend to increase the amount of

the drug sharply in the early stages of use. The team provided a group of rats with an unlimited supply of cocaine for 10 days, allowing them to "self-administer" by pressing a lever. When the supply was cut off, the rats that had shown the greatest escalation of cocaine use in the early part of the study continued to press the lever with a persistence and intensity that

signaled extreme cravings—a hallmark of addiction. The next step in this investigation, says Self, is to locate this predisposition within the animal's genes, a prospect that could lead to new ideas for early intervention and more effective treatment. The study was published in the June issue of *Neuropsychopharmacology*.

Use of alternative medicine widespread among mentally ill

The use of unregulated alternative or complementary treatments is growing rapidly throughout the population. Yale investigators have found it is particularly prevalent among people with psychiatric disorders. People with illnesses such as depression, schizophrenia and anxiety disorders are 25 percent more likely to use alternative or complementary treatments than those without such disorders.

"The results suggest that a substantial portion of patients with mental conditions use these therapies, whether to treat mental or other medical conditions," said Benjamin G. Druss, M.D., M.P.H., '95, assistant professor of psychiatry and epidemiology and public health, the study's lead author. Published in the July issue of *Archives of General Psychiatry*, the findings, Druss said, speak to the potential importance of screening for these treatments, which may interact with prescription psychiatric medicines. The researchers found that 9.8 percent of those reporting a psychiatric illness made a visit to a complementary or alternative practitioner, and about half of these people (4.5 percent) made a visit to treat the psychiatric illness. Among alternative treatments used for that purpose, herbal remedies were the most common.

Stress testing may hold older persons back from healthy exercise

The standard recommendation to get a stress test before starting to exercise may hinder efforts to keep older people active. According to a Yale study, a simple physical examination may be sufficient. After weighing the potential benefits and risks of exercise among persons age 75 years and older, researchers concluded that current guidelines for exercise stress testing are not applicable for the vast majority of older persons interested in starting an exercise program and may instead hold them back.

Thomas M. Gill, M.D., an associate professor of internal medicine and geriatrics, and his collaborators reported in the July 19 issue of *The Journal of the American Medical Association* that, “Based on a rigorous review of the available evidence, we found that the risk of myocardial infarction (MI) related to exercise among older persons may be overstated.” Current guidelines from the American Heart Association and American

College of Sports Medicine recommend that older people undergo a stress test before beginning a moderately intense exercise program. The purpose of testing is to detect asymptomatic blockages to the heart’s arteries that could lead to MI. “The problem with a stress test,” said Gill, “is that most older people can’t complete it, so you have to go to more expensive, chemical tests to detect asymptomatic blockages to arteries.” Gill found no evidence that detecting these asymptomatic blockages is beneficial. “The risk of MI from exercise is very low.”

Instead, Gill and his colleagues recommend that older persons starting an exercise program skip the stress test and undergo a complete physical examination including a health history to identify potential risks of exercise. And all previously sedentary older persons without symptomatic cardiovascular disease should start with a low-intensity exercise program such as balance



FRANS WACKERS

exercises, tai chi, self-paced walking and lower-extremity muscle strengthening.

The Yale researchers are following up on their study to learn more about the safest ways to get older adults into exercise programs. “We need more research on exercise and aging,” said Gill, “particularly now that the large baby boom population, who started the exercise movement, is growing older.”

A stress test, Yale researchers have found, may discourage elderly people who wish to exercise. A complete physical exam, according to the researchers, may be sufficient to identify potential health risks for those over 75.

When it comes to diet, parents weigh in heavily with their children

A Yale study has found that children’s perceptions of their parents’ attitudes toward eating and weight have a big impact on them. According to the study, college-age women are particularly sensitive to perceived criticism from their mothers in forming their own attitudes and behaviors regarding food and weight. Similarly, male college students adopt attitudes toward eating and weight that are associated with their perception of their

fathers’ attitudes and behaviors, the study shows.

The study, published last summer in *Health Psychology*, was based on research conducted by Christina Baker, then a graduate student in psychology at Yale, and Kelly D. Brownell, Ph.D., professor of psychology and epidemiology and director of the Yale Center for Eating and Weight Disorders. They compared what the parents reported about their own attitudes and

behaviors related to eating and weight with what their children perceived about their parents’ attitudes and behaviors. The investigators found some evidence that a discrepancy between the two might be a predictor of eating concerns.

Baker said one problem with previously available data is that much of it is based solely upon parents’ reports of their own attitudes and behaviors, which they might skew

for fear of looking as if they passed along unhealthy eating and weight-loss habits. “A lot of people are concerned about blame being placed on parents,” said Baker. “This study points out that children’s perceptions are more important. The results really highlight the importance of good parent-child communication.”

Screening for alcohol abuse with a few key questions

There are a variety of screening methods available for detecting alcohol problems. According to a review by Yale investigators, however, asking a few carefully worded questions during routine medical appointments is the best way of spotting alcohol problems before they get out of hand.

The study, led by David A. Fiellin, M.D., assistant professor of medicine, reviewed 38 previous studies of screening methods for alcohol problems in primary care physicians’ practices. It showed that the four so-called CAGE questions and the Alcohol Use Disorders Identification Test (AUDIT) were the most effective in identifying patients with alcohol abuse and dependence problems and at-risk, hazardous or harmful drinking. Patrick G. O’Connor, M.D., M.P.H., professor of medicine and senior author of the study published in August in the *Archives of Internal Medicine*, said, “This is the first study to examine the evidence in the literature for the effectiveness of these instruments, which focuses specifically on their use in primary care settings. This is important because primary

care physicians have been urged to screen their patients for alcohol problems but may often neglect to do so.”

The four CAGE questions are: Have you ever tried to Cut down on your drinking? Have people Annoyed you by criticizing your drinking? Have you ever felt bad or Guilty about your drinking? Have you ever taken a drink first thing in the morning, an Eye opener, to steady your nerves or get rid of a hangover?

The first three questions of the 10-question AUDIT instrument address the quantity and frequency of alcohol consumption. These questions were

found to be the most effective in showing more recent drinking behavior and problems.

O’Connor said blood tests are not good indicators of alcohol problems because they generally only reveal markers of advanced alcohol abuse, such as liver problems. “There are many people with drinking problems who are missing work and getting arrested for driving while intoxicated who might not show any physical problems on a blood test,” O’Connor said. “You want to try to get them before they appear in an emergency room or hospital. At that point, they are often far advanced.”



JOHN CURTIS
David Fiellin

Table 4. ALCOHOL USE DISORDERS IDENTIFICATION TEST (AUDIT)

1. How often do you have a drink containing alcohol? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	2. How many drinks containing alcohol do you have on a typical day when you are drinking? (1) 1 (2) 2 (3) 3 (4) 4 (5) 5 or more	3. How often do you have 6 or more drinks on one occasion? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	4. How often during the last year have you had a drink first thing in the morning? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	5. How often during the last year have you felt the need to cut down on your drinking? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	6. How often during the last year have you felt guilty about your drinking? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	7. How often during the last year have you had a drink or two to steady your nerves or to get rid of a hangover? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	8. How often during the last year have you been unable to remember what happened the night before because you had been drinking? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week	9. Have you or someone else been injured as a result of your drinking? (1) No (2) Yes, but not seriously (3) Yes, seriously (4) Yes, resulting in hospitalization (5) Yes, resulting in death	10. How often do you drink or are drunk when you are driving or operating machinery? (1) Never (2) Less than monthly (3) Monthly (4) 2-3 times a week (5) 4 or more times a week
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A few carefully worded questions such as those in the survey above can help clinicians spot alcohol problems before they get out of hand.

An odd silver lining in unhappy marriages

“Freud said that ambivalent, conflicted relationships would predispose the survivor to pathological grief,” said Holly G. Prigerson, Ph.D., an associate professor of psychiatry. According to a study she directed, Freud was wrong. “We found that losing a partner in a harmonious marriage puts you at greater risk of health problems. Your health care costs are lower if you are widowed in a discordant marriage.”

For the study, which was published in the June issue of *The Gerontologist*, the researchers interviewed 694 people who were part of a longitudinal study on successful aging and who remained married between the initial survey and the follow-up. The investigators then compared the health care costs of the married people to those of the widowed people. They also looked at the health costs of

widows and widowers from happy and unhappy marriages, as characterized by answers to questions posed to the couples before one spouse died.

The researchers found that annual health care costs were \$2,384 for widowed persons compared with \$1,498 for those who were married. Health care costs for the surviving partners in happy marriages were \$2,766 compared with \$2,100 for survivors of unhappy marriages.

Prigerson said the sense of loss for the survivor in a happy marriage is often so profound it can be defined as “traumatic grief syndrome,” which can cause an array of health disorders. “Doctors should realize that older widowed people are at increased risk,” Prigerson said. “Many widowed persons in the study needed mental health care, but few were receiving it.”

Yale researchers solve structure of the ribosome

Crystallography confirms a long-held notion that RNA, not protein, sparks protein synthesis on the ribosome.

In a landmark achievement, Yale researchers have determined the atomic structure of the ribosome's large subunit, paving the way for more effective drugs to fight infection.

The findings, published in two separate articles covering 25 pages in the Aug. 11 issue of the journal *Science*, were derived in Yale laboratories led by Thomas Steitz, the Eugene Higgins Professor of Molecular Biophysics and Biochemistry and an investigator at the Howard Hughes Medical Institute, and Peter Moore, the Eugene Higgins Professor of Chemistry.

"This is like climbing Mt. Everest or running the four-minute mile," Steitz said. "We

have solved the structure of the ribosome's large subunit, which is the largest unique structure determined. We have established that the ribosome is a ribozyme, an enzyme in which catalysis is done by RNA, not protein."

The ribosome is the cellular structure responsible for synthesizing protein molecules in all organisms. In addition to enhancing the understanding of protein synthesis, the research offers new clues about evolution and has significant medical implications because the ribosome is a major target for antibiotics.

Many antibiotics cure disease by selectively inhibiting the protein-synthesizing activ-

ity of large ribosomal subunits in disease-causing bacteria, while leaving human ribosomes alone. Unfortunately, over the years, many bacteria have become resistant to these agents, and the possibility exists that the devastating bacterial diseases that were brought under control by antibiotics in the 1940s and 1950s will once again become scourges.

"Now that we know the structure of the large ribosomal subunit," Steitz said, "we can determine its exact structure with antibiotics bound to it." The same methods of "structure-based drug design" that led to the development of HIV protease inhibitors for AIDS can now be used on the ribosome.

"The information that emerges should enable pharmaceutical companies to devise new inhibitors of ribosome function that can be used to control bacterial diseases that have become resistant to older antibiotics," said Moore.

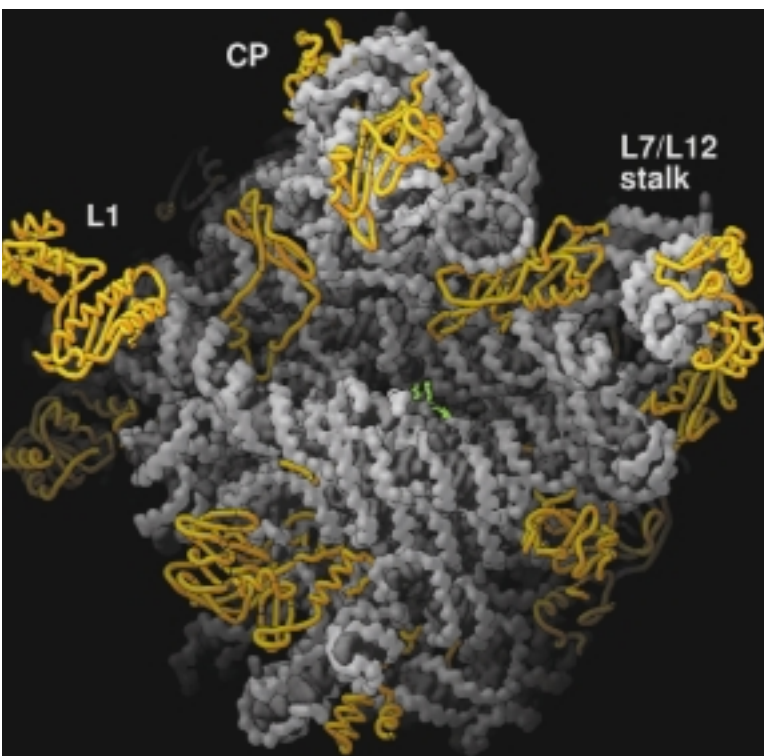
Although the ribosome is microscopic, it is gigantic in molecular terms. The larger of its two subunits is about 50 times larger than the average enzyme. Its function is to read the genetic information encoded in messenger RNA and generate the protein molecules that those messenger RNA molecules specify. The proteins made by an organism's ribosomes are responsible

for virtually all of its properties, including how it looks and behaves.

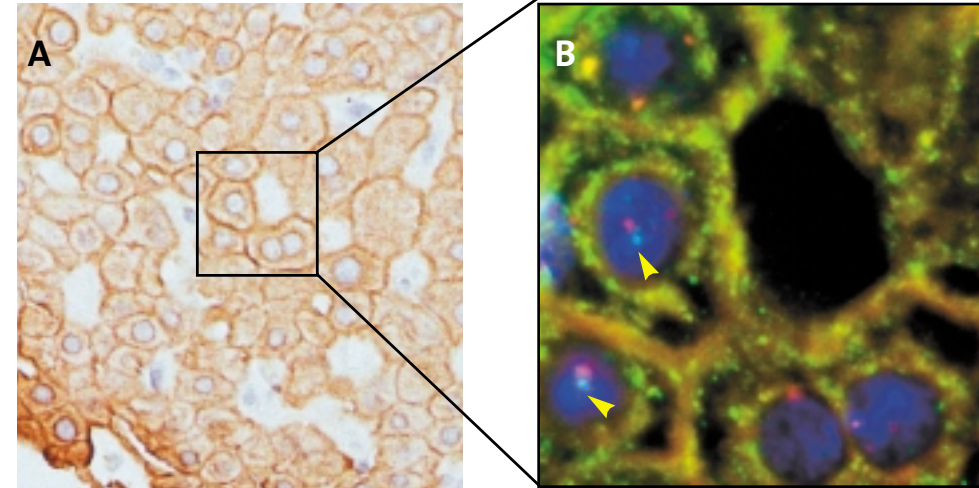
The structure of the ribosome's large subunit was determined using X-ray crystallography, a technique that can produce three-dimensional images at resolutions so high that individual atoms can be positioned. The 3,000 nucleotides of RNA in the large ribosomal subunit form a compact, complexly folded structure, and its 31 proteins permeate its RNA.

Enzymes composed entirely of protein promote virtually all chemical reactions that occur in living organisms. One of the most remarkable findings to emerge from this research is that the protein synthesis reaction that occurs on the ribosome derives from the two-thirds of its mass that is RNA, not from the one-third that is protein.

"It was suspected for many years that the RNA of the ribosome was the enzymatic component. We now know that for certain," Steitz said. "This means that in the very early days of evolution, protein synthesis evolved using RNA molecules because there were no protein molecules."



Yale scientists have determined the structure of the ribosome's large subunit, a finding that offers new clues to evolution and could increase understanding of protein synthesis and lead to the discovery of new drugs. The image at left shows the crystal structure of the large ribosomal subunit in *H. marismortui*, a bacterium found in the Dead Sea.



The presence of Y chromosomes, indicated by yellow arrows, in a liver transplanted from a female donor suggests that stem cells from the male recipient's bone marrow are developing into liver cells.

Stem cells from bone marrow can help to repair liver

Much of the power of self-repair in the liver comes, of course, from the liver's own cells, but a substantial portion is derived from a previously unsuspected source outside the liver, according to a paper published in *Hepatology*.

That novel source of liver cells is bone marrow, the producer of multipotent stem cells, which can develop into many different kinds of cells throughout the body. In the human adult, bone marrow stem cells have long been known for their unusual ability to give rise to both white and red blood cells, but

their potential also to become nerve or muscle or epithelial cells has only been discovered in the last several years. Investigators including Yale's Diane Krause, M.D., found that stem cells that travel through the bloodstream to the liver can develop into both hepatocytes and bile-duct cells, which are responsible for normal liver function.

The *Hepatology* paper describes the analysis of tissue samples from transplants in male patients who had received livers (but no bone marrow) from females, and in female patients who had received

bone marrow (but not their livers) from males. That is, both groups of transplant patients had bone marrow from one sex (male) and livers from the other (female).

In each case, some of the new cells that developed in the liver contained a Y chromosome, indicating their male origin. The researchers reason that in the male transplant recipients, these new cells could only have come from the males' own bone marrow, and in the females, the new cells must have come from the (male) donated bone marrow.

"This is an exciting finding, and it is incredibly surprising, because the bone marrow has never been considered as a source of liver cells," says senior author Krause, an assistant professor of laboratory medicine. Not only does the finding open up new possibilities for treating many kinds of liver disease, it also indicates that fully functional stem cells with a remarkable plasticity can be found within adult bone marrow.

How nicotine may buffer the brain

Smokers who claim that tobacco relaxes them are reporting a documented biochemical effect. Nicotine, the main active compound of tobacco, lowers the perception of pain and physical stress by reducing the amount of the neurotransmitter dopamine that is broken down by neurons in the prefrontal cortex, a region of the brain that lies just behind the forehead. But Yale psychiatrist Tony P. George, M.D., and his colleagues report in the July issue of *Neuropsychopharmacology* that the dopamine pathways are not acting on their own. It appears that they are regulated by the brain's system of endogenous opioid peptides—the brain's own pain relievers.

The Yale group performed experiments in which rats were given small amounts of nicotine; some were also given naloxone, which blocks the action of endogenous opioid peptides, while others received an inactive saline solution. When the animals

were tested by brief electrical shocks to the foot, the response of the saline group showed that nicotine had acted on the endogenous opioid peptides to reduce the amount of dopamine metabolized by prefrontal neurons, while the response of the naloxone group showed normal (non-nicotine) levels of dopamine metabolism. This indicates that the endogenous opioid system must participate in order for nicotine to be able to alter levels of dopamine uptake and

thereby reduce perceptions of pain and stress. Understanding the molecular basis of nicotine's effects in the brain may give scientists new tools for developing ways to treat nicotine dependence. "Furthermore," says George, "our results may have implications for our understanding of neuropsychiatric disorders such as schizophrenia," in which smoking, excessive responses to stress, and some dysfunction of the prefrontal cortex all may be linked.

A genetic cause for hypertension during pregnancy

Blood pressure normally dips slightly during pregnancy but, as every obstetrician knows, a spike in pressure can lead to a serious and potentially life-threatening complication. The reasons for this type of hypertension, which occurs in about 6 percent of pregnancies, remain mysterious but research by a Yale team has shed the first light on a likely molecular cause.

Working with a family predisposed to a rare form of hypertension, David Geller, M.D., Ph.D., and colleagues identified a mutation in a protein in kidney cells that normally regulates salt balance. The protein, known as the

mineralocorticoid receptor, is normally activated by the steroid aldosterone. The Yale scientists found that, in patients with the mutation, it is also activated by the hormone progesterone. “The consequence is that when women with this mutation become pregnant, the 100-fold rise in progesterone levels activates the receptor, causing increased salt balance and a marked increase in blood pressure,” said the paper’s senior author, Richard P. Lifton, M.D., Ph.D., a Howard Hughes Medical Institute (HHMI) investigator and professor of genetics, medicine, and molecular biophysics and biochemistry.

Hypertension during pregnancy can lead to preeclampsia, which may be fatal to mother, fetus or both. The team’s findings were reported in the July 7 issue of *Science*.

“Our findings demonstrate that a normal hormone of pregnancy can have abnormal effects that can cause hypertension to worsen. This raises the possibility that more common forms of pregnancy-related hypertension may be attributable to similar mechanisms,” Lifton said. This information, he said, will motivate careful examination of the possibility that progesterone is acting to promote increased salt balance in other

forms of pregnancy-related hypertension and may lead to clinical trials of salt restriction in selected groups of women whose blood pressure rises with pregnancy.

The paper was dedicated to the memory of the late Paul B. Sigler, M.D., who died in January 2000. Sigler, a noted Yale and HHMI structural biologist, created a computer model of the mineralocorticoid receptor and demonstrated how the mutated receptor might be activated by progesterone. The group then used this model to perform further experiments that proved the mechanism of action of the mutation.

Facial recognition is impaired in autism

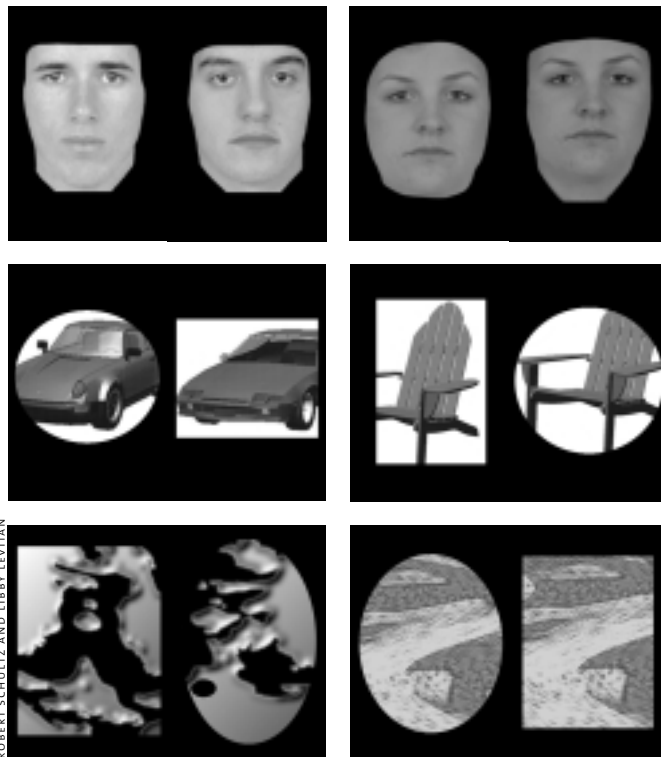
The developmental disorder autism interferes with social functioning—even with the recognition of faces, as a functional magnetic resonance imagery study now shows in detail. The study, which appeared in April in the *Archives of General Psychiatry*, was the work of a Yale research team headed by Robert T. Schultz, Ph.D., an associate professor at the Yale Child Study Center.

A decade of investigation has established that people with autism have more difficulty than unaffected individuals in recognizing faces. Instead, they rely on perceptual processes typically used to recognize non-face objects.

The Yale study confirms these observations in terms of brain activity patterns. When a person with autism examines a

face, his or her brain reacts differently from the brain of a normal person. Instead of bursting into activity at a site called the fusiform gyrus, which normally responds preferentially to faces, individuals with autism display increased activity in the inferior temporal gyrus, which normally responds most strongly to objects. In addition, people with autism tend to process faces by focusing on a few salient features rather than on the overall configuration, as if they were processing an object.

The new findings lead to a riddle. Could this abnormal brain activity be a *cause* of autism, or the *result* of a longstanding disinterest in social interactions that dates back to early childhood? “With our data, it is not possible to know,” says Schultz, but he and many of his fellow researchers look forward to finding out.



Researchers used the images above in the face, object and pattern task to determine how the brains of people with autism respond to visual stimuli. For each stimulus type, the pair on the left is different while the pair on the right is the same.

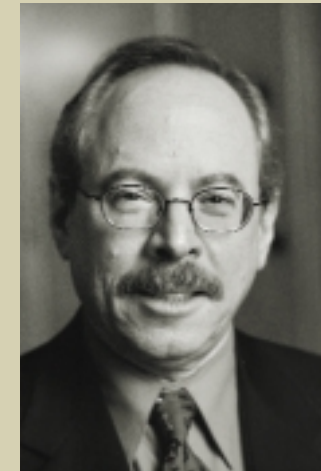
ROBERT SCHULTZ AND LIBBY LEVITAN



Ferraro



Fadiman



Leshner



Schoofs

MICHAEL FITZSOUSA (FERRARO); JOHN CURTIS (3)

Another vote for women’s health research

Former New York congresswoman **Geraldine Ferraro** came to Yale in September with a message about the importance of the political process to women’s health. “In the past, some diseases were not very interesting to those who funded research because they only affected women. That’s changing now,” said Ferraro, the first woman nominated for vice president by a major party when she ran with Democrat Walter Mondale in 1984. She was the keynote speaker at “Conference 2000: Factoring in Gender,” sponsored by Women’s Health Research at Yale, a day-long event that attracted more than 200 people to New Haven’s Lawn Club for lectures and presentations by Yale investigators. Noting that women make up more than half the population—and they vote—Ferraro said, “We are different biologically. Policies that don’t take this into account are not only unacceptable, they’re undemocratic.”

Bridging cultural divides in medicine

“Reality,” says writer **Anne Fadiman**, “not only *looks* different to different people. It *is* different.” Her acclaimed first book, *The Spirit Catches You and You Fall Down*, describes the linguistic and cultural gulf that separated a family of Hmong refugees from Southeast Asia from the physicians treating the family’s epileptic infant daughter in California’s Central Valley.

Caregivers, she said, need to understand the cultures of their patients. “Cross-cultural medicine,” she said in an address to the first-year class at the medical school on Sept. 1, “should be integrated into every course. It shouldn’t be taught just in the first term or the first year. It is fine then, but you will need it more in the fourth year when the assaults on your empathy need to be fought more aggressively.”

A toolbox for drug abuse treatment

Drug abuse has been linked to 72 risk factors, including individual, family and societal issues, according to **Alan I. Leshner**, Ph.D., director of the National Institute on Drug Abuse (NIDA). Yet most drug abusers, he said, fall into one of two categories.

Some use drugs as a novelty. Others “self-medicate” to normalize a troubled emotional state. “We have paid far too little attention to the distinction between them in treatment strategies,” said Leshner, the keynote speaker in September at a symposium, “Innovations in Drug Abuse Treatment: From Research to Practice,” sponsored by the School of Medicine and the Department of Psychiatry, which is participating in two national studies on tobacco and drug abuse. “Treatment has to be tailored to individual needs,” Leshner said. “There is no ‘one size fits all.’”

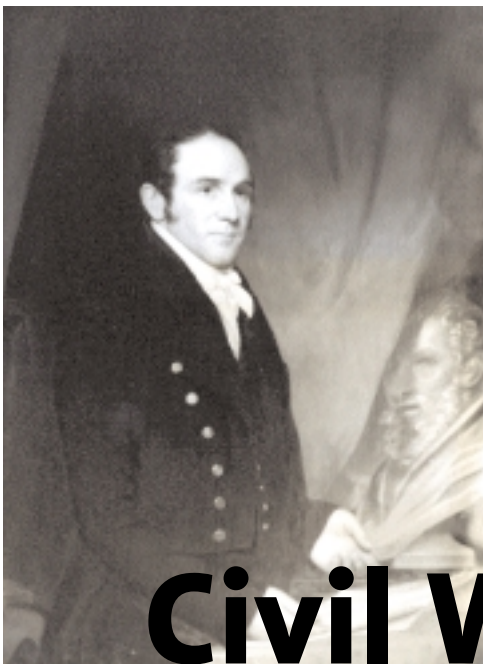
At the symposium he unveiled the *NIDA Clinical Toolbox: Science-Based Materials for Drug Abuse Counselors*, a collection of therapy resources. “It is a toolbox that might be used by practitioners to take the science we have supported and make it usable in ongoing treatment,” Leshner said.

AIDS in Africa: treating the “untreatable”

“We cannot let a disease for which a treatment exists mow down millions and leave a continent of orphans,” said writer **Mark Schoofs**, who won a Pulitzer Prize in 2000 for his coverage of AIDS in Africa published in the *Village Voice*. Without treatment, he said, Africa faces a plague of “biblical proportions.” In sub-Saharan Africa, where 24.5 million people are living with AIDS, the disease threatens to wipe out 10 percent of the population and make orphans of between 10 and 15 percent of the continent’s children.

In his keynote address at “AIDS in Africa,” a day-long discussion on Sept. 21 sponsored by the School of Public Health at the Joseph Slifka Center for Jewish Life, Schoofs called for a new social contract. “In a sane, compassionate world, drug companies could sell their drugs for a profit in rich countries and at cost in poor countries,” said Schoofs, a 1985 Yale College graduate.

The goals of treatment may have to step back from the norm in developed countries, he said, and be as modest as buying parents five more years of life. “We cannot let the perfect suck the life out of the good,” he said. “There already is a different standard of care in Africa. It’s called no care.”



Civil War Medicine

By Pem McNerney

ABOVE This portrait of Jonathan Knight by Nathaniel Jocelyn can be seen in the rotunda of the medical library. Knight was one of the founding professors of the Medical Institution of Yale College and was president of the National Medical Convention that formed the American Medical Association in 1846. He was president of the AMA in 1853-54.



An exhibit at the Cushing/Whitney Medical Library throws light on a pivotal period for American hospitals and New Haven's history.

HISTORICAL LIBRARY, CUSHING/WHITNEY MEDICAL LIBRARY (5)



When New Haven's first hospital opened in 1833, it was the product of years of political wrangling and a fund-raising campaign that swept up Yale's small medical faculty, who needed a place both to teach clinical medicine and to build their reputations and private practices. But the State Hospital, as it was known at first, also had trouble finding enough patients to fill its 75 beds. Wealthy and middle-class New Haven residents could afford to be seen at home by their private physicians, and hospital care in the early 1800s offered few benefits over home care. Demand from patients was so low that, for the first few years, the fledgling hospital on York Street rented out rooms.

That picture changed dramatically with the onset of the Civil War, according to a recent exhibit on New Haven's Hospitals at the Cushing/Whitney Medical Library. In 1862, the directors of the State Hospital leased the building to the U.S. government to be used as a military hospital. Through 1865, 25,340 soldiers were treated at the hospital, with only 185 deaths. During those war years, the hospital was known as the Knight U.S. Army General Hospital, after Jonathan Knight, a founding professor at the Medical Institution of Yale College and a leading surgeon in the state.

As patients poured into hospitals up and down the East Coast during the Civil War, doctors began to see that most deaths came not from bullets on the battlefield but as the result of infectious diseases including dysentery, typhoid and malaria. When the Knight Hospital was directed by the military to increase its number of beds to 1,000, it did so by building pavilions. This would allow doctors to segregate patients into wards to prevent the spread of disease.

While medical practices at the time were rudimentary, conditions at the hospital, and the personnel there, were vastly superior to those at the front. In general, wounded limbs were amputated with an instrument that resembled a hacksaw to halt the spread of infection. The operation was quick, generally taking no more than 15 minutes. An author in the *Knight Hospital Record*, explaining what sick and wounded soldiers have to suffer while en route from the battlefield, reported that "we are unloaded and assigned to a 'bed' on the nearest grassplot. Here we are surrounded by suffering in all its phases, and scenes most revolting. Bared wounds are on all sides, some of which are alive from exposure and lack of attention." The report went on to describe the amputation table, "where the



surgeons cut off limbs with as much composure as a butcher would saw a leg of mutton for your dinner table; where legs and arms, feet and hands, and toes and fingers, are heaped together in one conglomerated mess."

The name of the hospital was changed to New Haven Hospital in 1884. It grew significantly in the late 19th century along with other hospitals as cities burgeoned with the influx of immigration and industrialization and as improved medical care, including aseptic surgery and general anesthesia, began to attract middle-class and wealthy patients. In 1872, two wings were added. In 1882, a separate dormitory was built for the affiliated Connecticut Training School for Nurses, founded in 1873. The 1880s saw the addition of the Farnam Amphitheater for Surgery and the Gifford wings. The original State Hospital building was demolished in 1929 to make way for the Clinic Building.

In 1945, New Haven Hospital merged with Grace Hospital, a homeopathic facility chartered in 1889, to become Grace-New Haven Community Hospital. The York Street building known as the Memorial Unit opened in 1953 and, 12 years later, after a new affiliation with Yale University, the hospital became Yale-New Haven Hospital.

The exhibit, which was on display from May to September, can be viewed at info.med.yale.edu/library/exhibits/hospitals.

Pem McNerney is a writer and editor and the founder of Content Creation Co. in Madison, Conn.

ABOVE Most of these men were graduates of the Medical Institution of Yale College. Back row: Unidentified Army surgeon, Drs. Timothy H. Bishop, H.S. Pierpont, T. Beers Townsend, Charles A. Lindsley, Virgil M. Dow, unidentified Army surgeon. Front row: Drs. David L. Daggett, Levi D. Wilcoxson, Pliny A. Jewett, Worthington Hooker and W.B. Casey.

BOTTOM LEFT (OPPOSITE) The first hospital in New Haven, the State Hospital, opened in 1833 on a seven-acre plot between Cedar and Howard streets. The three-story stone structure could accommodate about 75 patients. This image appeared in E. Porter Belden's *Sketches of Yale College*, New York, 1843.

BOTTOM RIGHT (OPPOSITE) In 1862, the hospital was renamed the Knight U.S. Army General Hospital, after Jonathan Knight, who was president of the Board of Directors of the General Hospital Society of Connecticut and a professor at the Medical Institution of Yale College. The new name also reflected its new role as a military hospital that treated 25,340 soldiers during the Civil War, with only 185 deaths.

Neighbors



For years, health professionals and students at Yale have worked with their neighbors in the community in partnerships that provide benefits to all. These photographs, prepared for Yale's Tercentennial, tell that story.

**Text and photographs
by John Curtis**



2

1 & 2

Health on wheels

Physician associate Joy Burns takes the pulse of one patient, previous page, and checks the blood pressure of another, above, on the Community Health Care Van, which makes daily rounds through New Haven neighborhoods such as Fair Haven and The Hill and to soup kitchens and emergency shelters. Burns, two outreach workers and a social worker offer urgent care, HIV screening and counseling, substance abuse services, referrals to community health care sites and rehabilitation services, and screening for pregnancy, tuberculosis and sexually transmitted diseases. The van's sponsors are Yale University School of Medicine, Yale-New Haven Hospital, the Hospital of St. Raphael, Hill Health Center, Fair Haven Community Health Care Clinic, the City of New Haven and its Health Department, and the APT Foundation.

3

Cuddle time

Medical student Karen Thomas offered a little TLC to infants in the hospital when their parents couldn't be there.



3

During her first two years of medical school, Karen Thomas spent a few hours each Wednesday evening at Yale-New Haven Children's Hospital, cuddling infants whose parents couldn't be there with them. "It was, very literally, a way for me to lay my hands on a patient and contribute to their care," says Thomas. "In holding, talking, and playing with the children I thought I could help give each of them something that every patient needs—a little TLC."

Her fellow medical students, along with students at the School of Nursing, spend evenings at the Downtown Evening Soup Kitchen or the Columbus House homeless shelter, offering physical exams and checkups under the supervision of physicians and nurses. Students come to medical school laboratories from Hill Regional Career High School to learn anatomy. Public health students lead a workshop in self-esteem and conflict resolution at the New Haven Boys & Girls Club, just a few blocks from the medical school campus. The Physician Associate Program Class of 2001

John Curtis is the associate editor of *Yale Medicine*

spent a Saturday in June working on a Habitat for Humanity renovation project in the city's Newhallville neighborhood.

"Being able to participate in community projects like Habitat helps put things into perspective," says Class President Ed Hahm. "It's important for us to realize that there is so much more out there than just studying for weekly exams. Participating in community projects such as Habitat for Humanity gives us an opportunity to get involved with the community we're learning to serve medically."

These are just a few of the ways in which students in the health professions join with their neighbors in building healthier communities. As the University marks its 300th anniversary, it is looking not only to its own history and future, but also to its relationship with New Haven. The Tercentennial's opening weekend in October celebrated the University's neighbors with an open house. The photo essay that follows is adapted from a photo exhibit, "Neighbors: Working Together for a Healthy New Haven," displayed as part of the School of Medicine's celebration of the Tercentennial.

The photo essay documents the activities of students and health care providers who work in

In 1993 students and faculty contemplated forming an umbrella organization to coordinate the growing number of participating students and community service activities. covs, the Committee Overseeing Volunteer Services, was formed. It now oversees 17 activities involving scores of students and has established three categories of programs—health education and youth mentoring, clinical intervention and community development.

With the formation of covs, medical students reached out to students in nursing and public health, with whom they now work side by side at homeless shelters and soup kitchens. Now, about 70 percent of medical students are involved in at least one community activity. Both parties in these activities gain from the partnerships. "I came to school here with the goal of working with the homeless and low-income population when I graduate," says Holly Leopold, a nursing student who takes blood pressure and offers health counseling at the soup kitchen. "I have loved getting to know the soup kitchen guests and feel that my education, both in life and nursing, has been greatly enriched by my experiences there."

4 & 5

Making a connection

Medical students Suneil Ramchandani, below left, and Pamina Kim, below right, spent a Friday afternoon last spring at Roberto Clemente Middle School teaching A.J. Miranda and Miriam Lopez how to use search engines to navigate the Internet. Regular Friday after-school meetings are part of the Youth Onward program, which starts with workshops on self-esteem and social and health issues before shifting to one-on-one mentoring sessions.



4

the communities that border the medical campus. When student involvement with the medical school's neighbors began in its current form in the mid-1980s, activities focused on education—medical students held workshops in public schools to talk about drug abuse and AIDS. By the early 1990s students were serving as prenatal health advocates for new mothers, teaching high school students to teach their peers about AIDS, and bringing fifth-graders to campus for interactive lessons in medical science.



5

The worth of partnerships with New Haven's neighborhoods may not be felt for years, says Myron Genel, M.D., a faculty member who has worked for many years with student and community organizations. "The real rewards are going to come 10 to 15 years downstream when we can see the influence these programs have had on people's lives. They are long-term investments."

6, 7 & 8

A day of caring

For the past two years orientation for incoming medical students has included a "Day of Caring" to support community organizations. This year about 40 students, including Niya Jones and Ilene Wong, spruced up a garden at an adult day care center in Branford, Conn., bottom photo, and organized a basement library at Life Haven, a shelter for women

and children in Fair Haven, below. "We had lots and lots of volumes but there was absolutely no sense to the way they were shelved," says Barbara Winters, M.A., center, below left, program director at Life Haven. "The students moved all the books and categorized them for us. Now when the women go down they don't have to search the whole library."



6



7



8



26

9

9, 10 & 11

Medical mentors

Every spring for the past six years, local high school students have given up 10 Saturday mornings to join in a course that touches on HIV, nutrition, drug abuse, domestic violence and other health issues. The Health Professions Recruitment and Enrichment Program, a national program with 60

chapters around the country, fosters mentorships between minority medical and high school students and encourages the younger students to go to college. The students mark the end of each course with a graduation ceremony, and top students receive scholarships for college education.



10



11



12



16



14



13



15

12-15

Beyond the healing arts

Nursing students took part in three projects this year that examined New Haven's history and provided prenatal and primary care to its residents. They joined with the city's International Festival of Arts and Ideas to connect high school students with senior citizens and artists. The Yale students first trained students from Hill Regional Career High School in the rudiments of oral history (13). The high school students, including Victoria Bonaparte (12) then interviewed seniors at a local elderly housing complex and, with the guidance of artists, helped them make collages that told a story about their lives. The collages were displayed at the festival this past summer.

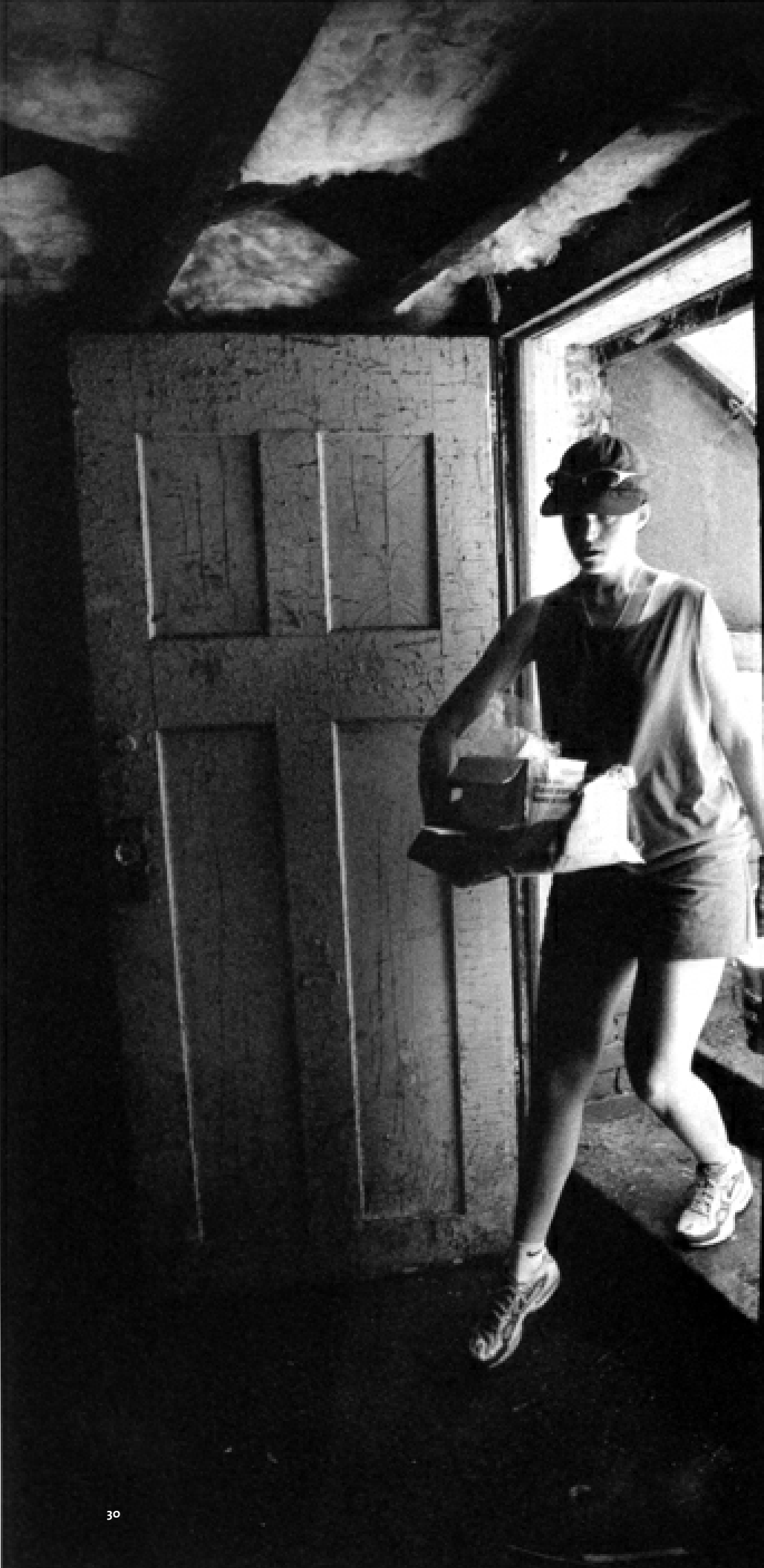
As a President's Fellow, nursing student Salma Mody (14) received a stipend that allowed her to spend the summer of 2000 working with young pregnant women at The Women's Center at Yale-New Haven Hospital. Mody, who plans a career as a nurse-midwife, offered prenatal care and worked to find ways to reduce pregnancy and sexually transmitted infections among young women.

As part of an ongoing program, nursing students such as Jennifer Sargent (15) offer basic medical care, such as blood pressure screenings, and basic hygiene supplies four nights a week at the Downtown Evening Soup Kitchen.

16

Painting a brighter picture

Started four years ago to encourage conflict resolution among teens, the New Haven Boys & Girls Club Volunteer Project has continued with an added focus on nutrition, personal hygiene and self-esteem. Once a month public health students lead younger students in discussions, followed by arts and crafts activities for teens and adolescents. Public health student Shoba Ramanadhan, above, helped a younger student with a painting exercise.



17 (this page) & 18

A day of labor

Members of the Physician Associate Class of 2001 put aside their medical studies on a Saturday last June to pick up rakes, hoes and shovels for a day of manual labor, left and below right. They joined members of the New Haven chapter of Habitat for Humanity in renovating two homes in the city's Newhallville neighborhood, where students cleaned up trash and helped prepare the garden of one home for seeding.

19, 20 & 21

Opening the campus

Every spring students come to the medical school from Hill Regional Career High School, just a few blocks away, to study anatomy with faculty and students. The anatomy classes are woven into the science curriculum at the high school. Students may also advance their science studies through SCHOLAR, a summer residential program that brings them to the Yale campus for three weeks of classes in biology and chemistry. Anatomy professor Bill Stewart, with the help of medical students, led studies of the human body, below right. G'Nee Herbert worked with research technician Crystal Bussey on DNA studies, right, while other students conducted experiments in a lab on Science Hill, far right. "We studied how to identify and clone genes and became acquainted with different types of lab equipment and how to use it," says Tom Haggerty, 17, a senior at Career.



19



21



20



18

New Haven's biotech boom

The medical school's efforts to bring its intellectual property to market have given the New Haven economy a boost
by Marc Wortman, photographs by Frank Poole

Clusters of industry: New Haven-area, Yale-affiliated biotechnology companies

Thirteen Yale-affiliated biotechnology companies are located in and around New Haven, and close to a dozen more businesses—the majority are expected to locate in the city—are now in development with assistance from Yale's Office of Cooperative Research. The existing New Haven-based companies are clustered in several locations in the city center and in nearby Branford.

Publicly traded companies

Alexion Pharmaceuticals
 Drug development for cardiovascular and autoimmune disorders, inflammation and cancer

CuraGen Corporation
 Genomics-based drug discovery and development

Genaissance Pharmaceuticals
 Population genomics and personalized medicine

Neurogen Corporation
 Drug discovery and development for psychiatric, metabolic and inflammatory disorders

Vion Pharmaceuticals
 Anti-cancer drug discovery, development and commercialization,

Companies developed by the Office of Cooperative Research *Founder's names in italics*

Achillion Pharmaceuticals
 Antiviral therapeutic discovery and development
Yung-Chi Cheng

Agilix
 Agriculture gene discovery
Paul Lizardi

Cellular Genomics Inc.
 Proteomics and functional genomics
Ira Mellman

L² Diagnostics
 Lyme disease diagnostics
Erol Fikrig, Joseph Craft and Richard Flavell

Molecular Staging Inc.
 Molecular diagnostics based on rolling circle amplification technology
David Ward and Sherman Weissman

PhytoCeutica
 Pharmaceutical development of traditional Chinese medicine
Yung-Chi Cheng

polyGenomics (now merged with Molecular Staging Inc.)
 Disease-associated genetic mutations
Sherman Weissman and David Ward

RadioTracer
 Development of novel brain imaging agents
Ronald Baldwin and Robert Innis

Recombinant Technologies
 Production and distribution of novel research reagents
Pazhani Sundaram

Companies in development

GasNet
 Anesthesiology Internet commerce
 Web site
Keith Ruskin and Charlotte Clark

TurboGenomics
 Bioinformatic tools for genomics
Gregory Gardiner

Phoenix Drug Discovery
 Disease-associated targets for drug development
Gregory Gardiner

UltraBiotics
 Development of novel antibiotics
John Swartley

Axotech
 Regeneration of CNS neurons
Stephen Strittmatter and Jeffery Kocsis

Rib-X Designs
 Development of antibiotics and novel drug targets based on ribosome inhibition
Thomas Steitz and Peter Moore

Archemix
 Molecular sensors for drug discovery
Ronald Breaker

Chemasense
 Odorants to modify insect and pest behavior
John Carlson

Epigenix Inc.
 Transgenic animals and functional genomics
Frank Ruddle and Adrian Hayday

Protometrix
 Informatic tools for protein expression analysis
Michael Snyder and Sherman Weissman

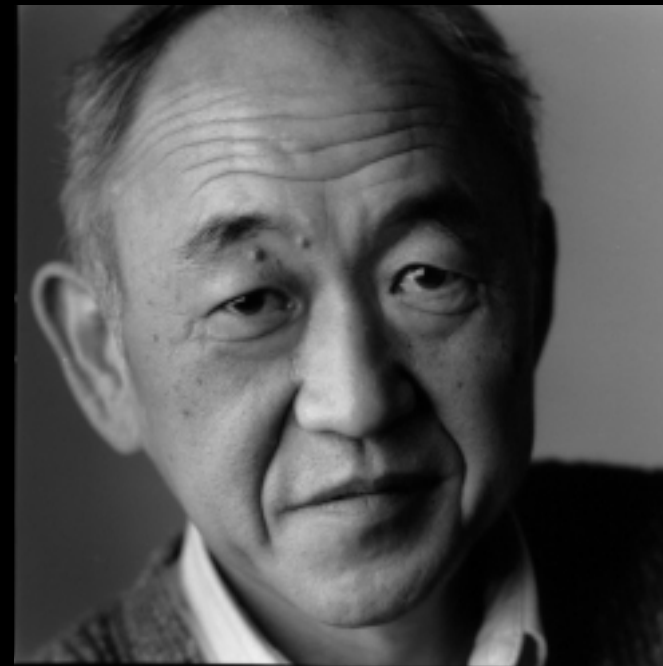
VaxInnate
 Vaccine cassettes for rapid development of novel vaccines
Ruslan Medzhitov and Richard Flavell



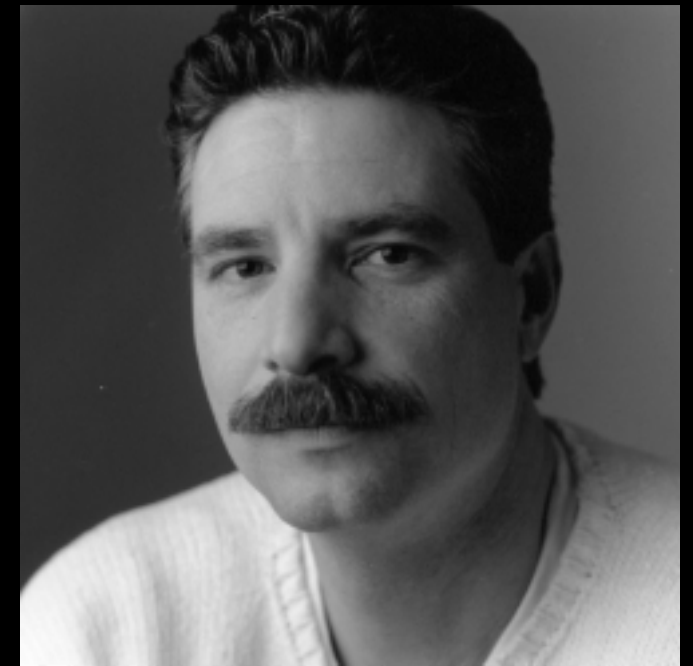
Four years ago, when staff from Yale's Office of Cooperative Research (OCR) went looking for scientific discoveries with commercial promise, they stopped first at the laboratory of Yung-Chi "Tommy" Cheng, PH.D., the Henry Bronson Professor of Pharmacology. Cheng is the inventor of eight pharmaceutical compounds with enough clinical promise to interest drug companies, an astounding number for one scientist. He is a co-discoverer of 3TC, one of the essential ingredients ▶

biotech boom

in the standard medication cocktails for patients with AIDS. And, the OCR staff learned, he had a portfolio of other compounds with potential for treating viral diseases such as HIV, Epstein-Barr virus and hepatitis B. “Individually,” recalls Alfred E. “Buz” Brown, PH.D., director of the OCR’s medical school office, “the clinical candidates were less likely to be developed by an existing company. Putting them together as a package, though, gave them synergies that, along with [Cheng’s] technological strength, gave us great potential for building a new company.” As it happened, OCR’s staff were in the process of forming a company around Cheng’s technology when they met William Rice, PH.D.



Yale pharmacologist Tommy Cheng discovered the compounds that showed promise as treatments for HIV, Epstein-Barr virus and hepatitis B.



Achillion President William Rice had a startup company, was willing to move it to New Haven, and liked Cheng’s clinical candidates.

Marc Wortman is a contributing editor of *Yale Medicine*.
Frank Poole is a photographer in New Haven.

Rice, a former research scientist at the National Cancer Institute (NCI), had built the management team for a new drug-discovery and development company based on promising technology he had developed at the NCI. But Achillion Pharmaceuticals, as the new company was called, didn’t have the clinical candidates or the pharmacological talent that Yale possessed. The Yale compounds were just the medicine Achillion needed to gain the venture capital financing necessary for its launch.

“Yale’s assets were highly complementary to what we had already built,” says Rice. “Having Yale as a partner gave us a huge lift.” Yale, too, saw Achillion as an opportunity to bring new money and business to New Haven and used its faculty, staff and network of connections to make it happen. Says E. Jonathan Soderstrom, PH.D., managing director of Cooperative Research for Yale University, “Buz Brown and [Associate Director] John Swartley [PH.D.] in our medical school office played a very active role in putting the business together with Bill, raising funds and bringing scientific talent and the business plan together. If it needed doing, we did it.” Rice had originally intended to base his company in Princeton, N.J., but Yale enticed the company to come to New Haven. Brown and Swartley shepherded Rice around the medical school, showed him

potential laboratory locations in town and even pointed out residential areas with schools that would be right for his young family. “They really made me want to be here,” says Rice. Together with the OCR staff and Cheng, Rice sought out investors. The partnership was so successful that, according to a report by the accounting firm of PricewaterhouseCoopers, Achillion’s more than \$17.2 million in financing represents the largest amount ever raised by a startup biotechnology company. Last summer, Rice moved his family to the New Haven area and Achillion opened its doors in renovated space in a former telephone company building within sight of the School of Medicine.

The launch of Achillion is just one of a growing number of successes for the biotechnology industry in greater New Haven, virtually all of which are directly tied to the School of Medicine. Most have not involved the complex deal-making that was behind the Achillion startup, but each of the eight new biotechnology companies—more are on the way—launched by Yale as part of a strategy to help jump-start the New Haven economy has the potential to grow explosively. With five existing publicly traded biotech companies and four major pharmaceutical research centers in the region, New Haven has emerged as a new mecca for biotechnology entrepreneurs.

Private investment returns to New Haven

The success of the last four years is part of a strategy announced by Yale’s leadership in 1995 to use the medical school’s intellectual might to attract private investment to New Haven. In the early 1990s, surrounded by a city with a declining industrial base and a reputation for poverty and crime, Yale woke up to the realization that it could not afford to look with benign indifference on its local environment. Dramatic change was needed at Yale itself if New Haven was ever to regain its former economic vitality. Guiding the transfer of Yale technology to private, for-profit companies within the region seemed the most promising way to assure that the gold and diamonds mined in Yale laboratories would be turned into jewelry close to campus. In 1995, the University tripled the OCR’s budget and staff and hired as its director Gregory Gardiner, PH.D., former worldwide director of external research for pharmaceutical giant Pfizer. Part of his mandate was to use promising Yale-licensed technology to build new companies that would locate in New Haven. As part of a wider effort by Yale to revitalize its surroundings, the OCR entered the entrepreneurial fray with a sharp focus on helping new businesses take root in the city. Commenting in 1998 on one of the first flowerings of those efforts, a



Buz Brown, Jon Soderstrom and John Swartley are the matchmakers who pair Yale-discovered technology with companies that have the means to apply that knowledge and bring it to market.



Bonnie Gould Rothberg, a medical school alumna, says drug-discovery and genomics powerhouse CuraGen benefits from its proximity to Yale.



New Haven Mayor John DeStefano Jr. welcomes growth in the biotech sector with open arms. It's an economic change that he says "will be defining the center city for decades to come."

significant new state investment in Science Park, New Haven's once-languishing technology incubator, Yale President Richard C. Levin said, "There are few things that Yale can do that will make a larger contribution to advancing the economy of this city and region than this expanded commitment to technology transfer. Yale can be seen effectively as the R&D engine that will spawn companies for New Haven's economy."

Gardiner, Soderstrom (who was then head of the OCR's medical school office) and their staff met with University scientists, respected venture-capital investors and state business-development leaders. Instead of focusing exclusively on the licensing of its intellectual property to existing companies, Yale began to explore ways in which New Haven-based startups might be formed around technologies conceived in its labs. The OCR worked closely with faculty whose discoveries had commercial value, wrote business plans, found investors willing to back the ventures and to bring business-development expertise to the table, and located appropriate space for growing high-technology businesses. It was an unprecedented effort by Yale to use technology transfer and in-house entrepreneurs to lure private investment into its hometown, and it worked better and faster than anyone could have foreseen.

The payoff has already been evident—for New Haven and for Yale. Among the recent successes, all eight new biotechnology companies have attracted hefty infusions of outside investment, together mounting well into the tens of millions of dollars; new high-technology research and development space has been built; and, perhaps most promising for the future of New Haven, a new entrepreneurial culture seems to have taken root within and outside the University to exploit the region's economic potential. During the first eight months of 2000, the privately held and publicly traded biotechnology companies in New Haven received more than \$554 million in new investments. This is a remarkable turnaround for a city that lost much of its industrial base, mostly in manufacturing, during the half-century following World War II.

An engine for employment

While it is still the new kid on the block relative to the long-established giant centers of the biotech industry around Boston, San Francisco and North Carolina's Research Triangle, New Haven now boasts some of the most advanced and fastest-growing biotechnology companies anywhere. Close to 1,000 people are now employed by the local industry, and every company is hiring as fast it can. "It's

incredibly exciting," says New Haven Mayor John DeStefano Jr. "We are seeing a change occurring in New Haven that will be defining the center city for decades to come. It's a transformation of the city's economy every bit as dramatic as that of the mercantile transition of 1900. New Haven will emerge as one of the dozen centers of the New Economy in America. It's happening as we speak."

As for Yale's contribution, Gardiner describes the process with this metaphor: "Complex crystals grow spontaneously once they are nucleated. Our job is to nucleate, to provide a little push and then let nature take its course." The first two companies—Molecular Staging Inc. and polyGenomics, both possessing novel genomics technologies invented at the medical school—opened their doors in 1997. Others quickly followed. "It was like an investment that starts small but, because it grows exponentially, becomes very large," says Gardiner, who retired in 1999 but continues to consult for his former office, teach at Yale and assist with the launch of local companies.

Without a doubt, Yale's participation has been essential to the blossoming of the New Haven biotechnology economy. Virtually all of the area's biotechnology companies are School of Medicine spin-offs and keep very close associations with Yale. Even for well-established

companies such as CuraGen Corporation, a leading developer of drug-targeting technology using genomic information that was founded in 1993, the Yale connections continue to be of value. Bonnie Gould Rothberg, M.D. '94, the company's group leader for pharmacogenomics, says, "We've always been very tied into Yale. We have active research collaborations and publish papers together with Yale scientists." Several members of CuraGen's scientific advisory board are Yale faculty members, including its chair, Richard P. Lifton, M.D., Ph.D., the chair of the medical school's genetics department. Like most companies in the area, CuraGen's executive and scientific leadership is also drawn from the medical school. The company's founder and CEO, Jonathan Rothberg, Ph.D. '91, received his doctorate and did his postdoctoral work at Yale, as did several other executives.

Yale may possess valuable technology and faculty with scientific know-how, but high-tech business development requires enormous, high-risk investment. Without broader support, Yale's efforts would not have been as well received by investors. After a long and at times acrimonious history with its home city, Yale leaders now speak of a partnership between the University and New Haven. Underlining the importance of that partnership, Yale created a new officer-level post, vice president and direc-

“Our job is to nucleate, to provide a little push and then let nature take its course.”

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Gregory Gardiner

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tor of New Haven and state affairs, two years ago. Bruce D. Alexander, a former high-level executive with the Rouse Corporation, a leading urban development firm, is the first holder of the office. “Clearly,” says Alexander, “the issue of New Economy companies is one where the University can exercise real influence. What the microchip revolution was to the last few decades, the life-sciences revolution will be for the next few. If we can catch this wave, it will recast New Haven’s economic development in a way that hasn’t been seen since it became a major manufacturing center more than a century ago.”

New Haven Mayor DeStefano credits Yale and the OCR for taking a leading role. “As the head of one biotech company said to me, ‘You have to be like a fighter pilot and react quickly in this business or you’ll be killed fast. Yale has been helping me to do just that.’”

Recognizing the state’s strong base in biomedical research, government and industry leaders have also backed investment in Connecticut’s biomedical sector. Connecticut United for Research Excellence Inc. (CURE), a 101-member organization of academic and research institutions, health care organizations and private companies, has long sought to promote the sector. As part of a wider effort to coordinate economic resources, Connecticut Governor John Rowland designated CURE to be the state’s “Bioscience Cluster” to foster growth in the industry. At CURE’s urging, the state legislature created a \$40 million fund to underwrite the building of new laboratory space. Managed by Connecticut Innovations Inc., the fund has benefited many companies including Yale spin-offs in Science Park and in the former telephone company building at 300 George Street, across the Oak Street Connector from the medical school. CURE president Debra K. Pasquale says, “This type of coordination and collaboration has never occurred in the state before, and that makes the environment for our efforts all the more fertile.”

A two-way street

While the economic benefits for the city and state are apparent, it is also true that development of a thriving private biotechnology economy provides significant scientific benefits for Yale’s own academic research and teaching missions—and the school’s reputation. “There are tremendous advantages in having companies here for our own resources,” says Sterling Professor of Genetics Sherman M. Weissman, M.D., who has consulted for private biotech-

nology companies elsewhere in the country for decades. “We do things of common interest and mutual benefit. We get analyses of our data we couldn’t otherwise afford.” He worked closely with the OCR in the formation of polyGenomics and Molecular Staging Inc. (MSI), companies based on new, extremely fast technology to detect disease-causing gene mutations that his departmental colleague David C. Ward, PH.D., and Associate Professor of Pathology Paul M. Lizardi, PH.D., created. With MSI just a five-minute walk from his Boyer Center office, it’s easy to drop by to and from work, he says. “I can have a hands-on view of what’s going on there.”

For the first time, pharmacologist Cheng does not need to fly somewhere distant to guide the development of the drugs he discovered and move them into the clinic. He is chair of the scientific advisory boards of Achillion and another biotech company founded in New Haven last year, PhytoCeutica. The latter company brings his knowledge of mainstream Western pharmacology together with traditional Chinese herbal medicine to develop drugs for improving cancer and stroke treatments. PhytoCeutica also possesses bioinformatic tools he developed in collaboration with the company’s chief executive officer, Patrick Kung, PH.D., which will be used for quality control and for discovering pharmaceutical uses for herbal medicines. “The companies have advantages being in New Haven,” Cheng says. “They have easy access to me for one. They can just walk over or call.”

Weissman, Cheng and other faculty with close ties to companies can also provide students and fellows in their laboratories with a convenient career path outside academia. Cheng says, “The companies want people trained in the technologies they use, so they are very interested in recruiting people from my laboratories. I’m not training students as scientists for the companies, but the students do now have more options for employment locally.” Says Rice, “We certainly are looking at postdocs as they finish their fellowships. There are major intangibles in just being affiliated with Yale when it comes to recruiting. Smart scientists want to be associated with a place like Yale.”



Writing the “operating system” for the new medicine

“Ultimately, our technology may allow physicians and patients to select specific treatments based on a patient’s genome.”

—Gualberto Ruaño, founder and chief executive officer of Genaisance Pharmaceuticals

As a student in the School of Medicine’s M.D./Ph.D. Program a decade ago, Gualberto Ruaño, Ph.D. ’92, M.D. ’97, expected to pursue an academic research career. Working with Kenneth K. Kidd, Ph.D., a professor of genetics and psychiatry, he discovered and patented a means of coupling the amplification of genetic materials with sequencing that has since proved valuable for biotechnology research and clinical medicine. “I got into the applied end of the research spectrum early, and I just went on from there,” he says. As chief executive officer of Genaisance Pharmaceuticals, a New Haven-based biotechnology firm, he licensed that same technology as part of his company’s strategy to develop new means of separating out genetic differences in the benefits and possible dangers people face in taking medications.

Ruaño’s goal is to create new medicines that are custom-tailored for individual patients based on their genetic profiles. Like many biotechnology companies, Genaisance is as much an information company as it is a laboratory-based discovery engine. In renovated, former industrial loft space in New Haven’s Science Park, some 50 software developers work alongside 50 more genetics researchers generating health care algorithms that will be used to analyze individual genomes and clinical data to come up with optimal treatment regimens. Ruaño hopes to create the “operating system” for health care of the future. He says, “We foresee knowledge of each individual’s unique genome being used to predict disease susceptibility and progression as well as each individual’s

response to a drug. Ultimately, our technology may allow physicians and patients to select specific treatments based on a patient’s genome.”

Genaisance combines analysis of genetic variation within diverse groups of people—largely drawn from ethnic and geographic population samples—with clinical data plotting individuals’ responses to medications. The technique allows the company to generate increasingly specific databases of genetic markers that will eventually prove useful in the development, marketing and prescribing of drugs. The Genaisance name, he says, “reflects the concept of moving from medieval flatness in imagery to the increasing awareness of depth, shape, color and individuality that took place in the Renaissance. We’re doing the same in genomics by developing an increasingly multi-dimensional understanding of disease and drug interaction.”

In a sense, Genaisance is a direct outgrowth of Ruaño’s time at Yale. Working with Frank H. Ruddle, Ph.D., Sterling Professor of Molecular, Cellular and Developmental Biology, who now heads Genaisance’s scientific advisory board and whose technology the company has also licensed, Ruaño launched the company in April 1997. Genaisance has grown rapidly and began selling its stock to the public in August.

“Yale was a magnificent opportunity for me,” Ruaño says. “One of the things that makes Yale special is exposure to leaders in different fields. I was able to capitalize on that experience. A lot of people I interacted with at Yale are now members of my company in some capacity.”

Finding the line

Closer ties to industry raise questions about conflicts.

“It is difficult to make the case that academic medicine is for the public good on the one hand if we are perceived as for sale on the other.”

—Yale professor and CURE founder Myron Genel

“The University is reviewing its conflict-of-interest policy and procedures with an eye to making them more robust and providing clearer guidance. We want to be sure that the University addresses the full range of issues that can arise.”

—Vice President and General Counsel Dorothy Robinson

As the boundaries separating academe and industry are redefined at Yale and other universities, questions arise about potential conflicts of interest: When money talks, will faculty focus their research on areas with the greatest possibility for commercial return? Will administrators guide appointments into research areas with the potential for more lucrative licenses? Will professors shirk their teaching duties to focus on outside businesses?

Underlying the questions is a concern that closer ties to the private sector have the potential to undermine universities' academic, educational, health care and public-service missions. Yale sometimes takes an equity stake in companies started by the Office of Cooperative Research (OCR), and licensing income—driven in large part by the success of d4T, an anti-HIV compound discovered in Yale laboratories—has grown rapidly, totaling more than \$46 million for the fiscal year ending last June 30. The money, which goes to support research and other University activities, represents more than 11 percent of Yale's total research expenditures.

Myron Genel, M.D., a Yale professor of pediatrics and the founding chair of Connecticut United for Research Excellence Inc. (CURE), worries that Yale and other universities risk harming the traditional character of medical schools that makes them so intellectually productive. “There is increasing concern that excessive emphasis on the commercial potential of academic research may damage the collegial, traditional nature of academic institutions,” says Genel.

Perhaps more significantly for the longer-term health of today's financially strapped medical centers, will all of this commercial activity reduce the public's willingness to support biomedical research? “What's at stake,” Genel says, “is the public perception of academic institutions. Nationally the academic medical community is vigorously attempting to sustain public support for the missions of medical schools and teaching hospitals. I believe we must keep our house in order on high-profile issues such as conflicts of interest by academic investigators, or, for that matter, on the part of our institutions. It is difficult to make the case that academic medicine is for the public good on the one hand if we are perceived as for sale on the other.”

To prevent the reality from arising or such a perception from emerging, Yale has set rules limiting faculty work consulting for outside companies and for avoiding conflicts of interest in undertaking research on behalf of commercial enterprises (See *Conflict-of-interest policy*, opposite page). It has also

undertaken a review of its current policies on conflicts of interest and commitment and on human subject protection to make sure they are up to date and appropriate. Under the existing rules, all faculty members must file an annual conflict-of-interest form that is reviewed by the provost and a standing committee. Faculty are at Yale to teach and carry out research and, to avoid so-called conflicts of commitment, they are permitted to work only one out of every seven working days for an outside organization. They also cannot undertake clinical trials on behalf of a company in which they hold a significant equity stake—one that could compromise, or appear to compromise, the results of the trial.

While research findings can sometimes be scrutinized for commercial value by sponsors prior to publication—a first look in return for support—all findings remain Yale's intellectual property to license out as it deems appropriate. Also, Yale will not accept any outside support that limits publication of research findings. “The more close ties we have with industry,” says Sara Rockwell, Ph.D., professor of therapeutic radiology and director of the Office of Scientific Affairs, “the more potential there is for conflicts of interest. Everything needs to be looked at to make sure that our research is free of the taint of a potential conflict of interest. It not only protects the research, it protects the faculty. One of the most awful things that can happen is to have your research findings accused of being tainted because of bias.”

The topic, a hot one at nearly every university in the United States, was the subject of a National Institutes of Health conference in August, with discussion focused on the ethical questions inherent in closer ties between academe and the private sector. At Yale, according to Vice President and General Counsel Dorothy K. Robinson, “the University is reviewing its conflict-of-interest policy and procedures with an eye to making them more robust and providing clearer guidance. We want to be sure that the University addresses the full range of issues that can arise.”

Still, most agree that the new push into biotechnology development in New Haven need not undermine the core missions of the University. “We feel very comfortable,” says Bruce D. Alexander, vice president and director of New Haven and state affairs, “that we can reconcile the traditional values of the University with respect to objective scientific research and the commercial application of that research to foster new companies that



HARRY BISHOP

will improve the quality of people's lives and cure human diseases.”

OCR Director E. Jonathan Soderstrom, Ph.D., finds that Yale faculty are not overly concerned with pursuing the commercial value of their work. From the OCR's perspective, the danger is that, if a new finding does not have patent protection prior to publication, no outside commercial entity will develop it because they will not be able to prevent competitors from copying the idea or product. “It's not unusual for us to learn about something on Friday that's set to be published on Monday,” he says. “We're always in a race with the faculty because they're not going to wait for us. They are more worried about publishing and tenure. The race here is to get the next cover of *Nature* and win Nobel prizes. If their desire was to get rich, they wouldn't have come to a university like Yale. I don't see that culture changing, and that's a good thing.”

Sitting in his cramped pharmacology department office, every inch of his desk covered with papers, Henry Bronson Professor Yung-Chi Cheng, Ph.D., does not look like a captain of one of the world's fastest-growing, most-high-tech industries. “The financial aspect is not a driving force,” he says. “My belief is that some of those medicines will turn out to be very useful for health needs which cannot be fulfilled by current approaches. That's my incentive for this.”

“We feel very comfortable that we can reconcile the traditional values of the University with respect to objective scientific research and the commercial application of that research to foster new companies that will improve the quality of people's lives and cure human diseases.”

—Yale Vice President Bruce Alexander

Conflict-of-interest policy

The following principles are among those that underlie the University's policy on conflicts of interest:

- External activities should not compromise an individual's ability to perform all the activities expected of him or her as a Yale employee.
- An individual should not receive remuneration for the conduct of his or her research or clinical activity at Yale or other Yale activity except through University channels (such as salary).
- An individual should not conduct research or clinical activity at Yale or carry on other Yale business under circumstances in which a reasonable person would infer that the Yale activity was distorted by the desire for or expectation of direct or indirect financial advantage.
- Yale researchers, including students and postdoctoral appointees, must not be precluded from publishing their work by agreements with external sponsors or on account of the interest of an external organization in which a faculty mentor or supervisor has an economic interest.
- Graduate students must not be held to non-disclosure of any aspect of their work in their meetings with individuals at Yale (including members of their dissertation advisory committees).
- Yale research facilities and research personnel should be used for Yale's research and educational purposes, except when other uses are specifically authorized by the University.
- An individual should not participate directly in the negotiation of research agreements, license agreements, equipment purchases or other arrangements between the University and an organization in which the individual has a significant economic interest.

The policy can be reviewed in its entirety at <http://www.info.med.yale.edu/ysm/research/conflict.html>

The year 2000 brought the working-draft version of the human genome and new hopes for medicine and the understanding of human biology. Genetics Chair Richard Lifton talks about what that means for research, both at Yale and around the world.

AFTER THE GENOME, "A NEW FUTURE FOR MEDICINE"

Left: Fragments of fluorescently labeled DNA light up a sequencing gel. The colors correspond to the four bases of deoxyribonucleic acid: green for adenine, yellow for thymine, blue for guanine and red for cytosine.



“We have caught the first glimpses of our instruction book, previously known only to God.”

—Human Genome Project leader Francis Collins

Early last summer, Francis S. Collins, M.D., PH.D. '74, FW '84, joined President Clinton and the CEO of Celera Genomics, J. Craig Venter, M.D., at the White House on a day that marked a turning point in the history of medicine. Scientists in a half-dozen countries, working together to sequence the 3.1 billion nucleotide base pairs that make up the human genome, had completed their first pass of the data several years ahead of schedule and would quickly be filling in the gaps to finish decoding the human book of life, as the seemingly endless string of adenines, guanines, cytosines and thymines has been described.

It was a moment in which millions of non-scientists became interested in genetics, a sudden curiosity reflected in front-page coverage around the world and the roller coaster for biotechnology stocks that preceded and followed the announcement. If people were excited by the news, they were also confused—not only by the complexities of molecular genetics but by what exactly was being announced. If the genome was 97 percent mapped, 85 percent sequenced and only 24 percent verified, what was so special about June 26, the day of the announcement?

The public proclamation, like the genome work itself, may have been speeded up by the race between the government-funded project and private upstart Celera to finish what is a gargantuan task, made possible by automated sequencing around the clock and massive computing power. (Venter brashly announced in 1998 that he would beat the public consortium's timetable and finish the job by 2000, five years ahead of its original target.) But although the working draft was not quite complete, the news of June 26 was indeed extraordinary. Not only had scientists determined the exact sequence of the vast majority of the chemical building blocks that make up human DNA, but they had also strung together this information across the entire human genome; despite the gaps, these overlapping sequences stretched from end-to-end of every chromosome.

Michael Fitzsosa is the editor of *Yale Medicine*.
Gale Zucker is a corporate and editorial photographer based in Branford, Conn.

“We have caught the first glimpses of our instruction book, previously known only to God,” said Collins, who received his PH.D. in physical chemistry from Yale in 1974 and trained as a fellow in genetics and pediatrics in the laboratories of Sherman M. Weissman, M.D., and Bernard G. Forget, M.D., in the early 1980s.

Among those called on to interpret the news was Richard P. Lifton, M.D., PH.D., chair of the Department of Genetics at the School of Medicine and a Howard Hughes Medical Institute investigator. (Lifton is also a member of the National Advisory Council to the National Human Genome Research Institute and of the NIH Oversight Committee for the Human Genome Sequencing Project.) “It’s an awesome accomplishment,” he told Jim Lehrer on the PBS *NewsHour* program the day of the announcement, “one that will have a profound impact on human biology and medicine for the next century. Who we are, why we are the way we are, why we succumb to different diseases—these are no longer open-ended questions but are bounded ones.”

So what comes next? In late summer, Lifton sat down with *Yale Medicine* Editor Michael Fitzsosa to discuss the impact of the genome project, the opportunities it provides investigators seeking the causes of rare and common diseases, and the likely next steps in Yale laboratories and around the world. Lifton, who came to Yale from Harvard in 1993 and heads the newly created Center for Genetics in Medicine at the School of Medicine, was the first to define the genetic underpinnings of hypertension, which affects 50 million people in the United States alone. With his colleagues he has identified 12 of the 13 genes known to play a role in regulating blood pressure, mostly through studies of families with rare disorders. In July, he and research fellow David S. Geller, M.D., PH.D., reported in *Science* that they had discovered a mutation responsible for an inherited form of hypertension during pregnancy, a complication that affects some 8 million women and their infants each year (See *Findings*, page 18).

Human Genome Project Director Francis Collins and his private-sector counterpart, J. Craig Venter, announced in June that the sequence of the entire human genome had been deciphered, at least in working-draft form. What significance does this have for medicine?

This really is a monumental achievement. The significance of it is that we can begin to see the outlines of a new future for medicine. We recognize that virtually every human disease—from cancer to heart disease, to asthma, to neuropsychiatric and other disorders—has significant inherited contributions. However, the road to identifying those components has been a narrow and twisting one. We haven’t known how many genes there are in the genome, what each gene itself is, where they are on chromosomes.

Having the human genome sequence really changes the way one thinks. We are no longer walking blindfolded through the forest not knowing how many trees there are, where they are, or when we’re going to stumble. We now have a precise map of where we’re going.

What exactly do the sequence data tell us?

There are a finite number of genes—probably 35,000 to 45,000, maybe as many as 100,000. So the inherited contribution to disease has to reside in the DNA sequences of those genes or the nearby components that regulate the expression of those genes. And so we go from this very open-ended problem to a bounded one, where we know all the genes and, in short order, will know all the common variations in the genes. It really becomes a matter of determining which variants in which genes contribute to the development of different human diseases. In many ways, it’s analogous to where chemistry was before and after the development of the periodic table of elements. Imagine if you were

the chemist trying to figure out the composition of a compound before you knew what all of the elements were. Now that we have the human genome sequence, it’s a matter of figuring out which genes are involved in which particular diseases.

What’s the next step for the gene mappers?

The draft version of the human genome sequence permits us to begin to identify, from the 3 billion base pairs of the human genome, all of the genes encoded in that genome. We can estimate that perhaps half of all human genes are undiscovered and will be identified by combining this raw sequence with other databases.

That will be one important step. In parallel, we will begin identifying all of the common variations that occur in these genes in human populations. Another process will be to go from the draft version of the human genome, which is 97 percent complete, to the full version, which we anticipate will come by the year 2003. Ambiguities as to the order of particular sequences within the chromosomes will then be resolved. We’ll have the whole sequence.

What we have now has been compared to a book with all the pages in order but the letters on each page scrambled. Is that unscrambling what will take place over the next few years?

Yes. In some cases we have pages that are complete. In other cases there are words and letters that need to be arranged properly. However, the information that we have today is a tremendous advance for the investigation of the inherited causes of disease. Having the genome sequence provides a tremendous boost to genetic research all over the world.

HHMI grant will support genetics research

The Howard Hughes Medical Institute (HHMI) has awarded the School of Medicine \$4 million over the next four years to establish the Center for Genetics in Medicine at Yale, which will support the recruitment of new faculty and provide core infrastructure to investigators throughout the school.

“The goal of the center is to apply the tools coming out of the Human Genome Project and human genetic analysis to the understanding of human disease,” said Richard P. Lifton, M.D., Ph.D., the principal investigator of the grant and the center’s director. “One of its premises is that there will be a new cadre of physician-scientists who are adept at performing these types of genetic analyses and have expertise in clinical medicine.”

Yale is among 41 institutions receiving a total of \$92 million over the next four years as part of HHMI’s new competition for Institutional Grants to Medical Schools. Ranging from \$1.6 million to \$4 million, the grants will help the schools find new ways to combine basic biomedical research and clinical treatment of patients, according to HHMI. They will also support programs in the rapidly developing field of bioinformatics. Yale was one of three institutions to receive the maximum \$4 million award.

The funding has helped Yale to recruit two new faculty members thus far, Kevin White, Ph.D., and Valerie Rienke, Ph.D., both from Stanford, who are leaders in the application of microarray technology. Microarrays are chips that enable the monitoring of gene expression in normal and abnormal cells derived from a variety of sources, from human to fruit fly.

The support from HHMI will also enable the expansion of Yale’s existing research facilities. The Keck Biotechnology Resource Center, one of the premier biotechnology resources in the country, provides core infrastructure for activities such as DNA sequencing and protein peptide synthesis. With the HHMI support, the center has become one of the first core facilities nationally to implement capillary DNA sequencing, a technology used in the Human Genome Project. In addition, funds have been used to establish a core microarray facility that will make this new technology broadly available at Yale.

What's an example of that? Say I'm a basic scientist, how are my prospects as an investigator different than they were perhaps a year ago?

I think there are at least three areas that will be strongly influenced by this. The first of these is genetic investigation. For the last decade, investigators have been mapping the chromosomal locations of disease genes by comparing the inheritance of chromosome segments to the inheritance of diseases in families. And many of these projects have located genes on chromosomes but have not yet been able to identify the gene in which mutations cause the disease. If you are able to refine the location of the disease gene only to a big chromosome segment that may contain 10 million base pairs, it's an extremely arduous task to identify all of the genes in that interval and then test which of them have mutations that cause the disease of interest. Having the genome sequence provides a tremendous bypass to that part of the project. Now you know all of the genes that lie within this 10-million-base-pair interval. Rather than putting an army of postdocs on the project to go through the heavy lifting of identifying all of the genes of that interval, you have somebody sit down at a computer terminal and parse through the sequence to identify all of the genes in that DNA sequence. All over the world, this is providing tremendous acceleration for human genetic studies. Projects that have lain dormant for a period of years are suddenly going to be brought to completion.

A second area will be the identification of new targets for therapeutic use. For example, many drugs now in clinical use target G-protein-coupled receptors, which sit at the cell surface and are activated by proteins or small molecules; nuclear hormone receptors, which sit inside

the cell and regulate transcription of genes; or ion channels and transporters that mediate passage of electrolytes in and out of tissues. Well, we've known about a number of these receptors, but it has been recognized that there are many more in the human genome that are ripe for discovery. Because these different types of targets share common elements, it will be relatively simple to identify all of the members of these gene families and to think about which of these might be targets for novel therapies. This is a first step, but it's important.

A third area in which the genome data will be enormously helpful is in identifying biochemical pathways that are altered in human disease states. We will have the ability to monitor the expression of every gene in a cell and to ask how that pattern of gene expression is altered in response to disease—or in response to a particular intervention. Up to now, most scientists have been able to deal with only one or a few genes at a time, having to make good guesses as to which pathways might be involved in disease processes. Now we can ask that question on a much larger and more comprehensive scale.

The genome project has received enormous attention, it has affected financial markets, and it seems to be affecting the way the public sees disease and health. Are great breakthroughs in medicine just around the corner?

In medicine we've done our best therapeutically when we have understood in great detail the underlying pathogenesis of disease. So I am optimistic that this greater under-

standing of human disease will ultimately translate into improved therapies. The timing and the pathway to achieving new treatments, however, are much harder to predict. In some cases we may readily identify new targets that are amenable to development of small-molecule agonists or antagonists. In other cases we may find new proteins that can very quickly lead to the development of new therapies. An example of that would be some of the growth factors for the hematopoietic lineage that are already in clinical use. That said, it will not always be the case that understanding the biology of a disease can be translated quickly into a treatment. A good example would be sickle cell anemia, where we've understood the molecular basis of the disease since 1953 but have yet to have a cure for the large majority of affected patients. Similarly, the bacterium causing tuberculosis was identified over a century ago, but it took 50 years to develop a cure for this disease. One has to recognize that the road from understanding the causation of disease to having effective treatment will be quite varied. In some cases there may be rapid successes, but in others it may be a very long process and we should be prepared for that and not falsely raise the expectations of the public.

In pursuing the goal of translating basic science knowledge into clinical interventions, what strategies seem to have the most potential?

The obvious key to this enterprise is increased collaboration between basic scientists and clinicians. The opportunities here are really unprecedented. When I started as a graduate student in 1975, it was very hard to think about productive projects that one could do at the interface between molecular genetics and human disease. Today, this

has completely changed. There is tremendous opportunity in almost every disease area. If, 25 years ago, you were interested in diabetes, productive avenues might have included trying to identify genes that are expressed in the pancreas or in fat cells, with the hope that these might be involved in some way in the pathogenesis of diabetes—a relatively indirect approach. Now we can take the clinical problems that we're interested in, study the disease directly with genetic approaches complemented by a monitoring of gene expression, and expect that we're actually going to learn something fundamental about the disease pathogenesis. This is qualitatively different than what we could do a generation ago. What is needed to make that work is expertise on both the clinical side and the basic science side and bridges between them.

There certainly has never been a time in the history of medicine in which there has been a more rapid unraveling of the pathogenesis of human disease. And this is just an extraordinarily exciting time to be interested in human disease biology.



“We are no longer walking blindfolded through the forest. We now have a precise map of where we're going.”

—Geneticist Richard Lifton

PHOTOGRAPHS BY GALE ZUCKER



JERRY DOMIAN

Vanderbilt professor is named physiology chair

Steven C. Hebert, M.D., one of the world's leading authorities on the kidney's regulation of potassium and other salts, has joined the School of Medicine as professor and chair of the Department of Molecular and Cellular Physiology.

Hebert arrived at Yale on July 1 from Vanderbilt University Medical School, where he had been the Ann and Roscoe R. Robinson Professor of Medicine and professor of cell biology, pharmacology, molecular physiology and biophysics. His appointment complements current strengths at Yale in several important areas of renal physiology as well as a long tradition of innovation in the field dating to the work of John Punnett Peters, M.D., here in the 1920s, '30s and '40s.

A long-time collaborator of his Yale departmental colleagues Gerhard H. Giebisch, M.D., and Walter F. Boron, M.D., Ph.D., whom he is succeeding as chair, Hebert received his medical degree in 1970 from the University of Florida and trained as a resident and fellow at the University of Alabama in Birmingham. He taught in Alabama, Virginia and Texas before joining the Harvard Medical School faculty in 1984 as an assistant professor of medicine (physiology). Hebert was a tenured professor at Harvard and director of the Laboratory of Molecular Physiology and Biophysics, Renal Division, at Brigham and Women's Hospital when he moved to Vanderbilt in 1997. His research has focused in part on the mechanisms and regulation of potassium, sodium and chloride transport by cells. He and colleagues cloned two of the major genes involved in potassium transport by the kidney, a potassium channel known as ROMK and the Na-K-2Cl transporter. A mutation in either gene results in improper salt handling

by the kidney and is a factor in end-stage renal disease and related disorders.

Hebert's other major research focus is on the roles of extracellular calcium as a "first messenger" regulating cell function. Working with Harvard colleague Edward M. Brown, M.D., he identified and cloned a G-protein-coupled receptor that senses extracellular calcium ions and provides the mechanism for extracellular calcium-mediated regulation of the function of parathyroid gland and of epithelial cells in the kidney and colon.

Hebert received the Carl W. Gottschalk Award from the American Physiological Society in 1995 and the Homer W. Smith Award from the American Society of Nephrology and New York Heart Association in 1997. He is also a founder and board member of two biotechnology companies, AquaBio Products Sciences and Luna Pearls, both of Portland, Maine. His wife, Patricia R. Hebert, Ph.D., is an associate research scientist in the Department of Internal Medicine.

The physiology department has 17 primary faculty members, 17 more with secondary appointments, 43 postdoctoral fellows and 24 graduate students. Hebert said he will be recruiting five new faculty members during the next five years, "bringing in people who have a focus in new and emerging areas of science such as the structure and function of proteins, the field of proteomics, and both physical and functional genomics."

Hebert said he has always had "one foot in clinical programs and the other in the basic sciences" and has the ability to interface between the two. "Particularly important in the post-genomic era is the translation of information obtained in basic sciences to clinical medicine," he said. "I'm very pleased to have the opportunity to do this, to increase the size of the faculty and shape the department over the next few years."

Six professors named to endowed professorships

University President Richard C. Levin, Ph.D., has named six members of the medical school faculty to endowed professorships. The appointments were recommended by Dean David A. Kessler, M.D., and Carolyn W. Slayman, Ph.D., deputy dean for academic and scientific affairs, who reviewed nominations from department chairs. The candidates were nominated for their excellence in scholarship and teaching.



Donald Cohen named Sterling Professor of Child Psychiatry

Donald J. Cohen, M.D., who specializes in neuropsychiatric disorders of children, including autism, Tourette's syndrome and attention disorders, recently achieved one of Yale's highest distinctions when he was named Sterling Professor of Child Psychiatry.

A child psychiatrist and psychoanalyst, he joined the Yale School of Medicine faculty in 1972 and has directed the Yale Child Study Center since 1983.

Cohen's clinical and research interests also focus on the interaction between biological and experimental factors in the emergence and treatment of psychiatric disorders, the early roots of personality development, the impact of psychosocial disadvantage on

children, national policy for children and adolescents and the impact of acute and persistent stress on children's development.

He is co-author or co-editor of a dozen books, including *Handbook of Autism and Pervasive Developmental Disorders*, *The Many Meanings of Play in Child Psychoanalysis*, *Understanding Other Minds: Perspectives from Autism* and *Tourette's Syndrome and Associated Disorders*. He has written more than 300 articles on neuropsychiatric childhood disorders.



Mary Tinetti, noted for work on health issues of the elderly, assumes Crofoot Chair

Mary E. Tinetti, M.D., the new Gladys Phillips Crofoot Professor of Medicine, has devoted her career to the health of the elderly and has a special interest in interventions that can help prevent older people from falling.

Tinetti is chief of geriatrics at the School of Medicine and director of the Program on Aging and the Claude D. Pepper Older Americans Independence Center. Her studies

show that, for many older people, injuries from falls often result in a loss of both mobility and independence and can be the beginning of a series of health problems that eventually lead to death.

Tinetti has earned national prominence for her work on fall-reduction strategies and her studies showing that physical exercise that improves balance and builds lower-body strength, such as dancing and tai chi, has a major impact on reducing falls.

In recent research with Yale colleagues, Tinetti found that the problem of dizziness in elderly people is more often a result of multiple problems—described as a "geriatric syndrome"—than a symptom of a particular illness.

Tinetti has written or co-authored nearly a hundred articles on health issues affecting the elderly, including alcohol consumption, home vs. hospital care for chronic illness, the care of persons with dementia, and older drivers at risk.



Stephen Strittmatter is appointed to new Coates Chair in Neurology

Stephen M. Strittmatter, M.D., Ph.D., who has been named to the Vincent Coates Chair in Neurology, is a specialist in the development and regeneration of the nervous system.

Earlier this year, he earned international attention for leading a research effort that resulted in the discovery of a protein that prevents the regeneration of axons following a traumatic injury to the central nervous system. The discovery of this protein, called Nogo, may lead to treatments to stimulate regrowth of axons in order to reverse brain and spinal cord injuries. Strittmatter is now engaged in work to define the nature of Nogo receptors and to develop methods to block those receptors.

A member of the Yale faculty since 1993, Strittmatter

continued on page 50



Stephen Strittmatter
continued

holds joint appointments in neurology and neurobiology. Since coming to Yale, he has been the principal investigator of a number of research projects focusing on axonal regeneration. He has received major grant awards for these projects from the National Institute of Neurological Disorders and Stroke, the Christopher Reeve Paralysis Foundation, the Donaghue Foundation and the John Merck Fund.

The Coates Chair in Neurology was endowed with a gift from alumnus Vincent J. Coates '46 of Sunnyvale, Calif. He is chair and chief executive officer of Nanometrics, a company that designs and manufactures microscopes to monitor the fabrication of integrated circuits on wafers, flat display panels and magnetic recording heads. In addition to his abiding interest in engineering, which he studied as an undergraduate, Coates has a strong personal interest in the study of the chemistry of the brain.



Pharmacology expert John Krystal is designated Kent Professor

John H. Krystal, M.D., the newly appointed Albert E. Kent Professor of Psychiatry, is an expert on the psychopharmacology and neurobiology of schizophrenia, traumatic stress and alcoholism and substance abuse.

His most recent research focuses on the neurobiology of schizophrenia and alcoholism, and he has developed several new investigative paradigms to probe possible neurobiologic abnormalities in schizophrenia. He also established clinical research programs using magnetic resonance imaging and magnetic resonance spectroscopy in order to study the brains of healthy individuals vs. those with psychiatric illnesses.

Krystal is deputy chair for research in the School of Medicine's Department of Psychiatry and is deputy director for clinical research in the Abraham Ribicoff Research Facilities at the Connecticut Mental Health Center. He is author or co-author of more than 100 articles on a wide range of subjects, including post-traumatic stress disorder, the body's responses to certain antipsychotic drugs, effects of sleep deprivation on depressed individuals and chronic alcohol use. He has also written numerous book chapters and reviews.

Asthma specialist Jack Elias named a Waldemar Von Zedtwitz Professor of Medicine

Jack A. Elias, M.D., newly named as Waldemar Von Zedtwitz Professor of Medicine, is a noted specialist in asthma and lung diseases and lung injury.

One focus of his research is the pathogenesis of asthma, and he has been widely quoted in the national media on possible causes of the increase in childhood asthma in the past 15 years.

Elias has been a professor of medicine and chief of pulmonary and critical care medicine at the School of Medicine since 1990. He was the principal investigator of nearly 20 research projects funded by major grants. In 1997 he became director of the Yale-based Specialized Center of Research for Asthma, one of seven in the nation selected by the National Institutes of Health for a five-year study into the causes of the disease.

Elias writes and lectures widely on chest diseases, and he has been an invited speaker at many medical symposia, conferences and grand rounds. He is co-editor of the two-volume textbook *Fishman's Pulmonary Diseases and Disorders* and has written several chapters in medical textbooks and other publications.



Keith Joiner, expert on infectious disease, also appointed a Von Zedtwitz Professor

Keith A. Joiner, M.D., newly appointed as Waldemar Von Zedtwitz Professor of Medicine, is an expert on infectious diseases whose research has focused on malaria, which kills some two million people each year, and toxoplasmosis, a parasitic infection commonly seen in people with AIDS.

A member of the Yale faculty since 1989, he is chief of the Section of Infectious Diseases and director of the School of Medicine's Investigative Medicine Program. He holds joint appointments in the departments of epidemiology and public health and of cell biology.

Joiner has co-authored nearly 200 articles in scientific research publications and lectures widely in the United States, Canada, Europe and Australia on topics ranging from septic shock to tropical diseases to bacteria-host cell interactions. He holds two patents, one as the co-inventor of a method for treating gram-positive septicemia, and the other for a quantitative assay for human terminal complement cascade.

Yale University School of Medicine 2001 Lectures

Tercentennial Series Harvey Cushing/John Hay Whitney Medical Library

Lectures, free and open to the public, begin at 5 p.m. in the Medical Historical Library, 333 Cedar Street. Reception follows. For information call (203) 785-5352. Remaining lectures in the series:

January 25
Readings from the Work of Richard Selzer
Richard Selzer, M.D.
Retired Professor of Surgery
Yale School of Medicine
Writer

February 8
When Cocaine and Heroin Were New: America's First Response
David F. Musto, M.D.
Professor of History of Medicine and Psychiatry,
Professor of Child Psychiatry
Yale School of Medicine

February 22
Struggling to Stay Human in Medicine: American Medical Students and Radical Health Movements in the 1960s
Naomi Rogers, Ph.D.
Director of Undergraduate Studies, Women's and Gender Studies Program,
Yale University
Lecturer, History of Medicine
Yale School of Medicine

March 8
History of New Haven Medicine
Sherwin B. Nuland, M.D.
Clinical Professor of Surgery
Yale School of Medicine

April 12
A Legacy of Medicine in Art: the Clements C. Fry Collection at Yale
Susan Wheeler, *Consultant*
The Clements C. Fry Collection,
Cushing/Whitney Medical Library, Yale School of Medicine

April 25
Evolution of Infectious Disease
53rd Annual Keynote Address presented by the Associates of the Cushing/Whitney Medical Library
Joshua Lederberg, Ph.D.
Nobel Laureate
Emeritus President
Rockefeller University
New York, N.Y.

The Program for Humanities in Medicine

Lectures, free and open to the public, begin at 5 p.m. in the Beaumont Room, 333 Cedar Street. For more information, call Clara Gyorgyey at (203) 785-4744 or 785-6102. Remaining lectures in the series:

February 1
Words Over War: Prevention of Deadly Conflict
Melanie Greenberg, J.D.
Attorney/Author
Washington, D.C.

February 15
Marcus Welby, A.P.R.N.: Paradigm Shifts in Today's Caregiving?
Linda H. Pellico, A.P.R.N.
Director of Graduate Program
Yale School of Nursing

March 1
Doctors and Patients in Visual Relation
Ann Starr, M.A.
Artist, Wellesley, Mass.

March 22
Patient and Doctor: A Relationship of Healing
The Bayer Lecture
Eric Cassell, M.D.
Clinical Professor of Public Health
Weill Medical College, Cornell University, New York, N.Y.

March 29
Myth, Medicine and the Human Body
Sherwin B. Nuland, M.D.
Clinical Professor of Surgery
Yale School of Medicine

April 5
Muscle, Motion and Art in the Late 19th Century
James D. Kenney, M.D.
Clinical Professor of Internal Medicine
Yale School of Medicine

April 19
Living with Limits: Devising an Affordable, Sustainable Medicine
The Howard Spiro Lecture
Daniel Callahan, Ph.D.
Director of International Programs
The Hastings Center
Garrison, N.Y.

April 26
The Doctor as an Internationalist
Michael H. Merson, M.D.
Dean of Public Health
Yale School of Medicine

May 3
Spiritual Life of Patients
Richard G. Druss, M.D.
Clinical Professor of Psychiatry
Columbia University
New York, N.Y.

May 10
Healer of Broken Hearts: Ruminations of a Cardiologist
The Multicultural Lecture
Forrester A. Lee, M.D.
Associate Professor of Internal Medicine, Assistant Dean of Multicultural Affairs
Yale School of Medicine



Sherwin



Tamborlane



Allison



Kohorn



Lengyel

Yale physicians have taken on leadership roles in the American Diabetes Association, the nation's leading voluntary health organization supporting diabetes research, education and advocacy. In July **Robert S. Sherwin**, M.D., the C.N.H. Long Professor of Medicine, assumed the presidency of the National Board of Directors. **William V. Tamborlane Jr.**, M.D., professor of pediatrics, and alumnus **Donald Ross Coustan**, M.D. '68, HS '73, Chace/Joukowsky Professor and Chair of Obstetrics and Gynecology at Brown University School of Medicine, were elected to the board at its 60th annual meeting and scientific sessions, held in San Antonio.

Three senior faculty members who came to Yale School of Medicine in the 1960s attained emeritus status this year: **Truett Allison**, PH.D. '62, professor of neurology and psychology, **Ernest I. Kohorn**, M.CHIR., F.R.C.S., F.R.C.O.G., professor of obstetrics and gynecology, and **Peter Lengyel**, PH.D., professor of molecular biophysics and biochemistry and senior research scientist.

Allison, an expert on visual neurophysiology and cognitive neuroscience, has conducted research in the localization of function in the human brain, the neurophysiology of the human and monkey somatosensory system, the evolution of sleep, the location and functional characteristics of the human cortex within the

mesial wall, and visual object recognition. Allison joined the faculty in 1963 and has held concurrent appointments at the VA Connecticut Health-Care System in West Haven since 1965. He became a full professor in 1980.

Kohorn, a pioneer in the use of obstetric ultrasound and in gynecologic oncology, first came to Yale as an instructor in 1965. After a year in England, where he developed the first ultrasound unit for obstetrics and gynecology in London, he returned to New Haven to set up the first obstetric ultrasound unit in New England. In 1970 Kohorn established what is now the Yale Center for Trophoblastic disease and was also one of the first gynecologists to use chemotherapy in the management of ovarian cancer. He has been president of the New England Association of Gynecologic Oncologists, the American Urogynecologic Society and the Society of Gynecologic Surgeons.

Lengyel has studied the control of protein synthesis with a focus on the genetics and biochemistry of the action of interferons, the secreted proteins of vertebrates that have antiviral, cell growth regulatory and immunomodulatory activities. Lengyel joined the faculty in 1965 as an associate professor and was appointed full professor in 1969. He also served as director of graduate studies of molecular biophysics and acting director of the division of biological sciences.

Mark R. Cullen, M.D. '76, HS '80, professor of medicine in occupational medicine and of public health, was selected by the Semiconductor Industry Association in October to be a member of an independent Science Advisory Committee. Members provide an independent perspective on possible cancer risks within the U.S. semiconductor manufacturing industry. Cullen is also a member of the Institute of Medicine of the National Academy of Sciences.



Vincent T. DeVita Jr., M.D., HS '66, professor of medicine and

of epidemiology and public health and director of the Yale Cancer Center, has received the first Saul Rosenberg Research Award from the Lymphoma Research Foundation of America. The \$50,000 prize recognizes DeVita's 40 years of seminal contributions to the treatment of patients with Hodgkin's lymphoma and will support additional research into diagnosis and treatment of the disease. The award honors Saul Rosenberg, emeritus professor of medicine and radiation oncology at Stanford University Medical Center.



The American College of Cardiology presented an award for humanitarian accomplishments to Nelson R. Mandela of South Africa at ceremonies held in Puerto Rico in May. **John A. Eleftheriades**, M.D. '76, HS '83, professor and chief of cardiothoracic surgery, was one of two American surgeons invited to speak at the event. Eleftheriades' addresses were "Yale Perspectives on the Thoracic Aorta" and "Conventional Cardiac Procedures as an Alternative to Transplantation in Patients with Left Ventricular Failure."



Arthur C. Evans, PH.D., assistant clinical professor of psychiatry, has been named deputy commissioner of the Connecticut Department of Mental Health and Addiction Services. Governor John G. Rowland announced the appointment in June. Evans served as director of managed care for the department for the past two and one-half years.



Durland Fish, PH.D., associate professor of epidemiology in microbial diseases, has been named editor of *Vector Borne and Zoonotic Diseases*, a new peer-review medical journal focusing solely on

diseases transmitted to humans by insects or animals. The journal will be published both in print and online.



Gary E. Friedlaender, M.D., HS '74, the Wayne O. Southwick Professor and

chair of orthopaedics and rehabilitation, became chair-elect of the American Academy of Orthopaedic Surgeons (AAOS) Council of Musculoskeletal Specialty Societies at its 67th annual meeting in Orlando in March. Friedlaender is chair of the Research Committee and Kappa Delta Research Award Committee for the AAOS. He is also a member of the Council on Education, the Council on Research, the Bone and Joint Decade Committee and the Task Force on Patient-Physician Communication.



Charles A. Greer, PH.D., professor of neurosurgery and neurobiology and

co-director of the Interdepartmental Neuroscience Program, was appointed chair of the National Institutes of Health Center for Scientific Review's Integrative, Functional and Cognitive Neuroscience Study Section 4. His two-year term began in July.



Lise R. Heginbotham, PH.D., assistant professor of molecular biophysics

and biochemistry, was selected as a 2000 Pew Scholar in the Biomedical Sciences by the Pew Charitable Trusts. She received the award for her research relating to ion channel structure and function and the relay of electrical signals through the membrane of the nervous system.



Jeannette R. Ickovics, PH.D., associate professor of epidemiology in

chronic disease, and of psychology, received the American Psychological Association's Award for Distinguished Contribution to Psychology in the Public Interest. Her research focuses on women and HIV/AIDS, particularly the acceleration of the disease among women.



Ruth J. Katz, J.D., M.P.H., associate dean for administration and assistant professor of medicine and public health, has been appointed to the National Institutes of Health Advisory Committee on Research on Women's Health for a four-year term that ends in 2004. As counsel to the U.S. House of Representatives Subcommittee on Health and the Environment in the early 1990s, Katz helped

write key legislation ensuring that women would be better represented in federally funded clinical trials. She has been active in building the women's health program at Yale since arriving at the school in 1997.



Ilona S. Kickbusch, PH.D., professor of public health and of political science and head of the division of global health, was presented a gold medal for meritorious service to the province of Vienna in May. The medal was awarded for her work at the World Health Organization in building a health promotion infrastructure in the city of Vienna. The work led to initiatives such as an overarching healthy cities program, a shift in health policy priorities and a series of programs to increase health promotion in schools, hospitals and women's wellness centers.



Lowell S. Levin, M.P.H. '60, professor emeritus and lecturer in public health,

has been serving as a senior consultant to the World Health Organization's new training and policy center in Venice, Italy. Levin developed the center's initial operational plan and will remain an advisor during its implementation.

Becca Levy, PH.D., assistant professor of epidemiology, was awarded the Brookdale National Fellowship for Leadership in Aging in July. She was one of four researchers in the country selected to receive the award, which is presented for excellence and promise in the field of geriatrics and gerontology.



Marc I. Lorber, M.D., professor of surgery and chief of organ transplantation

and immunology, was named president-elect, in May, of the American Society of Transplant Surgeons and will assume the presidency in May 2001. He recently completed a three-year term as the treasurer. Lorber was also elected a fellow of the American Surgical Association for his accomplishments, dedication and years of academic service and will be inducted into the association in April.



Bernard Lytton, M.B.B.S., F.R.C.S., the Donald Guthrie Professor Emeritus of Surgery, was elected president of the Clinical Society of Genito-Urinary Surgeons for 2000. His first annual meeting as president was held in November in Chicago. Lytton was also honored in September at "A Tribute to Living Donors" in Old Saybrook, Conn., a celebration of the successes and advances made in organ transplantation. Lytton performed the first kidney transplant at Yale in 1967.



Ruslan M. Medzhitov, PH.D., assistant professor of immunobiology, has

been named an assistant investigator for the Howard Hughes Medical Institute (HHMI), bringing the total number of HHMI investigators at Yale to 17. HHMI, based in Chevy Chase, Md., with an endowment of \$15 billion and annual budget of more than \$600 million, enters into long-term research collaboration agreements with universities and other academic research organizations, where its investigators hold faculty appointments. Medzhitov's research focuses on various aspects of innate immunity, including molecular mechanisms of innate immune recognition, control of adaptive immune responses by innate immune recognition, and mechanisms of autoimmunity and allergy. Medzhitov, originally from Tashkent, Uzbekistan, worked in the laboratory of Russell F. Doolittle at the University of California, San Diego, and received his PH.D. degree in biochemistry from Moscow University before being recruited to Yale by Charles A. Janeway Jr., M.D., in 1994. Medzhitov was among 48 scientists from 31 institutions selected as HHMI investigators in 2000.



Charles W. Needham, M.D., clinical instructor in neurosurgery, discussed

pacemaker systems in May at the McGill Neurosurgical Reunion. These systems, located at the center of the brain, are currently being investigated to account for the mechanisms of depression, obsessive-compulsive disorder, tinnitus, chronic pain and Parkinson's disease. The meeting, a celebration of 100 years of neurosurgery, was held at the Montreal Neurological Institute.

Sara C. Rockwell, PH.D., professor of therapeutic radiology and pharmacology, and in the Cancer Center, was appointed editor-in-chief of the journal *Radiation Research* at the May meeting in Albuquerque of the Radiation Research Society Council. Rockwell has served as a member of the Board of Editors of the interdisciplinary journal.



Gastroenterologist **James C. Rosser Jr., M.D.**, associate professor

of surgery, was featured in a documentary entitled "Cybersurgery" that premiered in July on the Discovery Health Channel. The documentary, which explored cutting-edge technology in medicine, followed Rosser as he taught a procedure through telemedicine to a surgical team in the Dominican Republic from his office at Yale.

Mark J. Schlesinger, PH.D., associate professor of public health, received the Association for Health Services Research's 2000 Article of the Year Award in June at the organization's annual meeting in Los Angeles. Schlesinger's paper, "No Exit? The Effect of Health Status on Dissatisfaction and Disenrollment from Health Plans," was co-authored with **Benjamin G. Druss, M.D., M.P.H.**, '95, assistant professor of psychiatry and public health, and **Tracey R. Thomas**, research associate in epidemiology and public health.



Marvin L. Sears, M.D., adjunct professor of ophthalmology and visual science, and founder and former chair of the department, was recognized by the American Glaucoma Society with the Lifetime Achievement Award for contributions to the scientific understanding and clinical treatment of glaucoma. The society's tribute included a video from former President Bush congratulating Sears. This spring, Yale University conferred on Sears the Meritorious Service Award for Science and Engineering. At a symposium last spring, Yale Alumni in Ophthalmology and the Department of Ophthalmology and Visual Science honored Sears with a symposium. In addition, benefactor Herbert Lotman endowed a lectureship in Sears' name.



Howard M. Spiro, M.D., professor emeritus of medicine and founder of

the Program for Humanities in Medicine at Yale, received the 2000 Julius Friedenwald Medal in May from the American Gastroenterological Association. The medal, the society's highest formal recognition to an individual, honors a lifetime contribution to the field of gastroenterology.



Marietta Vazquez, M.D., post-doctoral fellow in pediatrics, has

received support for a four-year fellowship under the Robert Wood Johnson Foundation's Minority Medical Faculty Development Program. Vazquez is currently conducting research to assess the protective efficacy of two recently approved vaccines for Lyme disease and chicken pox.



Eiji Yanagisawa, M.D., HS '59, clinical professor of surgery, received the

Chevalier Jackson Award in May from the American Bronchoesophagological Association at its annual meeting in Orlando. Yanagisawa spoke on "Videography and Digital Imaging of the Larynx" in June at the 11th World Congress of Bronchoesophagology in Yokohama, Japan.



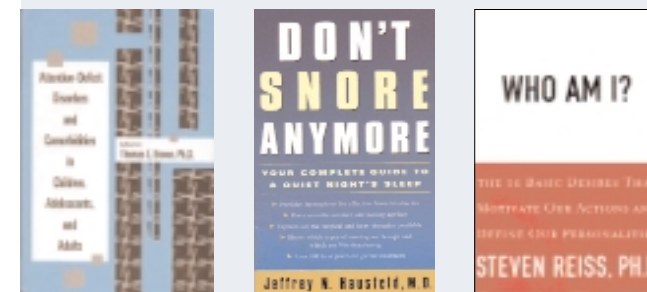
JOHN CURTIS

William Glenn and his wife, Amory, attended a reception in his honor in the Historical Library.

Endowed chair to honor cardiothoracic pioneer

Pioneering cardiovascular surgeon William W.L. Glenn, M.D., is being honored with a professorship in his name at the School of Medicine. During almost 40 years on the faculty Glenn and his colleagues were among the first to develop innovative techniques in cardiovascular and thoracic surgery. In 1948 he used a mechanical pump as a substitute for the heart's function. Six years later he devised a shunt to bypass a malformed right heart. Under Glenn's leadership, in 1959, the first use of the radio frequency cardiac pacemaker in the Western Hemisphere took place at Yale. Glenn also invented the phrenic pacemaker, a diaphragmatic pacemaker that allowed patients afflicted with Ondine's Curse to breathe regularly. The list of firsts continued through 1985, when Glenn retired. He has received his share of honors during his career—including the Francis Gilman Blake Award for excellence in the teaching of medical sciences and a lecture in his honor established by the Council on Cardiovascular Surgery of the American Heart Association. In June the medical school announced the establishment of the endowed chair, the William W.L. Glenn, M.D., Professorship in Cardiothoracic Surgery.

New Books



The following books by alumni and faculty have recently been published:

Attention-Deficit Disorders and Comorbidities in Children, Adolescents, and Adults, edited by Thomas E. Brown, Ph.D., assistant clinical professor of psychiatry and associate director of the Yale Clinic for Attention and Related Disorders, American Psychiatric Press, Inc. (Washington, D.C.), 2000. In this book for professionals, 24 internationally recognized researchers summarize what is currently known about treatment of ADHD with various high-comorbid disorders. The book offers research-based guidelines for assessment and treatment of these complicated cases.

Don't Snore Anymore: Your Complete Guide to a Quiet Night's Sleep, by Jeffrey N. Hausfeld, M.D. '78, HS '82, Three Rivers Press (N.Y.), 1999. Snoring is more than just a nuisance; it also leads to sleep loss and fatigue and can be a symptom of a more serious respiratory problem. Detailed medical information for diagnosing and treating snoring-related illness can be found in this consumer reference.

Who Am I? The 16 Basic Desires that Motivate Our Actions and Define Our Personalities, by Steven Reiss, Ph.D. '77, professor of psychology and psychiatry at Ohio State University and the director of the Nisonger Center for Mental Retardation and Developmental Disabilities, Tarcher/Putnam (N.Y.), 2000. Combining the methods of psychology with the ideas of philosophy, this book offers a new approach to the search for meaning and happiness as well as insights into romantic relationships, family dynamics, careers and spirituality.

Send notices of new books by alumni and faculty to Cheryl Violante, Yale Medicine Publications, P.O. Box 7612, New Haven, CT 06519-0612.

A new year, 106 new careers

Eclectic view of medicine unites first-year class.

RIGHT First-year student Michael Herce celebrates with his mother, Clare Herce, and aunt, Barbara Jarry.

BELOW Milton Hwang, Edidiong Ikpe and Jesse James were among the 106 members of the Class of 2004 who began medical school with the symbolic donning of a white coat.



GALE ZUCKER (3)



When Dagan Coppock came to the School of Medicine as an applicant, he knew he would like it here. His interviewers seemed interested not just in his GPA or what science courses he had taken, but in the poetry he enjoys writing. “I knew they were going to be supportive of other interests,” said Coppock, who took time off after his graduation from the University of Tennessee to study traditional healing in Nigeria.

Encouragement of other activities, the independence offered by the Yale System and the collegial atmosphere were among the reasons first-year students gave for deciding to study medicine at Yale. “I can concentrate on whatever I want,” said Aaron Berger, a graduate of the University of Pennsylvania from Lexington, Ky. “Laboratory research, volunteer work, you can go ahead and do it.” The school’s strong commitment to basic science research was another draw, he said.

Richard A. Silverman, director of admissions, noted that applications, available electronically through the American Medical College Application Service last year for the first time, were up 43 percent at a time when fewer students nationally are applying to medical school. The increase, Silverman said, was higher than the admissions office had projected. He attributed the increase in part to the new application system and in part to the attraction of Yale.

Because of the increased applicant pool, the rate of acceptances dropped from about 8 percent to 6 percent. “That’s a big difference,” he said, “for a school that’s already selective. I think

the change is reflected in the quality of the class in ways that would be very hard to quantify.

“It’s not enough to be smart, to be well-grounded in the sciences, to be a good classroom student,” Silverman said. “When we look at applicants, we look for qualities in them that are going to make them good doctors, not just good students.” Among those qualities, he said, are interests and experiences outside medicine.

The 106 members of the Class of 2004 include a former ski instructor, a figure skater, a ballroom dancer with a black belt in karate, and a researcher who spent two years studying HIV at the University of California at San Francisco. Kavita Mariwalla, a 1998 Yale College graduate, decided to leave her job as a Manhattan investment banker for something more fulfilling than enriching other people’s portfolios. “In medicine,” she said, “you can say you did something to help others.”

Coeurlida Louis worked her way through Wellesley as a registered nurse before coming to Yale. Since her childhood in Haiti, she knew medicine would be her calling. She recalled going to see the country doctor who tended to his patients under a huge tent. “There was the doctor looming over everyone in a white coat,” she said. “I wanted to be like that. He was making a difference in a lot of people’s lives.”

This year’s incoming class includes 56 men and 50 women, 11 African-Americans, eight Latinos and 24 Asian-Americans. Six students come with master’s degrees and one has a Ph.D. Almost a quarter of the class, 23 students, were Yale undergraduates. Another 11 came from Harvard and six came from Stanford.



Incoming student Nicholas Countryman is the grandson of Frank Countryman, center, who graduated in 1944 with classmate and best friend Nicholas Spinelli.

The promise of the white coat

The first year began, as it has for several years, in a tent on Harkness Lawn where faculty helped the students don the white coats that symbolize their promise as physicians. “What is it about this simple white coat that provides the lifeline between the patient and the physician?” asked Herbert S. Chase Jr., M.D., in his first address as deputy dean for education. “We are promising to our patients that we will be caring, that we will be kind, that we will comfort them, that we will respect their culture, that we will be completely committed to them and responsible for them.”

“When you wear that white coat,” said Dean David A. Kessler, M.D., “people will allow you into their lives. They will tell you things about their lives they will tell no one else. You are going to have to grow into that white coat.”



After delivering a keynote speech at orientation, author Anne Fadiman autographed copies of her book *The Spirit Catches You and You Fall Down* for members of the first-year class. Forrester Lee, far left, assistant dean for multicultural affairs, led a discussion of the book, which examines the profound miscommunication that occurred between a Hmong family in California and the doctors treating its youngest member.



Under the tutelage of clinical professor Paul Goldstein, second-year students learned how to conduct a pediatric ear exam.

On the first day, an appreciation of other cultures

The first day of class began in Room 110 of the Hope Building with an unusual exercise. On colored slips of paper, students used a word or two to describe themselves in each of five categories. On pink slips they wrote their religion. Ethnicity went on violet paper. Green was for sexual orientation. Orange was for race and bright pink was reserved for socioeconomic class.

The papers were collected, sorted by color, then taped to the walls of the auditorium. Some answers were to the point—"middle class," "heterosexual," "Latino." Others displayed some humor—"boy crazy," "broke," "rags to riches," "part-time Sikh" and "Roman Catholic, at least my mother is." The point of the exercise was to highlight the class's diversity and stimulate a discussion of culture and tolerance. A few moments later, the class divided into groups of seven or eight students to discuss the doctor-patient relationship as described in *The Spirit Catches You and You Fall Down*, by Anne Fadiman. Fadiman spent eight years documenting a tragic clash of cultures between a Hmong family from Southeast Asia and their doctors in California. While doctors looked to science to treat their infant daughter's epilepsy, the Lee family sought answers in spirituality.

After lunch at the Lawn Club, Fadiman gave a keynote speech about her experiences writing the book and the lessons she believes it provides for doctors (See *On Campus*, page 19). "What lay between the doctors and the family was not only a linguistic, but a cultural gulf," said Fadiman. Her own first visit with the Lees demonstrated that gap, she said. "I had been told the Lees were stupid and stubborn and crazy and hated Americans. I immediately met this smart and witty and warm and friendly family. I perceived them differently than the doctors did because they perceived me differently." She urged students and physicians to acknowledge their patients' cultures and beliefs and try to understand illness from the patients' points of view.

Following Fadiman's talk, students saw the dry language of a medical history translated into a flesh-and-blood human story. While a case history was projected on a screen, fifth-year student LaLisa Anderson read from oral histories she has collected in the South. Using the words of the people she interviewed, Anderson took on their characters, telling the stories. One, which paralleled a case history on the screen, was that of a young man who found his life turned upside down by the war in Vietnam. He came home addicted to drugs and alcohol, eventually to find redemption in faith. The message throughout the day was that the culture, language and beliefs held by patients will influence the way they interact with their doctors.

"Why are we talking about the doctor-patient relationship on the first day of school?" asked Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs. "Now is as good a time as ever to start thinking about these relationships, before acquiring any of the notions of how to behave that you are likely to pick up over the next four years."

Public health program welcomes 114 master's students

The entering class at the School of Public Health includes an unusually high number of women, who make up 76 percent of the 114 new master's students. Usually, says Anne Pistell, M.A., M.B.A., associate dean for student affairs, women make up about two-thirds of the class. The students range in age from 21 to 52, with an average age of 25. The group also includes 14 physicians taking an abbreviated course of studies, one veterinarian, one lawyer and a college professor with a doctorate in the history of medicine. The incoming class represents 76 undergraduate schools and 35 majors, the most popular being biological sciences. Pistell added that the program can accommodate students with a very wide range of interests, whether it's doing community work in Thailand, making policy in Washington or managing an HMO.



At the School of Public Health, incoming students were greeted with gifts of T-shirts from the upper classes.

"Don't Throw Me the Knife" and other survival skills for the clinic

In years past, third-year medical students entered the wards armed only with whatever clinical exposure they'd gleaned in their basic science years and at a daylong orientation consisting largely of lectures. The preparation sometimes left students ill equipped for their first days of clinical studies. "I remember someone saying 'Go get the EKG machine,' and not knowing what the EKG looked like, let alone how to attach it to a patient," said Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs.

To help students through the transition from basic to clinical science, Angoff's Office of Student Affairs expanded its clinical orientation program this year with a two-day Survival Fair held on June 22 and 23. In addition to lectures from chief residents, hospital staff and others, students received lessons in how to conduct a pediatric ear exam, draw blood and take blood pressure. A session called "Don't Throw Me the Knife" offered tips on operating room dos and don'ts.

The Survival Fair was the brainchild of Angoff, Cynthia Andrien, M.S., assistant dean for student affairs, and Gisella Weissbach-Licht, director of the Office of Education. "You're going to feel unprepared no matter what," said Angoff. "We came up with this idea to try to relieve the anxiety of starting on the wards by introducing students to some simple, hands-on skills they didn't get in great detail before."



Singh Nagula Teitelbaum

New council officers, a new agenda

The new officers of the Medical Student Council hope to address a variety of issues over the next academic year including producing a companion volume to the student guide known as *The Kit*. Treasurer Jennifer Teitelbaum, president Simran Singh and vice president Satish Nagula also plan to encourage greater faculty use of technology, explore a lowering of the age of financial independence, ask the library to extend hours at busy times and begin a mentoring program that would pair fifth-year students with first-years.

PA Program graduates 35

"You are entering a profession at a time when health care delivery is not as simple as it once was," speaker William C. Kohlpepp, M.H.A., P.A.-C, told the 35 graduates of the Physician Associate Program Class of 2000 at Commencement on Sept. 11. "Managed care and other emerging trends mean we will have new rules, new obligations and new ways of doing business," added Kohlpepp, chair of the board of the American Academy of Physician Assistants. Physician associates, as they are known at Yale, have proven successful, as has the model that teams them with physicians, he said. "We must remain flexible. We must remain committed to remembering that the patient is our number-one priority," Kohlpepp said.



Graduates of the Physician Associate Program gathered in the courtyard outside Harkness Auditorium before Commencement exercises in early September.

“Pay attention to what is inside,” Commencement speaker urges Class of 2000

Richard Belitsky, M.D., remembers the day during his residency that he had to change the dressings on a badly burned boy. “If you are my doctor, why are you hurting me?” the boy asked him, and for Belitsky, the question opened an emotional vein. “I burst into tears,” he recalled in May, standing at the podium at the Class of 2000’s Commencement exercises. “The attending came over. He wanted to console me. ‘Richard,’ he said, ‘if you are going to be a doctor you just can’t let it get to you like that.’”

Belitsky, now an associate clinical professor of psychiatry and the students’ choice as Commencement speaker, had different advice for the 111 graduating physicians.

“I wish he had said, ‘Richard, you are a doctor, of course you feel that way. We all feel that way sometimes,’” Belitsky told his audi-

ence. “You are going to feel these extraordinary things: fear, wonder, thrills, excitement, even terror, sadness, exhilaration. Whatever it is you feel, I want you to hear a voice inside that says, ‘You are a doctor, of course you feel that way. We all feel that way sometimes.’”

He urged the new physicians to maintain their spiritual equilibrium by staying in touch with their own hearts and reaching into the hearts of their patients. Talking to patients, he said, will help in their treatment. “It is through the telling of your stories and the listening to the stories of others that you will form the relationships that will allow you to bring your own individual humanity into this work.”

In his closing words he offered more advice. “Take a vacation,” he said. “And I don’t just mean go on a vacation. A vacation is not a time to get caught up on journal reading. It is not a time to write grants. Take a book you’ve been dying to read and, more importantly, take your loved ones with you. Pay attention to what is inside. It is what makes you you.”



MICHAEL MARSILAND

Honorary doctorate for Samuel Thier

Samuel O. Thier, M.D., former chair of internal medicine and former chief of medicine at Yale-New Haven Hospital, received an honorary degree as doctor of medical sciences at this year’s Commencement. Thier, who was on the medical school faculty from 1975 to 1985, was also president of the Institute of Medicine of the National Academy of Sciences, where he raised awareness of public policy issues related to AIDS and cancer research. He has served as president of Brandeis University and of Massachusetts General Hospital. In 1996, Thier became chief executive officer of Partners HealthCare System Inc., which oversees Brigham and Women’s Hospital, Massachusetts General Hospital and the North Shore Medical Center.

The following prizes were awarded to School of Medicine faculty and students at Commencement:

Bohmfolk Prize
Michael J. Caplan, M.D., Ph.D. ’87, professor of cellular and molecular physiology, and George Lister Jr., M.D., professor of pediatrics

Healthcare Foundation of New Jersey Humanism in Medicine Faculty Award
Nancy R. Angoff, M.P.H. ’81, M.D. ’90, HS ’93, associate dean for student affairs

Leah M. Lowenstein Prize
Robert H. Gifford, HS ’67, professor of medicine, and Lynn Tanoue, M.D., associate professor of medicine

Francis Gilman Blake Award
Richard Belitsky, M.D., associate clinical professor of psychiatry

Betsy Winters House Staff Award
Judd W. Landsberg, M.D., chief resident in medicine

Parker Prize
Karin L. Andersson

Miriam Kathleen Dasey Award
Royce C. Lin

Norma Bailey Berniker Prize
Azita G. Hamedani

Dean’s Prize for Community Service
Tanya E. Smith

Healthcare Foundation of New Jersey Humanism in Medicine Student Award
Joanna B. Sheinfeld

Campbell Prize
Julie A. Davis

Perkins Prize
Julie V. Schaffer and Sereena C. Tamburri Coombes

Merck Book Award
Elizabeth V. Harrold and Masha Huseinovic

Lange Book Award
Patricia Nez Henderson

M.D./Ph.D. Award
Amy Y. Jan

Connecticut Society of the American Board of Obstetricians and Gynecologists Prize
Leslie R. Boyd

New England Pediatric Society Prize
Lisa R. Eiland

Society for Academic Emergency Medicine Award
Arvind Venkat

Connecticut Chapter of American College of Surgeons Prize
Jose M. Prince

Peter A.T. Grannum Award
Leslie R. Boyd

Lauren Weinstein Award
Jakub Svoboda

Connecticut Academy of Family Physicians Award
Angela J. Rubineau

Endocrine Society Medical Student Achievement Award
Megan C. Lisska

The Courtlandt Van Rensselaer Creed Award
Dirk C. Johnson

ACP-ASIM Internal Medicine Award
Maya J. Salameh

National Health Service Corps Certificate of Recognition
Leslie R. Boyd and Jennifer B. Griffiths

COMMENCEMENT

2000

Melissa Wolfe and fellow graduates marched in procession from Sterling Hall of Medicine to the tent on Harkness Lawn for Commencement.



MELANIE STENGEL



JOHN CURTIS

Idealism, inequity and public health

As a young woman in her native India, Geeta Rao Gupta saw her dream of graduate studies in the United States dashed because of her gender. The men who ran the scholarship program told her she would be a poor investment; she would probably marry, have children and stop working. “I had lost a chance to pursue graduate studies because I was a woman,” said Gupta, who now holds a Ph.D. and heads the International Center for Research on Women, a Washington-based non-profit organization that studies the roles women play in developing countries.

Discrimination against women around the world is a public health concern, Gupta said in her Commencement address to the School of Public Health Class of 2000. Women of color between the ages of 15 and 25 are at greatest



JOHN CURTIS (2)

Public health students, above, before Commencement ceremonies on the main campus. Below, some graduates took advantage of the occasion to make a statement.

COMMENCEMENT 2000



risk for HIV/AIDS, she said. Ailments related to pregnancy and childbirth claim half a million women each year, despite knowledge of how to prevent such deaths. And domestic violence is a “devastating reality” in the lives of women around the world. “Clearly there is an unequal power balance in society,” she said, “a power balance that is determined by gender as much as by class, race and other identities.”

Gupta urged the new graduates not only to recognize but also to attempt to redress these social inequities. “They will undermine your work unless you incorporate them into your analyses and interventions,” she said. To achieve this, Gupta argued that idealism is essential. She suggested that public health workers’ efforts subscribe to three truths. “The first truth is that empowerment of women, the poor and minorities is not a zero-sum game,” she said. “More power to one does not mean less power to others. More power to one means more power to all.

“The second truth is that cultural and social structures are not cast in stone. When cultural practices cause health damage, they must be adapted, changed, or even cleverly co-opted. To feel, for example, that female circumcision is a cultural practice that must be tolerated because the culture cannot be changed, is unacceptable.

“The third truth: Remember that individuals in communities, no matter how disempowered or marginalized, are actors and agents of change in the drama of their lives. If you include them, if you take the time to listen with humility, if you do not presume to know, you will be rewarded with rich insights and new realizations.”

Gupta’s emphasis on the idealism fundamental to public health echoed that of student speaker Jacob Harley Creswell. “So what is public health?” he asked. “The question could be, ‘What isn’t?’ There are so many different fields we will be entering, so many ways to improve health, no matter how daunting a task this may seem. ... Over the last 21 months we have heard all kinds of stories, some saddening, some uplifting, some horrifying and some enlightening. We have learned about death and disease. We know what the world has to offer, and yet if I didn’t believe the world could be healthy, I would not be here.”

The School of Public Health awarded master’s degrees to the 123 members of the Class of 2000, and one doctor of public health degree. The Graduate School of Arts and Sciences awarded 12 doctor of philosophy degrees.

The following prizes were awarded to faculty and students of the School of Public Health at Commencement:

Award for Excellence in Teaching

Susan T. Mayne, Ph.D.

Dean’s Prize for Outstanding Thesis

Artemio Miguel Jongco III, for “Gonorrhea and Chlamydia Screening Among Jail Entrants in Rhode Island”

Rowena Kerrebrock Richter, for “A Public Health Analysis of Herbal Medicine in the U.S.”

Kelly Jen-Yi Yu, for “Patterns of Comorbidity and Familial Aggregation of Cocaine Abusers”

The Courtlandt Van Rensselaer

Creed Award

Kathryn Ann Finney

Wilbur G. Downs International Health Student Travel Fellowships

Jacob Harley Creswell, Erik Hett, Laura Anne Krech, Pamela A. Matson, Douglas Andrew Newton, Hilary Elizabeth Rosen and Shilpa Sayana

E. Richard Weinerman Fellowships

Subuhi Asheer, Nita B. Bellare, Rebecca A. Dodge, Kathryn Ann Finney, Nisha Gupta, Reshma Rani Mahendra, Benjamin K.S. Piper, Angela Denise Rogers, Gina N. Shin, Vivian Faye Wu and Alexander S. Zusman

United School of Public Health China Internships

Amy L. Arnold and Eugene E. Lee



MICHAEL MARSLAND

Alvin Novick led public health faculty in the procession on the main campus.

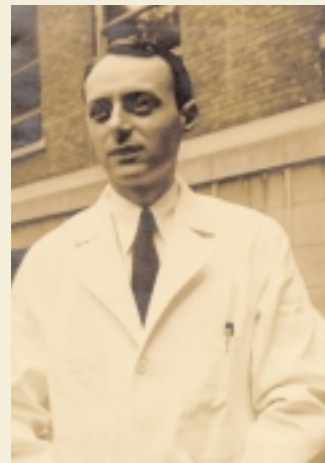


HARRY BISHOP



YALE MEDICINE ARCHIVES

Top; Wayne Southwick in his sculpture studio in 1993, shortly after his retirement. The sculpture in the photo now stands on Cedar Street outside Sterling Hall of Medicine. Max Taffel, right, was a legendary surgeon on the service of the Memorial Unit, above, which opened in 1953.



1940 PHOTOGRAPH, COURTESY MAX TAFFEL

Surgical society gathers steam, honors “the great teachers”

Six years ago, Yale faculty laid the groundwork for an organization they hoped would help keep alumni of the Department of Surgery in touch with one another in the years following residency. The first event, a reception during the annual meeting of the American College of Surgeons in Chicago in 1994, was attended by just a handful of Yale-trained surgeons.

That fledgling group has grown to become the Yale Surgical Society (YSS), which has attracted more than 700 members and organized annual programs since 1996 as part of the medical school’s Alumni Reunion Weekend.

YSS reunion activities have included tributes to former faculty, historical glimpses through the department’s past and, in 2000, a daylong symposium exploring current research in surgery at Yale. Next year’s event, a dinner on June 1, will honor Max Taffel, M.D. ’31, clinical professor of surgery, and Wayne O. Southwick, M.D., professor emeritus of orthopaedics and rehabilitation.

The program reflects the society’s desire to “honor the great teachers,” according to Andrew J. Graham, M.D., HS ’66, a general surgeon in New Haven who is the society’s president. Previous programs have paid tribute to Gustaf E. Lindskog, M.D., William W.L. Glenn,

M.D., John A. Kirchner, M.D., Jack W. Cole, M.D., and Bernard Lytton, M.B.B.S., F.R.C.S.

Graham says that the June 1 gathering will focus on Taffel and other faces from the Memorial Unit years in Yale surgery as well as on Southwick and the story of the Department of Orthopaedics and Rehabilitation.

During the 1950s and early 1960s, surgery in the Memorial Unit of Grace-New Haven Hospital functioned as a freestanding service. Taffel, who holds the first diploma issued by the American Board of Surgery, was a legendary figure in the Memorial Unit during those years.

Southwick was chief of the orthopaedics section from 1958 to 1979 while it was part of the Department of Surgery. Southwick’s work in building the section led to its expansion as the Department of Orthopaedics and Rehabilitation in 1986 under present-day chair Gary E. Friedlaender, M.D., who was trained by Southwick.

Membership in the Yale Surgical Society is open to former residents who trained in the department, current and former Yale surgery faculty, and Yale medical school graduates who have entered the field. The society has an 11-member board including four officers: Graham, Vice President Bauer E. Sumpio, M.D., Ph.D., HS ’86, Treasurer James M. Dowaliby, M.D. ’67, HS ’71, and Secretary Sanziana A. Roman, M.D., HS ’98. The society’s Web site can be found at <http://yalesurgery.med.yale.edu/yss/yss.htm>.

’40s



Donald W. Seldin, M.D. ’43, HS ’46, who was instrumental in building

University of Texas (UT) Southwestern Medical Center in Dallas into a major academic medical center, received the Mentorship Award from the University of California, San Diego, and the Salk Institute for Biological Studies in recognition of that integral role in UT’s growth. Seldin is vice president for medical center relations for the Southwestern Medical Foundation and clinical professor of internal medicine at UT.

received the David S. Friendly Award for 2000. This annual award is given to a graduate of the Pediatric Ophthalmology Fellowship program at Children’s National Medical Center in Washington, D.C., for outstanding original research and service in the field of pediatric ophthalmology. Ing writes, “The medical school here in Hawaii has recently been energized this past year by the arrival of Edwin C. Cadman, M.D., former Yale chair of medicine, to be the new dean of the school. Yale’s loss is Hawaii’s gain!”

’60s



Robert F. Maudsley, M.D., HS ’69, was appointed dean of the

faculty of health sciences for medicine and nursing at Aga Khan University in Karachi, Pakistan. Maudsley had been vice-dean of medicine at Queen’s University in Kingston, Ontario, from 1988 to 1996, and associate dean for health sciences at McMaster University in Hamilton, Ontario, from 1982 to 1984. “Karachi is a port city of 12 million people, and the university is situated on a beautiful campus with stunning architecture,” Maudsley wrote in an e-mail message to *Yale Medicine*. The school, which admitted its first students in 1980, is associated with a 600-bed modern teaching hospital and is undergoing a major revision of its medical curriculum. In September, Maudsley received the Duncan Graham Award of the Royal College of Physicians and Surgeons of Canada for his outstanding contributions to medical education.

’50s



Donnell D. Etwiler, M.D. ’53, founder and president emeritus of the Interna-

tional Diabetes Center in Minneapolis, was presented the Shotwell Award in May by the Hennepin Medical Society (HMS) in recognition of his dedicated service and contributions to the improvement of health care delivery. The bronze award, entitled *Sprites*, is a copy of a sculpture by artist Paul Granlund depicting a symbol of health and healing. Established in honor of Mr. and Mrs. James D. Shotwell by the Metropolitan Medical Center in 1971, the award is presented annually. HMS was selected to carry on the tradition when the Metropolitan-Mt. Sinai Medical Center closed in 1991.



Malcolm R. Ing, M.D. ’59, HS ’63, professor and chair of ophthalmology at the

University of Hawaii’s John A. Burns School of Medicine,

The Yale Surgical Society Application Form

Name _____

Date of Birth _____

Year Graduated from Yale School of Medicine _____

Year Completed Residency and/or Years of Faculty Appointment _____

Residence Address _____

City/State/Zip _____

Residence Telephone (include area code) _____

Office Telephone (include area code) _____

E-mail Address _____

Spouse or Significant Other _____

Children’s Names/Ages _____

Please accept my tax-deductible donation. Enclosed is my check for:

- One-Year Membership \$ 50.00
- Lifetime Membership \$ 500.00
- Retired, Voluntary Donation \$ _____

How to join

The Yale Surgical Society is open to surgeons who trained in the department, current and former Yale surgery faculty, and Yale medical school graduates who have entered the field. If you would like to become a member, please complete the application to the left and mail with dues to Sharon Cullen, Executive Secretary, Yale Surgical Society, c/o Yale-New Haven Hospital, Clinic Building, Room 228, 20 York Street, New Haven, CT 06504.

'60s continued



R. John C. Pearson, M.B.B.CHIR. M.P.H. '60, HS '63, former chair and pro-

essor emeritus of community medicine at West Virginia University School of Medicine, writes to say, "I've been doing quite a bit of travel this year (Morocco, England, South Africa, Mozambique and Italy), as well as visiting our children in Baltimore, Maine and Tacoma. I have also done some general practice in our local free clinic, a week of locum tenens in southern West Virginia and a few lectures in our M.P.H. courses." The Mozambique trip, he adds, was in regard to the startup of a new medical school.

Shaun Ruddy, M.D. '61, Elam C. Toone Professor of Internal Medicine, Microbiology and Immunology at the Virginia Commonwealth University/ Medical College of Virginia, has been named a member of the editorial board of *The Pharos* of Alpha Omega Alpha Honor Medical Society. Two fellow Yale alumni are also members of the board, **Robert A. Chase,** M.D. '47, HS '53, and **Robert G. Petersdorf,** M.D. '74, HS '76.

Leon G. Smith, M.D., HS '62, director of medicine and chief of infectious diseases at St. Michael's Medical Center in Newark, N.J., was presented a doctor of medical research, honoris causa, from Caldwell College in New Jersey at the commencement ceremonies in May. During his career, Smith co-founded New Jersey's first free medical clinic and a weekly conference on infectious diseases which has con-

tinued for 26 years at a hospital in New York or New Jersey. He also established a free shower and clothing center for the homeless at St. Patrick's Pro-Cathedral in Newark and developed a school-based HIV/AIDS prevention program.

'70s

Clayton A. Ajello, M.P.H. '75, is president and chief executive officer of LearnWare International Corp., which creates and distributes interactive multimedia courseware and presentations. Ajello has a doctoral degree in international health from The Johns Hopkins University School of Hygiene and Public Health and 20 years experience assessing national education and training systems.

Joseph M. Connors, M.D. '73, clinical professor of medical oncology at the British Columbia Cancer Agency in Vancouver, was the 2000 recipient of the Professional Association of Residents of British Columbia's award for excellence in teaching. The group cited Connors for his practice of evidence-based medicine and his dedication as a teacher who fosters an enjoyable learning environment.

Thomas W. Ferguson, M.D. '78, editor and publisher of *The Ferguson Report*, an e-mail newsletter, was the keynote speaker in May at the third Biennial International Conference on Internet & Society at Harvard. In his talk, "Shifting the Balance of Power: Patient Empowerment on the Web," Ferguson said increased patient access to medical information online is changing the percep-

tion of the physician as sole medical authority. Ferguson is adjunct associate professor of health informatics at the University of Texas Health Science Center in Houston.



Otolaryngologist **Jeffrey N. Hausfeld,** M.D. '78, medical direc-

tor of the Washington (D.C.) Center for Laser Medicine, was named chief medical officer of MD Productivity, an Internet medical services corporation in June. Hausfeld will play a key role in further developing the physician and patient services available on the company's Web site, www.MDproductivity.com. He is also on the faculty in the department of otolaryngology at The George Washington University School of Medicine.

Robert J. Lerer, M.D., HS '73, a pediatrician for 25 years with Pediatric Associates of Fairfield, Ohio, has devoted himself to medical and missionary work in Cuba during much of the past four years. In 1998, Lerer and his wife, Janis, a psychiatric nurse and licensed social worker, led a team of 24 health care professionals and volunteers from the United States on a medical-evangelical missionary trip co-sponsored by Caring Partners International and the Christian Medical and Dental Society.

Laurence A. Tanner, M.P.H. '72, president and chief executive officer of Central Connecticut Health Alliance and president and CEO of New Britain General Hospital, was appointed in October to the board of directors of American Financial Holdings Inc. and the American Savings Bank.

'80s



Ann L. Elderkin, PA '80, has been appointed a senior health policy fellow

in the Office of the Surgeon General. As a special advisor on health policy, she began her one-year fellowship in September. Elderkin was the director of the Portland (Maine) Public Health Division from October 1990 to July 2000 and director of the Somerville (Mass.) Health Department from 1990 to 1997. She is a former president of the American Academy of Physician Assistants and the Physician Assistant Foundation.

David Fassler, M.D. '82, clinical associate professor of psychiatry at the University of Vermont College of Medicine and clinical director of Otter Creek Associates, received the Green Ribbon Award for Childhood Depression Education from the National Mental Health Association. The award, presented in May at the National Press Club in Washington, recognizes national advocacy and educational efforts on behalf of children and families.

Eric J. Nestler, PH.D. '82, M.D. '83, former professor and director of the division of molecular psychiatry at Yale, has been appointed chair of the Department of Psychiatry at the University of Texas Southwestern Medical Center in Dallas. Nestler, the first to hold the Lou and Ellen McGinley Distinguished Chair in Psychiatric Research, will continue his research into the molecular basis of mental illness and addiction while leading the department of 115 at Southwestern.

'90s

Neil A. Solomon, M.D. '90, has joined CareGuide Inc., a care management company for older adults, as senior vice president and chief medical officer. Solomon will oversee all customer communications, as well as content of the Web site. He formerly held executive positions at the national headquarters of Kaiser Permanente. During the past 10 years, Solomon concurrently practiced internal medicine.

Correction



On page 46 of the Summer 2000 issue of *Yale Medicine*, this photograph of Harry C. Miller Jr., M.D. '54, was mistakenly placed next to an item about Leo H. Berman, M.D., HS '53. Our apologies to both.

Fortieth Reunion

James J. Nora, M.D. '54, wrote this poem after attending his 40th reunion with his classmates in 1994. Unable to attend his 45th last year, he sent this poem to *Yale Medicine* instead.

*Many of us had retired.
Already one-seventh of our class had died.
This was, I calculated, the last time
when morbidity and mortality would
be delayed enough to allow a substantial turnout.*

*I thought I'd like to remember us when we
looked the way we felt—young, vigorous, optimistic.
Most of our past histories had required no more
than a few short sentences scribbled in—before
beginning the longer narratives that would be tucked
between the aluminum chart covers of our lives.
Required supplements would eventually extend
through many pages—many volumes.
Was I prepared to blow the dust off the records?*

*It would have been easier if I had attended
other reunions along the way.
We could have glanced past a few
of each other's progress notes about
thinning hair and thickening waistlines
to find joys and triumphs—
and then more gradually absorbed the reports of
disappointments and losses and personal tragedies.*

*The volumes were opened,
the triumphs and defeats
were accepted and chronicled.
And within hours
the faces of older physicians
would for the rest of our lives
be indistinguishable from
the shining features of young students.*

—James J. Nora, M.D. '54
Aurora, Colo.



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Reunion

2000

Reunion program explores the “Many Faces of Medicine.”

In medicine, affirmative action means more than simply ensuring that African-Americans, Native Americans and Latinos get a chance to become physicians. It is critical to providing minorities with the same quality of health care that whites receive, says Augustus A. White III, M.D., PH.D., HS '66. Affirmative action is also essential to fostering respect among the diverse groups of people whose paths cross in hospitals, doctors' offices and medical school classrooms, according to White, the keynote speaker, and panelists who joined him for a discussion of “The Many Faces of Medicine.” About 100 people at this year's reunion attended the program exploring race, ethnicity and affirmative action through the experiences of minority alumni and students.

White, a professor of orthopaedic surgery at Harvard Medical School and surgeon-in-chief

1952 alumna Doris Wethers was the third African-American woman to graduate from the medical school.



PETER CASOLINO

“Supporting diversity does not just serve the minority community. It serves everyone.”

—Panelist Yvedt Matory

emeritus at Beth Israel Medical Center, delivered the keynote address, “The Importance of Affirmative Action to the Health Care of Our Nation.” White argued that members of minority groups don't receive the same quality of medical care as do whites. The proof is in the statistics. Infant mortality, a key health indicator, is 2.5 times higher among African-Americans than among whites. African-Americans are less likely to receive pain medication for long-bone fractures in the emergency room and are less likely to receive cardiac bypass surgery.

Minority patients, he continued, are often subject to disrespectful treatment such as the following: a physician who greeted an Asian woman as “Mrs. Thai Lady,” caregivers who failed to draw the curtains when undressing an African-American patient, and an Italian patient who heard it suggested that he must have a Mafia connection. Those acts of insensitivity were not committed by “skinheads,” said White, who was a professor of orthopaedic surgery at Yale in the 1970s.

“We need to do some things differently,” White said, “Minority doctors are more likely to practice culturally competent medicine. Diverse medical care teams can educate each other through interpersonal relationships as well as relationships with patients.”

Affirmative action has had a dramatic effect on minority enrollment at the medical school during the past 30 years, Forrester A. Lee, M.D. '79, told the audience. Lee, associate professor of medicine and associate dean of multicultural affairs, reported that from 1850 to 1900, only 10 blacks received medical degrees from Yale. During the succeeding five decades, not a single black graduated from the school, and from 1950 to 1970 a black student graduated every two to four years. Then, with the advent of affirmative action in 1970, the number of black graduates rose sharply to 10 to 12 per year. The 105-member Class of 2003 includes 13 African-Americans, 11 Hispanics, 22 Asian-Americans and 45 women, noted Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs.

Affirmative action, however, placed pressure upon students to prove themselves. “I knew as minority students we would be asked questions. ‘Are you here at Yale because you're black, or are you here at Yale because you're smart?’” said panelist O'Dell M. Owens, M.D. '76, medical director for United Health Care in Cincinnati.

“I am a product of affirmative action,” said panelist Rashida N'Gouamba, '02, who pointed out that affirmative action merely opens the door, without guaranteeing success. “Affirmative action doesn't get you the grades you're going to get. It doesn't make you do anything other than work hard.”

Doris Wethers, M.D. '52, the third African-American woman to graduate from the School of Medicine, recalled getting along with most of her classmates, although she was the only minority student. From Yale she went to Washington, D.C., where she did a one-year internship in a hospital that had desegregated its wards and staff, although the city remained segregated. “There was a little friction,” she said. She now lives in New York City, where she is a professor of pediatric medicine at the Columbia University College of Physicians and Surgeons. For decades she has led a continuing study of sickle-cell anemia at St. Luke's-Roosevelt Hospital.

Owens told of returning to Cincinnati, where patients occasionally walked out when they saw their physician was black. Panelist Yvedt L. Matory, M.D. '81, an assistant professor of surgery at Harvard Medical School, spoke of her time, first as a resident and now as an attending, as the only black woman on a staff of 90 surgeons. “I have spent a lot of my time educating my colleagues and the residents,” she said.

White acknowledged that physicians cannot be well-versed in the nuances and protocols of each culture they encounter. “We cannot be cultural anthropologists for every culture, but there is a need for more education in this area,” he said. And, added Matory, there is a benefit for all society. “Supporting diversity,” she said, “does not just serve the minority community. It serves everyone.”



PETER CASOLINO (2)

TOP “We need to do some things differently,” said Augustus White, keynote speaker at a reunion program on diversity. White, a professor at Harvard Medical School, served on the house staff at Yale in the 1960s.

BOTTOM O'Dell Owens chatted with other alumni before joining a panel to discuss his experiences as an African-American physician.

Reunion 2000

The future is here

Yale perspectives on the Human Genome Project.

When the Department of Human Genetics was founded at Yale almost 30 years ago, the field was narrow: Its investigators studied a handful of rare genetic disorders in children. "Three decades later," says Deputy Dean Carolyn W. Slayman, PH.D., Sterling Professor of Genetics and professor of cellular and molecular physiology, "we now know that genetic mutations play a role in most, if not all, common diseases in adults and must be taken into account by every practicing physician."

During this year's reunion, just three weeks before the announcement of the Human Genome Project's rough draft of the human genome, Slayman moderated "Mapping the Future: The Human Genome Project, Yale Perspectives," a presentation by three Yale researchers who discussed the genome project's profound implications for research, medicine and medical education.

Peripheral to its main goal, the project has spawned a variety of research technologies over the last six years, said David C. Ward, PH.D., professor of genetics and of molecular biophysics and biochemistry. "A lot of this is brand-new," said Ward, the creator of two such technologies, the widely used fluorescent in situ hybridization, or FISH, and a newer technique, rolling circle amplification, developed with Paul M. Lizardi, PH.D., associate professor of pathology. Among the innovations to result from the genome project are new methods of genetic testing and microarrays that can be used to analyze thousands of DNA samples and create databases with a prognostic value, Ward said. "While they are experimental today, they are heading to the clinic, and rapidly," he said.

Richard P. Lifton, M.D., PH.D., chair of the Department of Genetics and a Howard Hughes Medical Institute investigator, stressed the speed of new discovery (See interview, page 42). "Over the last five years we have gone from

almost zero understanding of the molecular basis of human disease to a milestone of understanding over 1,000 human diseases at the molecular level," said Lifton, who, with colleagues, has identified several genes related to hypertension. Identifying gene mutations that are linked to specific disorders, he said, provides insight into the mechanisms of disease, allows clinicians to identify susceptible patients before disease develops, helps investigators identify targets for therapies and allows them to tailor treatment to specific abnormalities. "We are going to know all the genes, all the common variations of those genes," he said. "We will be able to piece together whether they are implicated in human disease."

Rapidly changing information, said Margretta Reed Seashore, M.D. '65, HS '68, is nothing new in medicine. The development of the human genome, however, has increased both the pace and scope of new findings. The challenge for medical schools is to determine what is core information and what is specialty knowledge, and to help students learn how to examine new information critically. And, no matter what their specialty, students must also learn how to integrate genetics into the practice of medicine, Seashore said. To this end, Yale has begun to incorporate genetics into all four years of study for medical students and is developing programs for practicing physicians and graduate students.

All three speakers made clear that this new knowledge marks a new era in medicine. "Perhaps not since Morgagni started doing surgical autopsies and discovered that all disease was not caused by the same evil humor have we been in a period of such rapid discovery of the fundamental causes of human disease," said Lifton. "We are in the midst of one of the really great revolutions in the history of medicine."

"Mapping the Future" was also presented to an audience at the Yale Club of New York City in October.

Honors to Gifford and alumni

The accolades for Robert H. Gifford, M.D., HS '67, who spent more than 30 years at the medical school as a resident, teacher, associate and deputy dean, continued with his honorary induction into the Association of Yale Alumni in Medicine (AYAM) at this year's reunion. Association President Gilbert F. Hogan, M.D. '57, called it a "particularly special honor that is rarely given."

"We are going to induct a very special person as a member of the alumni association because of his contributions to the school," Hogan said. "Bob has been a teacher, a scholar



The Association of Yale Alumni in Medicine honored, from left, Paul Calabresi, Margretta Seashore and Martin Gordon with Distinguished Service Awards. Robert Gifford, right, received an honorary induction into the alumni association.

and, in recent years, dean of students, where he has won the affection and love of generations of students."

The AYAM also honored three alumni with Distinguished Service Awards for outstanding contributions to the School of Medicine and the profession: Martin E. Gordon, M.D. '46, clinical professor of medicine; Margretta R. Seashore, M.D. '65, HS '68, professor of genetics and pediatrics; and Paul Calabresi, M.D. '55, professor emeritus of medicine at Brown University.

Gordon's award cited his dedication as a teacher, his treatises on global medicine and, over the past 20 years, his devotion to the medical library. As chair of the Board of Trustees of the Associates of the Cushing-Whitney Medical Library, he has contributed to the expansion of electronic resources and increased the membership of the library's association.

The AYAM cited Seashore for her 30 years as a model educator, researcher and physician. "Scores of medical students, residents and fellows have benefited from your knowledge and insight," read the AYAM's citation.

Calabresi received the AYAM's recognition for his services to medicine and to Yale. As a physician, Calabresi was one of the pioneers of combination chemotherapy for treating cancer. He has chaired the National Cancer Advisory Board and served on the President's Cancer Panel. Calabresi is chair emeritus of the Department of Medicine at Brown University School of Medicine.

At its annual meeting the AYAM executive committee named Francis M. Lobo, M.D. '92, secretary of the association. Donald E. Moore, M.D. '81, M.P.H. '81, was named to his first two-year term as a member, and Arthur C. Crovatto, M.D. '54, HS '61, and Romeo A. Vidone, M.D. '57, HS '58, were named to their second two-year terms. Jocelyn Malkin, M.D. '51, HS '52, and Deborah D. Desir, M.D. '80, HS '83, were named to three-year terms as AYAM representatives to the Association of Yale Alumni.



EPH honors the late John Devereaux Thompson

John D. Thompson was a leader in the field of health services research whose expertise ranged from the design of health care payment systems to the social and architectural history of hospitals and the story of Florence Nightingale. On his death in 1992 at the age of 75 he was professor emeritus of public health and nursing administration. Thompson was a registered nurse and in 1950 received an M.S. in hospital administration from the School of Medicine. Friends, colleagues and family members gathered at this year's reunion for the First Annual John D. Thompson Health Management Dinner to honor his contributions to the field. The Department of Epidemiology and Public Health has established the John Devereaux Thompson Academic Development Fund at Yale, an endowed fund that will support the academic mission of EPH's Division of Health Policy and Administration and the division's Health Management Program. Attending this year's dinner were, back row from left, Thompson's son, Anthony Thompson; his daughter Margaret Thompson; son-in-law James Roberge; in the front row, his daughter Deirdre Hamilton; widow Adriana Thompson; sister Martha Carrick; daughter Julie Walpole; and daughter Siobhan A. Thompson.

Carolyn Slayman moderated a discussion of the Human Genome Project and its effects on the teaching and practice of medicine.

PETER CASOLINO

PETER CASOLINO

JOHN CURTIS

Reunion 2000

Reunion reports



1935

65th Reunion

As the only member of the class present, I enjoyed the overall reunion—one of the best ever—accompanied by my wife Ethel. Moderately active, I still teach four to five mornings a week and also serve as chair of planned giving for the School of Medicine Alumni Fund.

Only two other Class of '35 alumni are still living. **James Q. Haralambie** is a retired pediatric neurologist who lives at Heritage Village in Southbury, Conn. **Howard H. Groskloss** a retired ob/gyn physician, lives in Vero Beach, Fla.

— **Samuel D. Kushlan**

1945

55th Reunion

On a warm June day in 1942, few in our class could have expected that so many of us would be coming again to the Sterling Hall of Medicine on another lovely June day in 2000. This reunion, as arranged by **Dick** and Verne **Breck**, was the least structured and most enjoyable of any of our get-togethers in many years. Not only were the attendees able to come, but they were also standing tall and had a spring in their step.

Along with the Brecks, attending were **Sandy** and Claudine **Cockerell**, **Ed** and Das

Daniels, with son Ben, **Dick Dyer**, **Bob** and Ruthie **Easton**, with lovely granddaughter Pearl James, **Sid Feuerstein**, **Ray** and Pat **Gagliardi**, **Bob Hollan**, **Bill** and Marj **Jenney**, **Lee** and Barbara **Jones**, **Mike** and Jeri **Lau**, **Mark** and Margaret **Lindsey**, **George** and Michelle **Naumburg** and **Fitz** and Mildred **Pannill**. It was sad to realize that since our last meeting we had lost **Albert Atwood**, **Philip Good**, **Isao Hirata**, **John Howick**, **Hans Huesey**, **Joseph Stanton**, **Kenneth Steele**, **Sam May** and Dick Dyer's wife Nat.

Friday and Saturday were largely spent telling each other how good we looked, all things considered, and remembering old times. We even managed to remember things that never happened. One member recalled when our class voted not to take the Hippocratic Oath. No one else remembered it. As we talked and joked and remembered the fun things that lightened the darkness of those war years, we were reminded what an exceptional group of people made up the Class of 1945. While we didn't have a program of our own, we enjoyed what we heard and saw. We were interested to hear the dean tell us that the program of promoting diversity in the school was very successful. The student body now has 41 percent minority

enrollment. The physical expansion of the medical campus defies description and continues to make us proud.

The meals were excellent, and we have a dean with an outstanding sense of public relations who made us feel welcome and important.

Many classmates wanted to come but because of health or family concerns, coupled with prior travel plans, were unable to do so. **Mike Allison** was one of the travelers and, I think, the only one left who is still seeing patients.

We were enthusiastic about organizing an interim reunion in a couple of years before our 60th in New Haven. This was such a good one, we hope everyone can get to that one. You will all know the if, where, and when of that event. It will be a tough act to follow Breck's performance in 2000, but this class was never one to flinch or falter in the pursuit of excellence.

— **Raymond A. Gagliardi**

1950

50th Reunion

For those who came, the 50th reunion was a satisfying and memorable event; to those who could not be there: you were missed. Lodging and accommodations, most of which were arranged by **Sylvia Axelrod** and **Jane Shumway**, were at the Colony Inn, including a hospitality suite and our class dinner Friday

night. Each of us was invited to speak about memories of our time at Yale and our subsequent careers, lives, losses and accomplishments. We remembered those who were no longer with us. It was a moving experience and a most satisfying way to bring closure to the half century since we started out together.

Present were Sylvia Axelrod, **Mal Bagshaw**, **Bill** and **Ida Bucher**, **Al Davis**, **Tom** and Justine **Ferraro**, **Dan** and Anita **Fine**, **Yvette Francis**, **Larry** and Rina **Freedman**, **Dave** and Carol **Frucht**, **Carl Gagliardi**, **Marilyn** and Barney **Kritchman**, **John** and Kathleen **LeRoy**, **Harold** and Julia **March**, **Harry** and Sheila **McClelland**, **Charley** and Margaret **Nugent**, **Bob** and Phoebe **Sceery**, **John Strauss** and Jane and Clare Shumway. **Claude Delia**, who had planned to come, was unable to because of wife Jeanne's illness, and **Lyal** and Bonnie **Asay** went to Hawaii for their granddaughter's graduation.

Following a full day of activities on Saturday, we gathered at the hospitality suite for a meditation session led by Jane Shumway. With our minds at rest, we repaired to the Graduate Club for the Friends of the 50th Dinner for a most delicious repast.

On Sunday, **Margaret Lyman**, who had been unable to come to New Haven, hosted a delightful brunch at her

Middlebury home, a most pleasant country interlude, and a delightful finale to a wonderful reunion.

— **Dave Frucht**

1955

45th Reunion

This reunion was one of the best and most enjoyable for all the attendees. We had 18 members of the class accompanied by 14 significant others.

The first event of importance was the dedication of The **Paul Calabresi** Conference Room in the Yale Cancer Center on Friday, June 2. This honor was bestowed on Paul for his work in cancer research and treatment. Five or six of our classmates arrived early enough to attend, along with Paul's wife, Celia, and his brother, Guido Calabresi, the U.S. Court of Appeals judge and former dean of the Yale law school.

Things really got hopping then with the arrival of about another 10 classmates for the Dean's reception, where Dean David A. Kessler acknowledged that he indeed was not the "real David Kessler" and tipped his hat to our own **David R. Kessler** (see photo top right), and the outdoor clambake. This event terminated when a violent storm erupted; fortunately, we had already consumed all the food we could eat.

The next day Paul was again honored as one of the

recipients of the Distinguished Service Award.

Our seminar on Saturday afternoon featured a fascinating new approach to teaching students and residents the art of observation and description of patients, presented by **Irwin Braverman**. He brings them to the Yale Center for British Art where they observe paintings by the masters and are drilled in how to observe and describe details in the paintings. **Frank Johnson** brought us up to date on the epidemic of that chronic disease facing our nation: obesity. **Rocky Stone** gave us an in-depth view of the tragedy at Waco, Texas, from his vantage point as a member of the Congressional commission assigned to investigate it.

Saturday evening's banquet at the New Haven Hotel was a blast. We had a great meal and posed for the official class picture. The most enjoyable part was when attendees each spoke for three to five minutes and described their lives. Many of us are now retired but still living very active and productive lives. One, **Elizabeth Lamb** of Florida, will get her law degree in December.

The final event was a Sunday morning brunch at the home of Sarah and **Shep Nuland**. We were blessed with a beautiful sunny day and the blooming of Sarah's roses, rhododendrons, peonies and irises.

We enjoyed an atmosphere of close fellowship despite

being a diverse group of personalities with many different interests. See you at the 50th.

— **S. Jack Landau**

1960

40th Reunion

The millennial reunion of the class of 1960 was a splendid affair. Of the 65 remaining members of our class, 28 attended, most with spouses or significant others, for an extraordinary attendance rate of 43 percent. As has been our tradition, the class had its own reunion seminar. **Es Esselstyn** made a remarkable presentation on dietary intervention in cardiovascular disease. He demonstrated coronary artery disease reversal with full

restoration after significant narrowing, after as little as six weeks on an extremely rigorous diet that was devised by Es, which was equivalent to the dietary intake of the victims of famine in sub-Saharan Africa. For our class of leaders, I then made a presentation on "When Illness Strikes the Leader." This sobering one-two punch was followed by a clambake, replete with drawn butter, lobster, shrimp, clams, roast beef au jus, and strawberry shortcake, enough to clog fully the healthiest of arterial systems. **Vic Altshul**, reunion co-chair, and I want to apologize to the class participants for this unfortunate sequence. Perhaps mindful of the effects of his lecture, Es

was not able to stay for the evening gluttony, and the class admirably rose to the challenge, putting a wall of denial in place as we gorged ourselves on this wonderfully rich repast. On Saturday, the class dinner was held in a private dining room at the New Haven Lawn Club, arrangements for this perfect venue courtesy of Vic. The evening was awash with sentiment, nostalgia, and zany humor as the members of the class shared stories of their professional accomplishments, personal journeys, and warfare in the arena of managed care.

In attendance were: Vic and Laura Altshul, **Lanny Ames**, **Jack Barchas** and his wife Rosemary Stevens, **Don** and Nancy **Buebendorf**, **Gerry** and Dona **Cimmino**, **Frank** and Ann **Cogliano**, **Jon** and Carol **Courtney**, **Malin** and Lenore **Dollinger**, **Es Esselstyn**, **Jim Eustermann**, **Warren Fisher**, **Gene Gaenslen**, **Rick Kindwall**, **Susan Kleeman**, **Tom** and Alice **Kugelman**, **Ed** and Linda **Longo**, **Bob Marcus** and Vi Simons, **Gene McCarthy**, **Al** and Barbara **Newcomb**, **Fred** and Ruth **Palace**, **Jerry** and Carolyn **Post**, **Nancy** and Bill **Powell**, **Al Ross** and Jane Simmons, **Dan** and Linda **Rubin**, **John** and Suzanne **Schrogie**, **Fred Stargardt** and Pat Madden, **Bob** and Judy **Wallach**, and **Ron** and Katherine **Yankee**.

— **Jerrold M. Post**

Reunion 2000

Reunion reports



1965

35th Reunion

On the Saturday evening of reunion weekend, **Bob** and **Sue Weiner** hosted a French Country picnic at their summer cottage on Long Island Sound in Madison. Attending were **Phil** and **Marjorie Askenase**, **Frank** and **Donna Grady**, **Reid** and **Ellie Heffner**, **Dave** and **Gretchen Hill**, **Ginny Burnham Johnson**, **Ron Karpick**, **Mohandas** and **JoAnne Kini**, **Mark Lischner**, **Mike** and **Lili Mayor**, **Larry** and **Linda Ossias**, **Bob** and **Mary Pickens**, **Jibby Rachleff**, and **John** and **Greta Seashore**. **Mark** traveled the farthest (California), **Ginny** traveled the least (Guilford), and **Jibby** arrived by sailboat! Despite most of us being in practice 30 years, I was the only one fully retired. Many others were cutting back and considering joining the gainfully unemployed. Hopefully, by 2005 most of the class will have hung up their stethoscopes for good, and will have nothing better to do than attend our 40th reunion.
— **Robert G. Weiner**

1970

30th Reunion

The class reunion dinner was held on Saturday night at **Anne Curtis** and **Jim Fischer's** house in Madison. Attendees included **John Blanton** and **Katie Dyer**, **Romney** and **Mary Sue Burke**, **Michael** and **Janice Danzig**, **Margaret DeLano**, **Jonathan** and **Rosanne Ecker**, **Robert Epstein**, **Paul** and **Patricia Hessler**, **Jonathan** and **Susan Katz**, **Leonard** and **Ellen Milstone**, **Dennis** and **Reissa Shield**, **Richard** and **Laurinda Solomon**, **Philip Steeves** and **Karl Wustrack**.

Anne Lucky called to say hi to everyone. The evening was a success and a good time was had by all.

— **Anne McB Curtis**

1975

25th Reunion

Quality not quantity made for a good time at **Adriana's** restaurant on Saturday night for the class of 1975. **Paul Johnson** and **Liz Gawron** took time off from their busy medicine and peds practices to stop by in New Haven on the way to a vacation in Italy and brought with them the official class picture with our 1971 mug shots—so not only did we talk about you, we commented on your picture, too. **Sal** and **Susan Romano** didn't have to travel far from Water-

bury and **Sal's** dermatology practice, and at Friday's clam-bake, daughter and Yale medical student **Sally** joined us as well. Waterbury was also well represented by the **Ruchmans**, where **Mark** is an ophthalmologist. **Morris Westfried** drove up from New York City and his dermatology practice, and updated us on his turn toward natural remedies. **Jim Rosenbaum** filled us all in on what rheumatology was like in Portland, Ore., home of many naturalists. **Jim** is still running marathons. **Jim's** wife, **Sandy**, has a busy cardiology practice there as well. **Sandy Hershberg** came from D.C. where she practices psychiatry. **Jamie Robertson** came up from Philadelphia and his cardiology practice.

Faculty cardiologist **Henry Cabin** and his wife **Laura**, whose two-year-old was in the care of her 20-year-old brother, with regular phone advice from **Henry**, represented the New Haven contingent. **Yours** truly is still trying to juggle the roles of delayed childbearing mother of a 10- and a 12-year-old, and menopause maven. **Sid Spiesel** couldn't make the dinner—but some of you may have read in the *Yale Bulletin and Calendar* about **Sid's** new patented lice discovery technique. Now that's practical pediatrics (See page 9).

A few of our classmates sent official regrets. **Doug Zushman** sends his best. He couldn't make the last reunion because of his triplets, and family illnesses kept him from voyaging from California now. And cardiologist **Eddie Atwood** had to stay and take care of his Stanford students, but he sends his best, too. **Bruce McLucas** couldn't come at the last minute because one of his LA VIP patients was in pre-term labor.

We all thought about the classmates who couldn't be there with us, **Buddy Lisker**, **Jim Grabman** and **Sandy Shepherd** among them. But all present send our best to everyone who wasn't able to come—and **PJ** has saved photos for the next reunion.

— **Mary Jane Minkin**

1980

20th Reunion

A good crowd including 17 class members and seven spouses converged on New Haven to celebrate our 20th reunion. On Friday evening we enjoyed a clam-bake complete with spectacular thunderstorm. On Saturday night we gathered at **Zinc**, a trendy New Yorkish eatery on the New Haven Green. At the dinner much backslapping and hugging were seen as relationships were renewed. **Dean Kessler** even paid a surprise visit as he had decided to drop in on some of the "younger" reunion classes.

Traveling farthest was **Kim Swartz** from Portland, Ore., where he practices general and vascular surgery. **Kim** and his wife, **Teresa**, have two young children, **Kyle** and **Derek**. Hailing from Houston were **Alan Schlesinger** and his wife, **Paula Chandler Schlesinger**, M.D. '82. **Alan** is a pediatric radiologist at Texas Children's Hospital. **Paula** is also busy both at home with children **Katie**, **Jack** and **Madeline**, and at work as a pediatrician at the **Kelsey Seybold Clinic**. Soon to join **Alan** in Texas will be **Eric Nestler** and his wife **Sue**, along with **David**, **Matthew** and **Jane**. **Eric** will be assuming the chair of the Department of Psychiatry at UT Southwestern Medical Center in Dallas. **Mary Hill** and **Robert Wise** drove in from Rochester, N.Y., where **Mary** happily practices family medicine with the help of her husband, who doubles as office manager as well as being a massage therapist. Together they have four children: **Heather**, **Seth**, **Alex** and **Joshua**. **Mary** says she "missed seeing all the people who didn't come. They better come next time!"
Evangeline Franklin has landed in New Orleans, where she enjoys ballroom dancing and needlepoint as well as being network medical director for **Aetna U.S. Healthcare**. For those interested in the

management side of medicine she recommends a Web site, www.acpe.org, maintained by the American College of Physician Executives. **David Gowdy** lives in Alpharetta, Ga., along with his wife, **Stephanie**. They have two children, **Brandi** and **Brienna**, as well as a young grandchild by **Brandi**, **Taylor Haynes**. **David** is involved in occupational medicine with **Health South**, a "rehab" company, as well as being medical director at a hotel and at a local jail. Completing our M.P.H. roundup is **Donald Moore**, one of the panelists for "The Many Faces of Medicine" (See page 68). **Donald** practices family medicine in Brooklyn and is also on the clinical faculty of Weill Medical College of Cornell University. **Donald** and wife, **Christine**, have two children, **Ashley** and **Crystal**.

The Northeast/Mid-Atlantic contingent included a rash of dermatologists. Notably present were **Jean Bologna** (our beloved, honorable dinner chairperson) and her husband, **Dennis Cooper**. **Dennis** reports that **Jean's** hobby is dermatology! Both are on the faculty at Yale. **Ethan Lerner** and wife **Lisa** dropped in from Boston. **Ethan** is on the faculty at Harvard Medical School and describes himself as a "full-time dad." **Lisa** is also busy with dermatopathology and is an instructor in pathology at Harvard Medical School. The **Lerners** have three children, **Max**, **Sofia** and **Larissa**.

Patricia Brown practices general dermatology, solo in suburban Maryland. When not dodging HMOs, she keeps busy with church and community activities.

David Adelberg joined us from South Dartmouth, Mass., where he and his wife, **Linda**, live on the water with their two young children, **Ashley** and **Jake**. **David** enjoys private practice orthopaedics and being managing partner for his group. **Marc Glickstein** and being managing partner for his group. **Marc Glickstein** drove in for Saturday dinner from South Glastonbury, Conn., where he lives with **Sylvie** and their children **Sam** and **Emma**. **Marc** is a partner in the **Jefferson X-Ray Group** and is section chief for MRI at **Hartford Hospital**. **Howard Telson** came up from the **Big Apple**, where he is a psychiatrist on the faculty at **NYU** and is involved in "legal, legislative and policy stuff." His life partner is also a psychiatrist.

Finally we were graced by the presence of a number of folks who have not yet escaped New Haven's warm embrace. **Larry Young** is on the medical faculty at Yale in cardiovascular medicine. He reports it is interesting to be near the top end of the clinical chain of command after having been, not so long ago, in its lower reaches. **Larry** was accompanied by his wife,

Lynn Tanoue, M.D. '82, also on the faculty at Yale in pulmonary medicine. They have three children, **Robert**, **Marissa** and **Grant**. **Gary** and **Deborah Dyett Desir** live in Woodbridge and are busy with four boys, **Alexander**, **Christopher**, **Matthew** and **Carl**. **Gary** is on the medical faculty at Yale specializing in nephrology. **Deborah** is a rheumatologist in private practice. **Ann Hoefler** (a.k.a. **Henderson**) with husband **Ben Bradburn** completed our dinner group. Together they live in New Haven, sharing responsibility for two adolescent children, **Charlotte** and **Sophie**. **Ann** enjoys practicing with **Guilford Pediatrics** while **Ben** continues orthopaedic private practice in New Haven. And so until the 25th. Be there or be square!

— **Patricia C. Brown**

1985

15th Reunion

Continuing the trend set at the 10-year class reunion, avoiding New Haven appears to be a class trait. Those few of us who did choose to gather enjoyed an evening reminiscing about the rest of you. Four class members and their partners and children spent a pleasant evening at **JoAnne Burger's** house in Woodbridge.

Sam Goos, committed dermatologist, arrived at our sunny home armed with enough

Reunion 2000

Reunion reports



sunscreen to keep our entire graduating class pale and healthy. His wife, Sarah Goos, and their two children shared with us news about their horse farm in Concord, Mass. **Jay Gates**, who is practicing pathology at Dianon Systems in Connecticut, was accompanied by Ruth Schuler. He would be happy to read anyone's slides for a second opinion and says "I miss you, send me your tissue." This has been a year of many changes for **Barbara Guillette**, who attended with her husband, Curtis Perry, and their two boys. Barbara recently merged her ENT practice with two partners and was thrilled not to be carrying a beeper to the reunion. Among the few members of our class who never seemed to manage to leave scenic New Haven are JoAnne Burger and husband Michael Caplan, M.D., Ph.D. '87. JoAnne continues to enjoy her pediatric practice at Yale Health Plan and Michael proudly reports that he gives the defecation lecture in the physiology course at YSM.

Others whom we remembered included **Peter Rubin**, who was married last year to Laura Kelly, a dermatologist. The wedding was attended by Detroit transplant surgeon **Bob Higgins** and **Rich Garber**, a Boston-area pediatrician. Sam Goos, who dished the "derm dirt," also shared that **Victor Hsu**, a rheumatology

researcher, had the good taste to marry a fellow dermatologist. Barbara mentioned enjoying Cleveland pediatrician **Robert Needleman's** columns in *Parents* magazine. A personal communication from **Julie Danaher**, ob/gyn in Wyoming, who could not attend due to a speaking engagement, passed along the happy news that **Sara Schutzman**, Boston pediatrician, will be married this summer. **Michael Gilbert**, family practitioner in California, spent the weekend driving his daughter to take the SATS. (Remember when Meghan was born in our third year?) Jay and Ruth reported that they enjoyed a lovely weekend with **Robby Aronowitz** and Jane Mathieson. Robby continues to write about the history of medicine and Jane practices psychiatry in Philadelphia. Personal communications reveal that **Brian Lombardo** continues to be busy with his family and his family practice in pastoral Vermont and **Mary Nakamura** continues to enjoy her two children and rheumatology practice in San Francisco. We still have lots of leftover food and hope to share it with a larger group of returnees at the 20th.

— **JoAnne Burger**

1990

10th Reunion

The Class of 1990 was well represented at the reunion and benefited from a sunny New Haven weekend. **Susan Anderson** and **Kristen Hepler** were applauded by the group for traveling from San Francisco. Susan is at Stanford University and is actively involved in a tropical medicine Web site. Kristen is an ENT in the Bay area and is married to an investment banker.

Nancy Angoff, Yale's associate dean for student affairs, helped host our class dinner on Saturday evening at the Graduate Club. **Will Andrews**, married with a son, is practicing internal medicine near Boston. **Chander Samy** is married and is a retinal surgeon in Ocala, Fla. **Vinita Sehgal** is a nephrologist in New York City and is married to **Elan Louis**, M.D. '89, and has two boys. **Sam Colin** is married and is busy managing a health care investment fund on Wall Street. **Jonathan Foster**, married with three children, is an ob/gyn in Waterbury; he has kindly offered to host a welcome party at the 15th year reunion around his new pool.

Alan Hilibrand is a spinal surgeon at Thomas Jefferson Hospital in Philadelphia and is married to Gittel (Yale College '90) with a daughter. **Laurie-Ann Nessralla**, an anesthesiologist who recently moved back to Connecticut, is married with one daughter. **Bever-**

ly Stoute is a psychiatrist in New York City; she and her husband are expecting their first child this summer. **Bruce Baker** remains at Yale (surprise!) as a faculty member in the Department of Psychiatry. As for myself, I am married with three children and practice pharmaceutical medicine and dermatology.

Dean Kessler and his wife toasted the class members prior to dinner at the Graduate Club. Dr. Nicholas Spinelli and Connie Tolliver were also present. Dean Gifford told us of his "retirement" and his plans to teach science to New Haven youth and also consult for an Internet medical education company. Finally, for those of us who left Yale in '91 or '92, Sharon McManus, director of alumni affairs, kindly reminds us to check our class status to ensure that we are affiliated with the class of 1990. See you at the 15th reunion.

— **Ercem S. Atillasoy**

1995

5th Reunion

For all those who missed the reunion, definitely make plans for the 10th! It is sure to be even more fun than the fifth. We enjoyed all of the planned events, as well as an evening at Mory's that brought back many memories.

The reunion weekend brought a record turnout of fifth-year alumni! Many local alums were spotted, including **Jon Driscoll**, who is completing his ortho residency at YNHH and preparing for a sports fellowship at New England Baptist, and **Chris Wahl**, who is about to begin a chief year in ortho at YNHH. (They both missed the great dinner Saturday night due to their department party.) **Sung Lee** made a brief appearance at the clambake wearing scrubs as proof of his continued status as a neurosurgery resident. **Marty Mayse** was at the Friday events and reports that when he finishes his pulmonary/critical care fellowship at YNHH, he plans to abandon clinical medicine for the rewards of industry. **Amy Knorr** tells us she is finishing up her neurophysiology fellowship and will be joining a private practice in Norwalk. **Pia Ali-Salaam** joined us at the dinner Saturday and appeared delighted to inform us that she has only one year of plastic surgery training remaining. **Dara Thomas** is still living in New Haven and has been practicing in a pediatrics clinic in Bridgeport since completing residency at Yale. **Steve Craig** has also been in practice in pediatrics for two years but has hung his shingle in Hartford.

Others made a journey to New Haven. The greatest distance traveler was **Christine Brozowski**, who flew in from California. She has been in

general practice in Berkeley for over two years after completing only a total of 13 months of residency (and most of an MBA) since graduation. **Tim Kinkaid** drove north from the Carolina coast where he is already making plans to move after finishing the remaining year of his ortho residency at Duke. **Dierdre Reynolds** came in from New York, where she is practicing psychiatry at Mt. Sinai. **Nick Schwartz** also came from Mt. Sinai, where he is an ER attending and doing acute pain research. **Farzad Mostashari** won the "coolest job" award as an epidemiologist for the CDC investigating outbreaks in New York City. He and his wife are expecting a baby in July. **Jake Roth** drove down from Boston, where he is completing his psychiatry internship at Harvard after working as a consultant for some time. Unfortunately, his wife Emily (Rosenberg) Roth was unable to come due to commitments with her pediatrics fellowship. Jake was, however, proud to announce the impending arrival of their first child this summer. The pediatric waters in Boston must be fertile, because **Barbara (Garcia) Pena** and husband Tino Pena, M.D.

'94, are also expecting a baby later this year. Barbara is completing her peds ER fellowship and will be staying on at Boston Children's as a chief resident this year. **Larry Solomon** flew in from Chicago, where he is a cardiology fellow. **Eric Gomes** made the trip from Lawrenceville, N.J., where he has had a private internal medicine practice since finishing residency at Yale. My husband **Brian Adams** and I enjoyed the weekend getaway from Cincinnati, where Brian is director of dermatology at the VA and I am about to begin a research fellowship in pediatric rehabilitation medicine.

The reunion gave us a chance to gather reports about other classmates unable to attend. **Jeff Algazy** couldn't return due to commitments in California, where he is a Robert Wood Johnson scholar. New Haven locals who were missed include **Henry Hsia** (a plastic surgery resident), **Elizabeth Claus** (in neurosurgery), **Eric Hughes** (new daddy and relatively new resident!) and **Lynn Sullivan** (a three-time mom and chief resident in internal medicine, about to join the Yale faculty). In Boston, **Alice Chang** just switched gears from medicine to an "Internet job" at Harvard while **Cathleen (Greenberg) London** is in family practice in Brookline. **Tigist Hailu** finished internal medicine at Penn and is about to start a cardiology fellowship at

Cornell. **Nora Canty** finished her radiology residency and is in practice in Oakland, Calif. Perhaps she runs into **Becky Shoemaker-Zorovic**, currently an endocrinology fellow at Stanford. Rumor has it that **Todd Alamin** and **Artis (Tague) Montague** will be relocating to San Francisco from San Diego this summer, bringing along children Healey and Spencer. **Ben** and **Erin (Scalley) LeBlanc** finished residency at Stanford and relocated to Portland, Ore.

We would love to report news from anyone else out there, so drop me a line at jvargasadams@pol.net. Please also send me your e-mail addresses, because Dr. Gifford (who was at the reunion and marvelously hasn't changed an iota) is planning a study comparing our career goals as first-year students with our current occupations. I'll forward a class list of e-mail addresses to him.

— **Jilda Vargus-Adams**

Photographs by Peter Casolino and John Curtis

In memoriam

In June the Columbia Hospital for Women in Washington, D.C., dedicated The **Michael A. Puzak**, M.D., Continence Center to honor the late urologist and genito-urinary surgeon who graduated from the medical school in 1942. The Continence Center, the first of its kind in the Washington, D.C., area, was founded in 1986 by one of Puzak's former students at Georgetown University Medical School. Under a grant from Puzak's family, the expanded services of the center will emphasize awareness of sports-related incontinence and the newest treatment for pregnancy-related and older-age incontinence.



Michael Puzak

James M. Bunce, M.D. '42, died of cancer on Aug. 30. He was 82.

Born in Hartford, Conn., Bunce graduated from the Loomis School. After undergraduate and medical studies at Yale, he completed his internship and residency training at Johns Hopkins University Hospital and Hartford Hospital. For his service in the Army Medical Corps in Europe during World War II he received the Bronze Star for Valor.

Bunce, a West Hartford resident, practiced obstetrics and gynecology at Hartford Hospital for 32 years. He was a fellow of the American College of Obstetrics and Gynecology and a supporter of the anatomical gift program of the University of Connecticut School of Medicine.

Sanford Roy Dietrich, M.D. '44, of Santa Barbara, Calif., died Aug. 10 at home. He was 80.

Born in Kansas City, Mo., Dietrich attended the University of Kansas for two years before transferring to Yale to complete his bachelor's and medical degrees. He was enrolled in the Navy V-12 College Program at Yale and served as a physician during World War II with the rank of lieutenant junior grade. He then completed his residency at Barnes Hospital in St. Louis, Mo.

Dietrich practiced plastic and reconstructive surgery in California until his retirement. He also served as president of

the Santa Barbara County Medical Society.

John L. Doppman, M.D. '53, died of cancer Aug. 21 at the National Institutes of Health (NIH) Clinical Center in Bethesda, Md., where he served as chief of diagnostic radiology for 25 years.

A resident of Potomac, Md., Doppman graduated from Holy Cross College. After he received his medical degree from Yale, he completed his internship at Mercy Hospital in Springfield, Mass. He served in the Navy from 1954 to 1957 and went on to residency training in radiology at the Hospital of St. Raphael in New Haven. Doppman worked in research at the Postgraduate Medical School at Hammersmith Hospital in London and at the Karolinska Institute in Stockholm, before joining the NIH as deputy chief of the diagnostic radiology department in 1964.

During his career, Doppman developed and performed various semi-surgical radiologic procedures, including angiography. He also did research on vascular malformations of the spinal cord and developed ways to visualize and treat them. His later research concentrated on endocrinology and techniques for locating ectopic or elusive glandular tumors.

James M. Giffin, M.D. '61, retired surgeon and author, died of leukemia on May 12 at his home in Ridgway, Colo. He was 64.

Born in New York City, Giffin graduated from Amherst College, received his medical degree from Yale and trained in surgery at Barnes Hospital in St. Louis, Mo. He went on to become the chief of surgery at Beach Army Hospital in Mineral Wells, Texas, and at the 45th MUST Hospital at Tay Ninh, Vietnam. He was awarded a Bronze Star.

Giffin practiced surgery for 11 years in Springfield, Mo., before moving to Colorado in 1978 to serve on the staff of Delta County Memorial and Montrose Memorial hospitals. In 1991, during Operation Desert Storm, he was called to active duty and served at the Fitzsimmons Army Hospital in Denver, the Fox Army Hospital in Huntsville, Ala., the 24th Evac Hospital in Seoul, Korea, and Darnall Army Hospital in Fort Hood, Texas. Giffin retired in 1995 with the rank of lieutenant colonel and moved to Ridgway.

Giffin wrote a book on the Great Pyrenees breed of dog, which he raised and showed, and wrote several books on the care of dogs, cats and horses.

Malcolm Hill, M.D. '57, of New York City, died of cancer July 16. He was 70.

Hill was a graduate of Swarthmore College and

received his medical degree from Yale. He was an associate clinical professor of psychiatry at Weill Cornell Medical College and was known by colleagues as a gifted and sensitive therapist and teacher.

T. Dennie Pratt, M.D. '37, died June 8 in Bar Harbor, Maine. He was 88.

Pratt, born in Brookline, Mass., graduated from Phillips Andover Academy in 1930 and from Harvard University in 1934. He received his medical degree from Yale in 1937 and completed his internship and residency training at Boston Hospital and the Mallory Institute of Pathology.

Pratt was a surgical fellow at the Massachusetts General Hospital and later had a practice in New York City. He served in the Army Medical Corps in World War II. After his retirement in 1977 at age 65 he enjoyed sailing, gardening and tennis.

Roy C. Robison, M.D. '36, died Sept. 12 at his home in Tucson, Ariz. He was 91.

After serving in the Army Medical Corps during World War II, Robison opened a practice of obstetrics and gynecology in Stamford, Conn. He also served as vice president of St. Joseph's Hospital in Stamford. Robison lived in Noroton, Conn., until his retirement and enjoyed sailing, skin diving and tennis and was a member of the local yacht club. He also enjoyed music, especially jazz.

Nathan E. Ross, M.D. '28, of Hollywood, Fla., died April 23. He was 95.

Ross, who graduated from Yale College in 1925, spent much of his career as a family practitioner in Beechhurst, N.Y., with his wife Hilda at his side as his office manager. During World War II, Ross served in Italy and North Africa. In 1946 he returned to New York to practice in Astoria. At age 55, he left his busy family practice to receive residency training in anesthesiology, which he practiced until his retirement to Florida in 1975.

Robert Treat Rowe, M.D. '40, an Ohio native, died April 2. He was 86.

Rowe graduated from Harvard University in 1935 and, after receiving his medical degree from Yale, served his internship and residency at Akron City and Akron Children's hospitals. He was coroner of Medina County, Ohio, from 1941 to 1945, then moved to Grosse Pointe Woods, Mich., to practice pediatrics. He was an attending at Henry Ford Hospital and the Herman Kiefer Hospital for Infectious Diseases. He practiced in Akron from 1949 until 1952, when he joined the U.S. Air Force as a major, serving at Nellis Air Force Base in Nevada. In 1954 Rowe resumed his career in Akron, where, with a colleague, he founded The Pediatrics of Akron practice. He also held

the positions of chief of staff at the Akron Children's Hospital and clinical associate professor emeritus of pediatrics at the Northeastern Ohio Universities of Medicine. He retired in 1980.

Douglass Willey Walker, M.D. '39, died Aug. 20 at the Penobscot Bay Medical Center in Rockport, Maine. He was 87.

Walker received his undergraduate degree from Bowdoin College in 1935 before beginning his medical studies and, later, a residency at Yale. His residency was interrupted during World War II, when he joined the Army Medical Corps and was assigned to the preventive medicine division of the Surgeon General's office in Washington. He became executive officer and received the Legion of Merit for his performance there. Walker returned to Yale for a fellowship in pediatrics and then joined the Laconia Clinic in New Hampshire for 17 years. He also worked in the allergy department at The Children's Hospital Medical Center in Boston.

In 1963 he was named assistant dean for administration of the Johns Hopkins Medical School in Baltimore and assistant professor of pediatrics. He was later promoted to associate dean. Walker was appointed as the Maine Medical Center's first medical director in 1970 and was named vice president of medical affairs in 1975.

Henry M. Williams, M.D. '52, died Aug. 29 at his home in Avon, Conn. He was 74.

Williams' undergraduate schooling at Yale was interrupted by World War II, in which he served as an infantryman in France and Germany. A bullet cut short his military career and he was awarded a Purple Heart. He returned to Yale to complete his premedical studies, graduating from Yale College in 1946, and continued on to the medical school. He served his internship and residency at Hartford Hospital from 1952 to 1956 and spent a year as a special fellow in medical neoplasia at Memorial Sloan-Kettering.

In 1957 Williams entered practice in Hartford as one of the first medical oncologists in the state of Connecticut. What followed was a 28-year career in the field of medical oncology that was finally recognized as a subspecialty by the American Board of Internal Medicine in 1967. He was an assistant clinical professor of medicine at Yale from 1963 to 1986. After retiring in 1986, he worked as a medical consultant, area medical director, director of medical policy and consultant in technology assessment at Aetna Life and Casualty until 1996. Williams enrolled at the University of Hartford in a business/medicine program in 1997 and received an E.M.B.A. degree in 1999 at the age of 73.

The case of the CIA and butter clam toxin

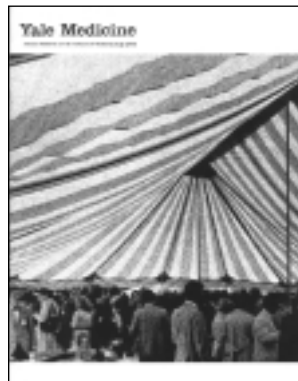
“While much of America is viewing the Senate hearings on the activities of the Central Intelligence Agency with some dismay,” *Yale Medicine* reported in its Fall 1975 issue, “J. Murdoch Ritchie, PH.D., D.S.C., Eugene Higgins Professor of Pharmacology, is watching them with considerable concern.

“The object of Dr. Ritchie’s concern is a supply of the poison, saxitoxin, which the agency kept in violation of a Presidential order in 1969 to halt the development of biological and chemical weapons, and to destroy existing stockpiles. The Senate Select Committee on Intelligence, chaired by Senator Frank Church, learned this summer that a middle-level official of the CIA had failed to destroy supplies of saxitoxin and cobra venom.

“Saxitoxin, which is derived from tissues of butter clams and other shellfish, was developed by the CIA for various possible covert activities. In testimony that seems more likely from a James Bond novel than a Senate hearing, one source claimed that the agency considered using the poison in suicide pills so that U.S. agents could kill themselves if they were caught by enemy agents. ... According to Dr. Ritchie, the amount of saxitoxin retained by the CIA, if properly administered, could kill up to 5,000 persons.”

The article went on to say that Ritchie had asked the agency and the Senate Committee to prevent the destruction of the shellfish toxin on the ground that it could be “extremely valuable for medical research on diseases of the nervous system and for our understanding of how the nervous system normally works.”

“The toxin,” he wrote in a letter to Church, “reacts in extremely small concentrations with a critical component of the nerve membrane, to block conduction in nerves. It can, therefore, be used to study the functional integrity of the nervous system.”



Asked about the outcome of the case, Ritchie (who continues to conduct research in the Department of Pharmacology as the Eugene Higgins Professor) told the rest of the story in a letter to *Yale Medicine* in September. “In the end the toxin was not destroyed,” he wrote. “At first, it was suggested that I take charge of the CIA’s saxitoxin, with the idea that I would be responsible for its appropriate distribution to scientists who asked for it. However, I realized that there would be very many applicants for the toxin, which was in somewhat limited supply. So I would be forced to ration it, or even deny some applications, and would surely make enemies. I therefore declined the offer but strongly suggested it be held by the NIH, a recommendation that was indeed accepted.

“My work did not come up with any method of counteracting the effects of the poison saxitoxin or the development of new kinds of anesthetics—neither has anyone else’s. It did, however, account for the main defect in multiple sclerosis, which is the inability of nerves that have demyelinated to conduct nerve impulses.” Nerve conduction fails and paralysis ensues.

“Unfortunately, the ultimate cause of the demyelination leading to MS remains unknown.”

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