Medicine@Yale
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For patients, research … and for Yale

Yale alumnus, benefactor underwrites construction of new cancer hospital

Joel E. Smilow, a 1954 graduate of Yale College, has done a great deal for his alma mater. In the 1980s he made a seven-figure gift to endow the head football coach position, a post held at the time by the legendary Carm Cozza. He was the lead donor to the renovation and expansion of the Lapham Field House, now called the Smilow Field Center, and over the years he endowed five other coaching positions. He stewarded the major gifts component of the university's "… and for Yale" capital campaign in the 1990s and received the university's highest honor, the Yale Medal, in 1993 for these and numerous other efforts.

A decade later, after serving as treasurer and then secretary of the Yale College Class of 1954, he played a key role in the implementation of that class's $120 million gift to Yale, the largest class gift in the university's history.

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

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

Joel Smilow says "a confluence of positive things" inspired him to make the major gift that will underwrite the construction of the Smilow Cancer Hospital, which will open in 2009.

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

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

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

Yale Cancer Center (YCC) Director Richard L. Edelson, M.D., says that the Smilows' gift "is happening at exactly the right time," and is the latest instance of "an alignment of the stars" in cancer treatment and research at Yale.

Pointing to Yale's recent acquisition of the Bayer HealthCare campus in West Haven, Conn., and its 550,000 square feet of laboratory space (now known as Yale's "West Campus"), Edelson, professor of dermatology, says that "there may not be any other cancer center in the United States where two such extraordinary facilities—clinical and research—are coming online at the same time, offering a quite special opportunity for programmatic growth and development."

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'Thriving survivor' tells his tale

At the celebration of the gift establishing the Smilow Cancer Hospital, cancer survivor Pat Sclafani, a software engineer for the ABB Group who lives in Marlborough, Conn., gave a patient's perspective on the clinical care offered by Yale Cancer Center.

In mid-September 2006 I was diagnosed with thymoma, a cancer of the thymus gland. I was told that this type of cancer is very rare, with about a thousand cases a year in the U.S.

After hearing those words, I went back home and jumped on the Internet, and it was apparent from the initial information I could gather that my condition was serious and that I needed to be in the hands of people who had experience dealing with it.

My first call was to Yale Cancer Center, where the phone was answered by Linda David, the case coordinator for the thoracic oncology program. Linda listened for over an hour as I told my story. She coached me and she consoled me. Linda helped me to understand what was going on and

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(From left) Cancer survivor Pat Sclafani with daughters Marie and AnnPatrice, and wife Lucille.

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Surgeon Sukru Emre has brought his indomitable spirit and unflagging energy to Yale's transplant program, performing four kidney transplants and 12 liver transplants since his arrival in July.

Transplantation, transformed

Turkish-born surgeon leads a revived center for organ transplants at Yale

In the well-known Greek myth, Zeus is so incensed that Prometheus stole fire from the gods that he condemns the audacious thief to be chained to a rock, where an eagle descends to tear his liver from his body day after day without end. According to transplant surgeon Sukru Emre, M.D., this bizarre punishment suggests that the ancient Greeks knew that the liver is one of the few human organs that can regenerate after injury.

Emre moved to Yale last July from Mt. Sinai Medical Center in New York, where he directed the pediatric and adult liver transplant programs and helped develop Mount Sinai's transplant surgery fellowship program, one of the most sought-after training programs in the country. He is breathing new life into the Yale-New Haven Organ Transplant Center, just as he's done for his many patients for whom he's performed life-saving liver and kidney procedures over the years.

In his short time in New Haven, Emre has already made history by performing the first "split-liver" transplant in Connecticut. The human liver is composed of eight segments, each of which can grow into a complete, functioning organ, and Emre was able to use two sections of a donor's liver to replace the liver of a 7-month-old boy with biliary atresia, a defect that afflicts about 1 in 10,000 infants and is the most common reason for pediatric liver transplants. The eight-hour surgery to implant the liver section in the infant was performed under a microscope using tiny needles and sutures thinner than a human hair. The remainder of the liver was transplanted into an adult. Both recipients are at home and doing well.

Eventually, Emre plans to perform living donor liver transplantation, another cutting-edge surgical procedure in which he specializes. In this procedure, a liver segment from a live donor is transplanted into a recipient, an operation that has been performed elsewhere in this country and in Europe, but never in Connecticut. There are more than 16,500 Americans awaiting livers for transplant, according to the United Network for Organ Sharing.

Lifelines
Sukru Emre

"One of the great things about Sukru is that he won't accept defeat," says Benjamin Shneider, M.D., the former chief of pediatric hepatology at Mt. Sinai, who adds that he routinely saw Emre conquer "unsolvable clinical problems."

A native of Turkey, Emre received his medical degree and completed his residency at the University of Istanbul. He did a fellowship in hepatobiliary surgery there before coming to the United States in 1988 to train in transplantation, which "makes you a complete physician," he says, because of the depth and breadth of medical knowledge it requires.

After finishing a transplantation fellowship at Mount Sinai, he and his wife, Umit Emre, a pediatric pulmonary specialist, decided to stay in the United States so their three daughters could be educated here.

According to Robert Udelsman, M.D., M.B.A., chair and William H. Carmalt Professor of Surgery, Emre's appointment is part of a $12.5 million investment in Yale's section of transplantation surgery that will significantly increase the number of surgeons, nurses and support staff. Emre's mission is to revive a largely inactive liver transplant program while strengthening Yale's kidney and pancreatic transplant programs. Since his arrival, he has performed four kidney and 12 liver transplants, five in children and seven in adults. The center's waiting list for liver transplants has grown from about five to 40, and Emre's goal is to see it grow to between 100 and 150 within a year.

"One of the best universities in the world deserves a great transplant program. That's my nature; I accept a challenge," Emre says. "And I don't give up."

Surgical oncologist is appointed Lampman Professor of Surgery

The Medical School Historical Library was the setting for a ceremony marking the appointment of Ronald R. Salem, M.D., as Lampman Professor of Surgery. Salem specializes in surgery for esophageal cancer, hepatobiliary and pancreatic surgery, retroperitoneal sarcomas and other intra-abdominal malignancies. His research interests include combined modality therapy for esophageal cancer and the management of benign and malignant liver tumors.

Ronald Salem

Educated in Zimbabwe, Salem earned degrees in medicine and surgery from the University of Rhodesia. He interned at Harare Hospital in Zimbabwe and was an emergency room physician at Guy's Hospital in London, England, before completing a residency in general surgery at Hammersmith Hospital there. Salem then completed a surgical oncology fellowship at New England Deaconess Hospital and the Dana-Farber Cancer Institute in Boston, Mass.

Salem joined the School of Medicine faculty in 1990 as an assistant professor and became an associate professor in 1996. He was appointed full professor in 2005. He was awarded the annual General Surgery Resident Teaching Award multiple times, as well as the Alvan Feinstein Clinical Teaching Award in 2005. He is a member of the medical school's Society of Distinguished Teachers.

The Lampman professorship was established from a bequest of Leonard Bronk Lampman of the Yale College Class of 1896.

Expert on protein folding is named Sterling Professor

School of Medicine researcher Arthur L. Horwich, M.D., has been named Sterling Professor of Genetics and Pediatrics. The Sterling Professorships, endowed by John William Sterling of the Yale College Class of 1864, are among the highest honors bestowed on Yale faculty.

Horwich, a member of the medical faculty since 1984 and a Howard Hughes Medical Institute investigator since 1990, studies how the chains of amino acids that make up proteins fold into the unique three-dimensional shapes needed for the proteins to successfully perform their tasks.

Arthur Horwich

Horwich studies chaperonins, molecular machines that play a key role in the proper folding of proteins.

The chaperonins, present in all living cells, are part of a quality-control network that ensures that proteins are properly configured, and that poorly folded proteins are targeted for destruction. Clumps of unfolded or improperly folded proteins called aggregates have been associated with such conditions as Alzheimer's, Parkinson's, "mad cow" disease and the paralyzing nerve disorder amytrophic lateral sclerosis.

Horwich received his B.A. and M.D. degrees from Brown University. He was elected to the National Academy of Sciences in 2003, the Gairdner International Award in 2004, the 2006 Stein and Moore Award of the Protein Society and the Wiley Prize in the Biomedical Sciences in February of this year.

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Advances

Health and science news from Yale

Does breastfeeding build better brains?

For some infants, being breastfed means a higher IQ later in life. But for others, breastfeeding doesn't boost IQ score at all. A small difference in one gene, it turns out, makes all the difference. The gene, *FADS2*, helps turn the fatty acids found in breast milk into compounds important to brain development.

A team of researchers including Julia Kim-Cohen, PH.D., assistant professor of psychology at Yale, discovered that children who have one version of *FADS2* and who were breastfed scored 7 points higher on IQ tests administered up to age 13 than those who carry the same gene variant but drank formula milk. But for children who don't have the special version of the gene, there was no IQ difference associated with being fed breast milk versus formula, the scientists report in the November 20 issue of *Proceedings of the National Academy of Sciences*.

"Previous research linking breastfeeding to IQ has been somewhat inconsistent. This gene may help explain that inconsistency," says Kim-Cohen, who is now studying whether *FADS2* and other genes play a role not only in cognitive development but in the emotional development of children.

An *Akt* against heart disease

As blood courses through the 100,000 miles of vessels in an adult's circulatory system, cholesterol, fats and other debris can coat the walls of arteries, forming the dangerous, rupture-prone plaques of atherosclerosis. Scientists believe that atherosclerosis begins after damage to the endothelium, the innermost layer of cells that lines artery walls, but they are still learning about the genes that prevent—or promote—its progression.

In the December issue of *Cell Metabolism*, a team led by William C. Sessa, PH.D., professor of pharmacology and director of the medical school's program in Vascular Biology and Therapeutics, describes a key gene in the development of coronary atherosclerosis.

In mice prone to atherosclerosis, the loss of the gene *Akt1* decreased endothelial production of the gas nitric oxide, leaving the endothelium even more susceptible to damage and the formation of fatty plaques. Mice lacking *Akt1* also had more plaques in the aorta and coronary arteries, making them a valuable new model to understand acute coronary syndromes, such as unstable angina and heart attacks, in humans.

New building is 'a place for great science'

Environmentally friendly features abound in new space for research

The new research building on Amistad St. is a bright beacon for the interdisciplinary research led by (from left) William Sessa, Haifan Lin and Jordan Pober.

"This is the future," declared Yale President Richard C. Levin at the October 5 ribbon cutting for the medical school's newest building, a 120,000-square-foot structure at 10 Amistad Street that will house the Interdepartmental Program in Vascular Biology and Therapeutics (VBT), the Yale Stem Cell Center (YSCC) and the Human and Translational Immunology (HTI) Program. The $88.6 million building is the latest to be built as part of a $1 billion plan to expand science facilities at Yale.

The research done in the three programs that will occupy the new facility, each of which draws on faculty throughout the university, was identified by a strategic planning committee in 2004–2005 as crucial to the medical school's long-term goals, said Robert J. Alpern, M.D., dean and Ensign Professor of Medicine.

The VBT program, established in 2000, was the School of Medicine's first official venture in translational research, which aims to convert laboratory findings into practical treatments for human disease as rapidly as possible.

Directed by William C. Sessa, PH.D., the program counts 35 faculty members drawn from numerous basic science and clinical departments who focus on the role of vascular biology in heart disease and peripheral vascular diseases, cancer and stroke. Program scientists also search for ways to improve outcomes in organ-transplant patients. The new location on Amistad St. will give the program much-needed lab and office space for expansion.

The new building is the first real home for the YSCC, launched in 2006 by leading stem-cell researcher Haifan Lin, PH.D., professor of cell biology and YSCC director, with the help of a $7.8 million grant from the state of Connecticut. In addition to hiring new faculty to occupy labs in the Amistad St. building, Lin and associate director Diane S. Krause, M.D., PH.D., professor of laboratory medicine and pathology, are coordinating the efforts of more than 30 additional faculty members across the medical school and Yale University campuses who are working on stem cell-related topics, including the properties and mechanisms of human embryonic stem cells, human adult stem cells, and stem cells in model organisms such as the mouse, fruit fly and nematode.

With the inclusion of the HTI program, Alpern said, the new facilities will "capitalize on our incredible strength in immunology."

Under the leadership of Jordan S. Pober, M.D., PH.D., professor of pathology, immunobiology and dermatology, the HTI faculty will study the immunologic aspects of a very broad range of human diseases, such as cancer, autoimmune diseases (including endocrine diseases such as Type 1 diabetes), rheumatoid arthritis, systemic lupus erythematosis, asthma, multiple sclerosis, and Crohn's disease.

With workstations for more than 250 scientists, the building on Amistad St. offers sophisticated microscopy facilities and advanced technology for cell sorting. The building is also environmentally friendly. Designed by Herbert S. Newman and Partners, a New Haven-based firm, with lab spaces planned by Ellenzwieg Associates of Cambridge, Mass., the building features lights that turn off automatically, rainwater collection and other "green" features.

At a symposium on translational and regenerative medicine held to celebrate the building's opening, Yale Provost and Silliman Professor of Chemistry Andrew D. Hamilton, PH.D., summed up the sentiment of the day. "This," he said, "is going to be a place where great science is done."

Connecticut high schoolers get a taste of real-world research

They could have spent their summer lounging around at the beach, earning some extra spending money or traveling. But a handful of Connecticut high school juniors found their ideal summer vacation in a less typical location—Yale School of Medicine research labs.

"The whole idea is to expose these students to really doing science," says Gil Mor, M.D., associate professor of obstetrics, gynecology and reproductive sciences and creator of the Discovery to Cure program, one of several initiatives that immerse high school students in Yale's research labs.

This past summer, the fourth year of the program, 20 students from 10 high schools spent six weeks tackling some of the biggest questions in biomedical science.

Kaitlin Markoja, from Cheshire High School, worked in Mor's laboratory studying the relationship between the immune system and pregnancy.

Kelsey Hogan, of Mercy High School in Middletown, Conn., presents her neuroscience research on maternal obesity to peers and mentors in the Discovery to Cure high school program.

"People who are pregnant don't respond to viruses in the same way as other people, and we're trying to understand this," Markoja explains.

Markoja, like most of the participants, already knew she wanted to pursue a career in science or medicine, but the Discovery to Cure program cemented these plans. "It was such a hands-on experience," she says, "right from the beginning."

Irene Visintin, a research associate who coordinates the program with Mor, says this deep involvement in

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Out & about

October 5: **THE OPENING CELEBRATION FOR THE RESEARCH BUILDING ON AMISTAD STREET** (see related story, page 3) featured a scientific symposium, "Frontiers in Translational and Regenerative Medicine." **1.** Taking part in the ribbon-cutting for the new building were (from left) Yale provost and Benjamin Silliman Professor of Chemistry **Andrew D. Hamilton**, PH.D.; Yale President **Richard C. Levin**; medical school Dean and Ensign Professor of Medicine **Robert J. Alpern**, M.D.; **Jordan S. Pober**, M.D., PH.D., vice chair and professor of immunobiology and director of the Human and Translational Immunology program; **William C. Sessa**, PH.D., professor of pharmacology and director of the Interdepartmental Program in Vascular Biology and Therapeutics; and **Haifan Lin**, PH.D., professor of cell biology and director of the Yale Stem Cell Center (YSCC). **2.** (From left) Symposium speaker **Douglas A. Melton**, PH.D., Thomas Dudley Cabot Professor of the Natural Sciences and Howard Hughes Medical Institute Investigator at Harvard University, with **Martin E. Gordon**, M.D., clinical professor of medicine, and **Diane S. Krause**, M.D., PH.D., professor of laboratory medicine and associate director of the YSCC. **3. Marc Feldmann**, F.MED.SCI., F.R.S., director of the Kennedy Institute of Rheumatology at Imperial College in London, England, was a speaker at the symposium. **4.** Symposium speaker **Salvador Moncada**, M.D., PH.D., D.SC., F.R.C.P., F.R.S., director of the Wolfson Institute for Biomedical Research at University College, London (second from left) met with postdoctoral researchers (from left) **Behrad Derakhshan, PH.D., Levente Jozsef, PH.D., Yajaira Suarez, PH.D.** and **Carlos Fernandez, PH.D.**

October 31: Faculty, physicians and patients gathered at Yale-New Haven Hospital (YNHH) to celebrate the **NAMING OF THE SMILOW CANCER HOSPITAL** in recognition of a significant gift from **Joel and Joan Smilow** of Westport, Conn. (See related story, page 1.) Admiring a cake featuring an architect's rendering of the future hospital are (from left) **Robert J. Alpern**, M.D., dean and Ensign Professor of Medicine; Joel Smilow; Yale President **Richard C. Levin**; **Inge T. Reichenbach**, vice president for development at Yale; Joan Smilow; **Marna P. Borgstrom**, M.P.H., president and CEO of YNHH; **Debbie Chênevert**; and **Jonathan Bush**.

November 15: Representatives of the **CONNECTICUT CHALLENGE**, an annual, non-competitive bicycle ride to support services and resources for survivors of adult and childhood cancers at Yale Cancer Center (YCC), presented a check for $560,000 raised from this year's ride to (From left) **John Ragland**, Connecticut Challenge co-founder; **Richard L. Edelson**, M.D., professor of dermatology and YCC director; and **Bob Mazzone**, Connecticut Challenge executive director. With the funds raised at the 2007 ride, the total donations to YCC from the Connecticut Challenge over the past three years exceed $1.35 million.

July 12: Friends gathered at the School of Medicine's Anlyan Center for Medical Research and Education for "Dopamine System Regulation and Schizophrenia: Advancing the Link between Neurobiology and the Clinic," a symposium to mark the **RETIREMENT OF BENJAMIN S. "STEVE" BUNNEY, M.D.**, chair and Charles G.B. Murphy Professor of Psychiatry. Family, friends and symposium attendees gathered afterward for dinner at the New Haven Lawn Club. Bunney was on the medical school faculty for 38 years, and served as psychiatry chair for 20 years. **1.** (From left) **Ezra H. Griffith**, M.D., professor of psychiatry and African American Studies; **Michael A. Hoge**, M.D., professor of psychiatry; and **Wayne Dailey**, PH.D., deputy commissioner of the Connecticut Department of Mental Health and Addiction Services. **2.** (From left) **Susan R. Sesak**, PH.D., professor of neuroscience at the University of Pittsburgh; Bunney's wife, **Marjorie Bunney**; and Bunney's sister-in-law **Blynn Bunney**, PH.D., assistant clinical professor of psychiatry at the University of California, Irvine. **3. John H. Krystal**, M.D., Robert L. McNeil Jr. Professor of Psychiatry. **4.** Bunney's brother, **William E. Bunney**, M.D. (left), Distinguished Professor and Della Martin Chair of Psychiatry at the University of California, Irvine, with the guest of honor. **5.** (From left) Bunney's children, **Elizabeth Bunney**; **Brad Bunney**, M.D., associate professor of emergency medicine at the University of Illinois at Chicago; and **Katherine Auerswald**, M.D., staff physician at the VA Medical Center in Washington, D.C. **6. George K. Aghajanian**, M.D., Foundations Fund Professor of Psychiatry, and **Ennio Esposito**, M.D., PH.D., of the Consorzio Mario Negri Sud in Chieti, Italy. **7. Connie Ferguson**, coordinator of development for the Department of Psychiatry, and **Henry G. Jarecki**, M.D., adjunct professor of psychiatry.

Advances

Health and science news from Yale

Of bugs, bivalves and breathing

Chitin, a tough natural polymer, is an important component of fungal cell walls and the bodies and eggs of parasitic worms, so both plants and mammals have evolved chitin-degrading enzymes known as chitinases to ward off infection.

But chitin is also found in crustacean and clam shells and in insect exoskeletons, making it the second-most abundant biopolymer on Earth. According to Geoffrey L. Chupp, M.D., associate professor of medicine, and colleagues in Paris and Wisconsin, the chitin-related mechanism that protects us from fungi and parasites may also be contributing to a global rise in asthma rates by reacting to shellfish or the chitin-encased dust mites that roam about in our mattresses and carpets.

As reported in the November 15 issue of the *New England Journal of Medicine*, Chupp's research group found that levels of YKL-40, a chitinase-like protein, are significantly elevated in patients with severe asthma, defined as those who use rescue inhalers and oral corticosteroids most frequently and require hospitalization for their asthma most often.

Although the study doesn't prove that YKL-40 is involved in causing asthma, it demonstrates that the protein can be used as a reliable measure of asthma severity.

Adding staying power to brain tumor drugs

When a surgeon removes a brain tumor, it's routine to leave chemotherapy drugs in place of the cancer. But it's notoriously tricky to get these drugs to sufficiently penetrate the brain; blood flowing through capillaries sweeps the small molecules out of the dense tissue before they can make much of an impact.

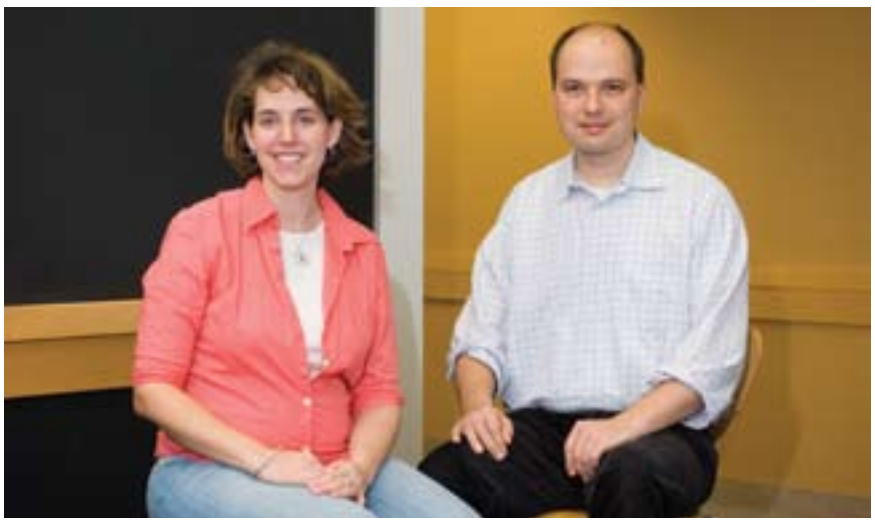
But W. Mark Saltzman, PH.D., Goizueta Foundation Professor of Chemical and Biomedical Engineering, and colleagues at Cornell University have made one drug, camptothecin, stick around the brain longer by attaching water-soluble polymers to it. The larger compound doesn't get taken up by capillaries, and is more amenable to the brain's chemistry, the group reports in the November issue of *Bioconjugate Chemistry*.

Saltzman's team designed the drug to release the polymer once it's had a chance to seep throughout the brain, so the drug can then do its job in killing cancerous cells.

"Like a stealth fighter," says Saltzman, chair of Yale's department of biomedical engineering, "it can get through war zones."

Young scientists honored at White House

President pays tribute to beginning researchers from School of Medicine



Susan Kaech and Sven-Eric Jordt received Presidential Early Career Awards, the country's highest honor for young scientists.

In early November, two School of Medicine scientists each received a Presidential Early Career Award, the highest honor that a beginning researcher can receive in the United States.

The scientists, Sven-Eric Jordt, PH.D., assistant professor of pharmacology, and Susan Kaech, PH.D., assistant professor of immunobiology, were among 58 recipients of the Presidential Early Career Awards for Scientists and Engineers (PECASE), which honor outstanding researchers who are beginning their independent research careers. All were honored at a White House ceremony on November 1.

Jordt and Kaech were part of a group of 12 PECASE winners sponsored by the National Institutes of Health (NIH).

"The National Institutes of Health is extraordinarily proud of supporting 12 PECASE winners who have, early in their research careers, shown exceptional potential for scientific leadership during the 21st century—the essence of this award," said NIH Director Elias Zerhouni, M.D. "We look forward to continued innovation from these outstanding investigators as they push the frontiers of medical research during this pivotal time for scientific discovery."

Jordt was honored for conducting ethics seminars for incoming students, and for his research on TRP (pronounced "trip") channels, molecular sensors that mediate sensations of heat, cold and pain. The TRP receptors Jordt studies respond to both temperature changes and natural plant products. One responds both to high temperatures and to capsaicin, the chemical that gives chile peppers their "heat", another responds to cool temperatures and to menthol, which explains the "cool" sensation caused by some breath mints.

Using capsaicin, mustard oil, menthol and other compounds as chemical probes, Jordt's research focuses on the role of TRP channels in hypersensitivity to pain and in the chronic inflammation seen in asthma, allergy, chronic cough and dermatitis.

Kaech was selected for mentoring undergraduate and graduate students as well as postdoctoral fellows, and for her study of the development of memory T cells, the defensive immune system cells created after vaccination or infection.

When we contract an infection, "naïve" cells known as CD8 cells encounter the invading pathogen and then quickly differentiate into specialized T cells that kill cells that have been infected. When the infection has cleared, most of these newly created T cells die off, but some remain in the body as "memory cells" that provide long-term immune protection, and this same phenomenon is responsible for the effectiveness of vaccines.

Kaech aims to improve vaccines by determining what crucial factors make memory cells and keep them alive throughout our lifetime.

The PECASE winners, who receive five years of support for their work, are selected by the White House Office of Science and Technology based on two criteria: innovative research at the frontiers of science and technology, and community service demonstrated through scientific leadership, education or community outreach.

The honored scientists are nominated by the NIH, the National Science Foundation, the Department of Defense, the Department of Energy, the Department of Agriculture, the Department of Education, the Department of Commerce, the National Aeronautics and Space Administration and the Department of Veterans Affairs.

The PECASE were established in 1996 by the National Science and Technology Council. With three winners this year—Dean S. Karlan, PH.D., assistant professor of economics at Yale, also won an award—Yale garnered more PECASE awards than any other institution.

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real-world research is what makes the Discovery to Cure program unique.

"We don't want them in there washing glassware; that's not the goal," she says. "They're actually getting their hands dirty on some of the latest and greatest equipment in the country."

And the benefits of the program, says Visintin, are far from one-sided. Not only do the students contribute to research, but they remind more senior researchers why science is fun.

"They absolutely inject enthusiasm into the labs," she says. "They ask a million and one questions and run around smiling. They are just really excited to be here."

Mor's original inspiration for designing the ambitious program came when he was trying to think of ways to get local high school students interested in science, and interested in applying to Yale.

"Many kids in the area don't apply here," Mor explains. "They always think Yale is something belonging to a completely different world. And there's a decrease in the number of these young kids going into science and medicine."

Gil Mor

So Mor initiated the program with just a few schools, and six students came to Yale that first summer.

"We were a little afraid of bringing teenagers into the lab," he admits. "They might break things, damage things. But the opposite happened. They contributed to the lab. The work that they did was outstanding."

That year, Mor asked teachers at the participating high schools how many of their students planned on applying to Yale. The answer was zero.

But last year, four students who completed the Discovery to Cure program applied to Yale, and two ended up enrolling. Other program graduates now study science and medicine at top-tier schools like Harvard, Cornell and the University of Chicago. Some have returned on summer breaks to do research at the School of Medicine.

Mor hopes that as more medical school labs become receptive to participating, he'll be able to collaborate with more high schools to increase the size of the program.

Kelsey Hogan, a budding neuroscientist from Mercy High School in Middletown, worked this summer in the laboratory of Tamas L. Horvath, D.V.M., PH.D., chair and professor of comparative medicine, and professor of obstetrics, gynecology and reproductive sciences and neurobiology.

In Horvath's lab, Hogan studied how obesity in pregnant mice affected their offspring, spending most of her days dissecting mouse brains to look for dye that indicated the activity of cells that control appetite.

This painstaking work might turn some people off from science, but Hogan loved it, and she is now convinced she wants to continue doing neuroscience research. "This was like the best summer vacation I've ever had," she says.

Smilow *from page 1*

Edelson says that there was already great momentum building from the recent recruitment of a large number of additional nationally recognized clinical researchers by YCC Deputy Director Edward Chu, M.D., professor of medicine, and the strong basic science and population science research programs, respectively under the direction of YCC Associate Directors Daniel C. DiMaio, M.D., PH.D., professor of genetics, and Susan T. Mayne, PH.D., professor of epidemiology and public health.

Most important, he says, is the singularity of purpose of the university, medical school and YNNH to make Yale one of the world's premier centers for cancer research and cancer care. "We are locked together, with shared goals," Edelson says. "Yale Cancer Center is positioned to play a leading role in the shaping of the field, through the merging of scientific and clinical advances."

Smilow has been an active philanthropist since his retirement from Playtex in 1995. He made a generous naming gift to New York University Medical Center, which dedicated the $175 million Joan and Joel Smilow Research Center in 2006. He is a trustee of the medical center, a member of its operating committee and the chair of its board development committee. The Smilows also support research at Johns Hopkins, through the William S. Smilow Center for Marfan Syndrome Research. As well as supporting Yale College, Smilow has been involved as a participant and major donor to a wide variety of causes: three medical institutions in addition to Yale, NYU and Hopkins; the New York Philharmonic, of which he is a director emeritus; and the Boys & Girls Clubs movement. For 36 years, he has been associated with the Madison Square Boys & Girls Club in New York. This organization's largest clubhouse is named for him. He also served as a vice chair and a member of the executive committee of the Boys & Girls Clubs of America, which recognized him in 2003 with its President's Award. A new Smilow clubhouse under the aegis of the Boys & Girls Club of Lower Naugatuck Valley is now under construction in Ansonia, Conn.

A native of Washington, D.C., Smilow was the presiding officer, from 1999 to 2004, of his Yale College Class of 1954, which in the early 1970s started a fund that grew to $60 million and ultimately totaled $120 million with additional contributions by class members and credits from the university (an all-time Yale record for any class). The class was recognized before the Yale-Harvard game on November 17 for its major contribution of roughly half the total of the Phase I renovation expenses at the Yale Bowl. Smilow also served as a member of both the Yale Development Board and the Board of Governors of the Association of Yale Alumni, and he chaired the Class of 1954's 50th reunion.

Of the cancer hospital donation, he says, "This opportunity responded to my interests both in medical care and, because of the close involvement of the hospital with Yale School of Medicine, medical research. The third factor was supporting Yale. This confluence of positive things made it something I was delighted to be able to do."

After his graduation from Yale College, Smilow served in the Navy as a lieutenant JG, primarily serving as a line officer on an Atlantic Fleet destroyer. From 1956 to 1958 he earned an M.B.A. degree with distinction from Harvard Business School, where he was elected a George F. Baker Scholar. He began his business career in 1958 in the marketing department of Procter and Gamble, which he calls "the best graduate school you could ever go to, if you're interested in marketing or business in general." In 1965 he moved from P&G to Glendinning Associates, a marketing consulting firm in Westport, Conn. In 1969 he was tapped, at age 36, to become the youngest president in Playtex's history. In an era when growth in the garment industry was slow, Playtex thrived, demonstrating enormous increases in sales and operating profits under Smilow's leadership. He led a billion dollar management buyout of the company in 1986 and eventually became the majority owner of Playtex Products Inc.

The Smilows have lived in Fairfield County, Conn., since 1965, when they settled in the coastal town of Westport. Residents now of nearby Southport, Conn., they have three children, one of whom still resides in Westport with three of their four grandchildren. Two grandchildren are students at the Hopkins School in New Haven.

Smilow is chairman of Dinex Group LLC, a company he formed in 1992 with esteemed chef Daniel Boulud. The company owns the celebrated New York restaurants Daniel, Café Boulud, DB Bistro Moderne and Bar Boulud, as well as others in Palm Beach and Las Vegas. Smilow says the same partner/backer spirit that permeates his relationship with Boulud also applies to his involvements in the not-for-profit world: "My goal is to make a difference whenever I can. I hope I can be cerebrally helpful to Yale-New Haven Hospital, as I have been and will continue to be to Yale."

Smilow says that he also hopes the gift will free up other funds "that can be used for the medical school, to enable Dean Alpern to aggressively recruit more of the world-class scientists that are needed to move research ahead."

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

Opportunities for giving

Construction of the new 14-story Smilow Cancer Hospital is well under way; the building will open its doors to patients in late 2009. Donors who make gifts in support of this important project may choose to have their philanthropy recognized by naming prominent spaces throughout the hospital. A sample of these naming opportunities is listed below. For information about these and other spaces, please contact Jancy Houck, Associate Vice President for Development and Director of Medical Development, at (203) 436-8560.

MEDITATION GARDEN
$20 million

HOSPITAL LOBBY
$15 million

DIAGNOSTIC IMAGING CENTER
$5 million

FAMILY CONFERENCE CENTER
$2 million

MRI SUITE
$500,000

OPERATING ROOM
$100,000

PATIENT ROOMS
$25,000–$40,000

Sclafani *from page 1*

did everything she could to make the process easier. There was a lot to learn with respect to managing one's care and this phone call was my first lesson.

On the last Friday of September 2006, I walked into 800 Howard Avenue and went to the second floor. That day my wife, Lucille, and I met many members of the thoracic oncology team. It was a little overwhelming, but it was very obvious that all the members of the team were kind, compassionate and competent, just as Linda had been the week before.

My diagnosis, stage 4 thymoma, was confirmed, and I was told that the path to treatment was going to be a long road of chemotherapy, surgery and radiation. It was as though someone had kicked me in the stomach, but something else happened that day: I felt that this team—my "Yale army"—was going to be there for me and my family to combat my condition.

The team discussed a myriad of topics with my wife and me in the first meeting, including how the team operates, how to tell our 5-year-old and our 11-year-old that their Dad has cancer, nutrition, the logistics of transportation to and from Yale, side-effects of treatment, alternative therapy, surgery, long-term follow-up and much more. My surgeon and co-director of the thoracic oncology program, Dr. Frank Detterbeck [professor and section chief, thoracic surgery] gave me his business card, and wrote down his cell phone number. I'd never heard of such a thing—a doctor giving his cell number to a potential patient! When deciding where I should be treated, my wife and I agreed there was something special about Yale Cancer Center and decided that Yale was the place for me.

I began my chemo treatment in October 2006, and over the next several months I endured three cycles of chemotherapy, a 7-hour thoracic surgery, 30 radiation treatments, and two more additional cycles of chemotherapy.

Everyone who assisted in my treatment did a fantastic job, and the thoracic oncology team worked so incredibly well. The oncology arm, directed by Dr. Scott Gettinger [assistant professor of medicine], the radiation arm directed by Dr. Lynn Wilson [professor of therapeutic radiology] and the surgical arm, directed by Dr. Detterbeck, all clicked like a well-oiled machine. The survivorship clinic directed by Dr. Ken Miller [assistant professor of medicine] has also been instrumental in helping with my after-care.

I cannot imagine how superb it will be when treatment centers, support services, research facilities, alternative therapies, diagnostic and survivorship support are all in the same building. Having all these dedicated and compassionate people all in one place will be amazing.

In addition to my Yale army, my wife, Lucille, my two daughters, AnnPatrice and Marie, siblings, in-laws, friends, neighbors and my employer, made up my support team.

I'm grateful to say that after more than one year since my first visit to Yale Cancer Center, there is no evidence of this disease. To be here today doing what I'm doing is truly miraculous.

The dedication I've experienced has empowered me as I've joined the battle to help in any way I can. I do not plan to walk away from my cancer, and I plan to fight against it for myself as well as others. Whether it's to help a newly diagnosed patient, raising awareness, sharing my story, promoting wellness, raising funds for research, or to help celebrate a moment as great as today, I will do anything to help further the cause against cancer.

The incredible generosity and kindness that we're celebrating today will ensure that the extraordinary people of Yale Cancer Center will have a world-class, state-of-the-art facility that will empower patients so that they too can become a thriving survivor, just like me.

New NIH program funds scientific 'innovators' at Yale

In September, two Yale scientists won Director's New Innovator Awards from the National Institutes of Health (NIH), part of the Roadmap for Medical Research Initiative launched by NIH Director Elias Zerhouni, M.D., to transform the nation's medical research capabilities and speed the movement of research discoveries from the bench to the bedside.

David A. Spiegel, M.D., PH.D., assistant professor of chemistry at Yale, and Derek K. Toomre, PH.D., assistant professor of cell biology at the medical school, were among 30 recipients of the awards who were selected out of 2,100 applicants. A special evaluation process that engaged 262 experts from the scientific community identified the most highly competitive individuals in each pool.


David Spiegel

This was the first year that New Innovator Awards were granted. The awards, which provide a total of $1.5 million in research support over 5 years, are reserved for investigators of exceptional promise who are just beginning their careers and have not yet received a regular research grant from the NIH.

"New investigators are the future of science, and innovative ideas are its lifeblood," said Zerhouni in announcing the new grants.

Spiegel, a 2004 alumnus of Yale's M.D./PH.D. Program who went on to complete a postdoctoral fellowship at Harvard University, is developing a novel approach to using antibodies that normally recognize a single small molecule as a universal agent for targeting and destroying many different pathogens and various types of diseased cells.

For many years, physicians and scientists have used the small molecule 2,4-dinitrophenyl chloride, or DNP, to generate anti-DNP antibodies as a test of the status of the immune system.

"For no apparent reason, about 20 percent of people already have DNP antibodies in their system, and it is easy and harmless to induce DNP antibody production," Spiegel explains. "Our task will be to rationally design DNP compounds that recognize pathogens and act as 'magnets' for the antibody."

To do this, Spiegel is designing "bifunctional" molecular structures: one side will bind DNP antibodies, and the other will bind distinctive surface proteins on infected target cells, such as cells infected by HIV. These two-sided constructs will serve a function similar to that of the adapters placed on electrical cords, increasing the versatility of DNP antibodies by allowing them to "plug into" a wide variety of pathogens and infected cell types, thereby marking the cells for destruction by the immune system.

Spiegel theorizes that when infected cells, bacteria or viruses are exposed to his new compounds, they will be treated by the immune system as if they were coated with DNP, which will bring on a defensive attack of DNP antibodies.

With his award, Toomre and his colleagues are developing a new generation of microscopes that gives a clear close-up view of the inner life of the cell.


Derek Toomre

The cell cortex, a region that is a cell's gateway to its environment, is abuzz with activity. It is the region where molecules are secreted, signaling complexes are assembled, cell-surface receptors are internalized and the cytoskeleton (the cell's internal scaffolding) is remodeled.

Studies of the cell cortex are important for understanding secretion, cell migration, and signal transduction and downregulation—processes that go awry in diseases such as cancer and diabetes.

Toomre's lab employs Total Internal Reflection Fluorescent Microscopy (TIRFM).

Using optical sleight of hand, TIRFM illuminates a very thin section of the lower cortical region of the cell (as thin as 50 nanometers) and provides exquisitely high signal-to-background images—so detailed that single molecules can be visualized.

The new, variable-angle TIRFM microscopes proposed by Toomre's team will prevent artifacts created by conventional TIRFM equipment that can obscure the image and will also allow the depth of the light beam's penetration to be rapidly varied.

These powerful new microscopes will permit researchers to observe membrane trafficking and signaling in three dimensions with unprecedented resolution.

Among other projects, Toomre's group will apply this technology to understand the trafficking pathways that regulate insulin-stimulated delivery of glucose transporters to the cell surface—a process that is disrupted in type 2 diabetes.

Toomre, who joined the medical school faculty in 2004, earned his PH.D. in 1997 at the University of California at San Diego and did postdoctoral research in Germany with Kai Simons, M.D., PH.D., an internationally renowned cell biologist.

Grants and contracts awarded to Yale School of Medicine

March/April 2007

Federal

Norma Andrews, NIH, *Regulated Exocytosis of Lysosomes*, 4 years, $1,418,100 • **Peter Aronson**, NIH, *Roles of SLC26A6 in Renal NaCl Transport and Prevention of Oxalate Urolithiasis*, 5 years, $2,863,567 • **Angelique Bordey**, NIH, *Glial Cell Function on SVZ Neurogenesis*, 5 years, $2,071,292 • **Walter Boron**, Dept. of Defense (U.S.), *Instrumentation for Studying the Structural Biology and Cellular Physiology of Gas Channels*, 1 year, $325,918 • **Tiffany Briere**, NIH, *Characterization of Polyductin Family Proteins*, 2 years, $52,544 • **Yung-Chi Cheng**, NIH, *Mechanism and* In Vivo *Anti-HBV Study of a Novel Class of Non-Nucleoside Compounds*, 4 years, $1,488,094 • **Enrique De La Cruz**, NIH, *Functional Diversity of Myosin VII*, 4 years, $1,175,811 • **Deepak D'Souza**, NIH, *Cannabinoid Receptor Function in Alcoholism: Effects of D-9-THC*, 2 years, $339,818; NIH, *Neurobiology of Cannabis Effects*, 3 years, $679,322 • **James Duncan**, NIH, *Bioimaging and Intervention in Localization-Related Epilepsy*, 5 years, $4,918,621 **Ewa Folta-Stogniew**, NIH, *Asymmetric Flow FFF and Composition Gradient/Light Scattering System*, 1 year, $270,827 • **Murat Gunel**, NIH, *Molecular Genetic Pathogenesis of Intracranial Aneurysm*, 5 years, $1,808,698 • **Manisha Juthani-Mehta**, NIH, *Clinical Features in Nursing Home Residents with Suspected UTI*, 2 years, $135,437 • **Maria Lalioti**, NIH, *Functional Characterization of FSHR Alternatively Spliced Variants*, 2 years, $165,250 • **Csaba Leranth**, NIH, *Negative Effects of Bisphenol A on the Monkey CNS*, 2 years, $454,485 • **Haifan Lin**, NIH, *Function of PIWI/Argonuate Proteins in Spermatogenesis*, 5 years, $1,653,667 • **Joseph Madri**, NIH, *Proteinase Modulation During T-Cell Endothelial Adhesion*, 4 years, $1,611,875 **Graeme Mason**, NIH, *Neurotransmitter Function, Psychiatric Disorders and MRS*, 1 year, $15,000 • **James McPartland**, NIH, *Neural Correlates of Perceptual Expertise for Faces and Letters in Autism*, 1 year, $82,500 • **Wang Min**, NIH, *TNF Receptor 2 Signaling in Arteriogenesis/Angiogenesis*, 4 years, $1,653,438 • **Melinda Pettigrew**, NIH, *Molecular Epidemiologic Identification of Pneumococcal Tissue-Specific Genes*, 4 years, $2,277,984 • **Andrew Rasmussen**, NIH, *Cytokine Signaling in* Drosophila *Acute Phase Response*, 3 years, $147,750 • **Naomi Rogers**, NIH, *Sister Kenny, Polio and American Medicine, 1940–1960*, 1 year, $82,500 • **Gary Rudnick**, NIH, *Ion and Biogenic Amine Transport Mechanism*, 5 years, $1,653,750 **Gerald Shulman**, NIH, *Mechanisms of Fat-Induced Insulin Resistance*, 5 years, $1,694,923 **Stephen Strittmatter**, NIH, *Nogo Receptor in Adult Central Nervous System Plasticity and Regeneration*, 4 years, $1,446,571 • **Patrick Sung**, NIH, *BLM-Mediated Homologous Recombination Regulation and Suppression*, 5 years, $1,860,469; Dept. of the Army, *Molecular Basis of BRCA2-Mediated Breast Tumor Suppression*, 3 years, $495,708 • **Ian Suydam**, NIH, *Probing pKa Shifts at A756 of the VS Ribozyme by ^{19}F NMR*, 2.5 years, $122,111 • **Joann Sweasy**, NIH, *DNA Polymerase Beta and Breast Cancer*, 2 years, $363,375 • **Hemant Tagare**, NIH, *Constrained Maximum Likelihood Cryo-EM Reconstruction in Proteomics*, 2 years, $165,188 • **Christina Tam**, NIH, *Modulation of the Phagolysosome by* Salmonella, 3 years, $153,822 • **Peter Tattersall**, NIH, *Molecular Basis of Parvoviral Target Cell Specificity*, 5 years, $2,507,128 • **Benjamin Turk**, NIH, *Proteome-Wide Analysis of Kinase Phosphorylation Specificity in Yeast*, 5 years, $1,570,983 • **Erika Wells**, NIH, *Minority Predoctoral Fellowship Program*, 4 years, $171,800 **Dianqing Wu**, Dept. of Defense (U.S.), *Identification and Validation of Small Molecule Wnt Antagonists as Potential Therapeutics for Prostate Cancer*, 3 years, $619,385 • **Kimberly Yonkers**, NIH, *Symptom-Onset Antidepressant Treatment for PMDD*, 5 years, $1,559,420 • **Yong Zhu**, NIH, *Database of Functional SNPs in Cancer-Related Environmentally Responsive Genes*, 3 years, $847,986

Non-Federal

Ali Abu-Alfa, Astellas Pharma U.S., Inc., 10 months, $5,000; Genzyme Corporation, 1 year, $5,000 • **Loren Berman**, Foundation for Informed Medical Decision Making, *Abdominal Aortic Aneurysm Repair: Facilitating Collaborative Decision-Making*, 1 year, $25,000 • **Elizabeth Bradley**, William J. Clinton Foundation, *Liberia Health Management Delivery Program*, 16 months, $99,940 • **Judson Brewer**, American Psychiatric Institute for Research and Education, *Evaluation of Mindfulness Training in the Modulation of Cocaine Craving*, 2 years, $2,500 • **Richard Bucala**, Alliance for Lupus Research, *MIF Inhibition in SLE*, 2 years, $890,042 • **Daniel DiMaio**, Health Research Inc., *Small Transmembrane Proteins that Target Marburg Virus Glycoprotein*, 1 year, $173,998 **Terri Fried**, The Patrick and Catherine Weldon Donaghue Medical Research Foundation, *EPIIC: Empowering Patients to Improve Informed Choice*, 20 months, $150,200 **Josephine Hoh**, American Health Assistance Foundation, *AMD Beyond Complement and Serine Protease Pathways*, 2 years, $100,000 **Mark Horowitz**, Jackson Laboratory, *Mouse Models to Delineate a Unique Metabolic and Skeletal Network*, 1 year, $147,150 • **Yingqun Huang**, Connecticut Innovations Inc., *Function of the Fragile X Mental Retardation Protein in Early Human Neural Development*, 2 years, $200,000 • **Ivana Kawikova**, Tourette Syndrome Association, Inc., *The Role of the Immune System in Tourette's Syndrome*, 15 months, $75,000 • **Anthony Koleske**, Institute for the Study of Aging, Inc., *Inhibition of Rho Signaling to Prevent Dendritic Regression in Alzheimer's Disease*, 1 year, $100,000 • **Diane Krause**, Connecticut Innovations Inc., *Role of Leukemia Gene MKL in Developmental Hematopoiesis Using hES Cells*, 3 years, $856,654 • **Haifan Lin**, G. Harold and Leila Y. Mathers Charitable Foundation, *Epigenetic Programming of Stem Cells*, 4 years, $1,000,000; Connecticut Innovations Inc., *Human Embryonic Stem Cell Core Facility at Yale Stem Cell Center*, 2 years, $2,500,000 • **Qun Lin**, Oak Ridge Institute for Science Education, *Tissue Microenvironment and its Role in Cell Differentiation*, 1 year, $50,000 • **Brett Lindenbach**, Edward Mallinckrodt, Jr. Foundation, *Dissecting Crucial Aspects of Hepatitis C Virus Infectivity*, 1 year, $60,000 **K. Brooks Low**, Aviex Technologies, llc, *Development of an Attenuated* Salmonella *Vaccine for Avian Flu*, 1 year, $94,594 • **Eleni Markakis**, Connecticut Innovations Inc., *Directed Neuronal Differentiation of Stem Cells Derived from Human Embryos*, 2 years, $184,407 **Matthew Oetgen**, Orthopedic Trauma Association, *The Influence of Racial and Economic Factors on the Treatment of Pediatric Fractures of the Wrist and Forearm*, 1 year, $10,000 • **Lynne Regan**, Weizmann Institute of Science, *Single-Molecule Fluorescence Studies of Protein Folding*, 1 year, $125,400 • **Valerie Reinke**, University of Washington, *Global Identification of Transcribed Regions of the* C. elegans *Genome*, 1 year, $387,854 • **Harvey Risch**, H. Lee Moffitt Cancer Center and Research Inst., *Haplotype-Based Genome Screen for Ovarian Cancer Loci*, 1 year, $220,523 • **Erik Shapiro**, Connecticut Innovations Inc., *Magnetic Resonance Imaging of Directed Endogenous Neural Progenitor Cell Migration*, 2 years, $199,725 • **Warren Shlomchik**, Fred Hutchinson Cancer Research Center, *Targeting Alloreactivity for Leukemia Eradication*, 1 year, $109,301 • **Mehmet Sofuoglu**, Baylor College of Medicine, *GABA Medications and Amphetamine Interactions in Humans*, 16 months, $193,207 • **James Tsai**, Eye-Bank for Sight Restoration, Inc., *Evaluation of Neuroprotection with an Anti-Nogo Receptor Blocking Protein in a Rat Model of Glaucoma*, 1 year, $24,053 • **Caroline Zeiss**, American Health Assistance Foundation, *Interaction of Diet and Genotype in AMD Pathogenesis*, 2 years, $100,000

Structural biologist wins top science prize

Insights into ribosome's form will aid research on antibiotic-resistant diseases

(From left) Thomas Steitz and Harry Noller, both experts on the structure of the ribosome, celebrate their achievements at the Gairdner International Awards ceremony in Toronto, Canada.

In a ceremony at the Four Seasons Hotel in Toronto, Canada, on October 25, Yale scientist Thomas A. Steitz, PH.D., received one of the five 2007 Gairdner International Awards, which are among the most prestigious awards in science.

Steitz, Sterling Professor of Molecular Biophysics and Biochemistry and a Howard Hughes Medical Institute investigator, was honored along with with Harry F. Noller, PH.D., the Robert L. Sinsheimer Professor of Molecular Biology at the University of California, Santa Cruz, for their groundbreaking studies on the structure and function of the ribosome. Ribosomes are molecular machines inside cells that translate the information in messenger RNA into the amino-acid chains that form proteins.

The ribosome is an important target of antibiotic drugs, and understanding its structure points the way toward the development of new drugs for antibody-resistant diseases. "A major health consequence of the increasing number of antibiotic-resistant bacteria," says Steitz, "is that two million people per year get infections from them in hospital facilities—and 90,000 per year die from them."

With Yale colleagues Peter B. Moore, PH.D., Sterling Professor of Chemistry, and William L. Jorgensen, PH.D., the Conkey P. Whitehead Professor of Chemistry, and others, Steitz founded Rib-X Pharmaceuticals, a biotech company that is using knowledge of ribosomal structure to create new classes of antibiotics. In just five years, Rib-X has moved one potential compound into Phase II clinical trials.

The Gairdner Foundation was founded in 1957 by Toronto financier and industrialist James A. Gairdner, to "recognize and reward the achievements of medical researchers whose work contributes significantly to improving the quality of human life." In announcing the awards last May, John Dirks, M.D., president and scientific director of the Gairdner Foundation, said that the prizes "reflect the importance of basic discoveries that lead to a better understanding of human disease and the development of treatments and cures to alleviate them." Of the 288 recipients, 70 have gone on to win the Nobel Prize.

Three other Yale faculty members have recently received Gairdner International Awards. In 2006, Joan A. Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry (and wife of Thomas Steitz) and Thomas D. Pollard, M.D., chair and Sterling Professor of Molecular, Cellular and Developmental Biology won the award. Two years earlier a Gairdner Award went to Arthur L. Horwich, M.D., Sterling Professor of Genetics and Pediatrics.

This year's other three Gairdner Award winners were C. David Allis, PH.D., the Joy and Jack Fishman Professor and head of the Laboratory of Chromatin Biology at The Rockefeller University in New York; Kim A. Nasmyth, PH.D., Whitley Professor of Biochemistry at Oxford University in England; and Dennis J. Slamon, M.D., PH.D., professor of medicine at the University of California, Los Angeles.

In his keynote address at the award ceremony, Sir Paul Nurse, PH.D., president of The Rockefeller University, Gairdner Award winner in 1992, and winner of the 2001 Nobel Prize in physiology or medicine, praised this year's recipients as "five explorer-scientists of the highest calibre: they were given the tools, they explored, and they discovered. Let us all learn from their example."

New AAAS Fellows

Six biomedical scientists and educators at Yale have been named as Fellows of the American Association for the Advancement of Science (AAAS), an honor bestowed upon members of the organization by their peers in recognition of distinguished efforts to advance science or its applications. Along with Thomas A. Steitz, PH.D. (see story at left), the five new Fellows listed below will be inducted at the 2008 AAAS Annual Meeting in Boston in February.

Sankar Ghosh, PH.D., *professor of immunobiology and of molecular biophysics and biochemistry*

Nigel D.F. Grindley, PH.D., *professor of molecular biophysics and biochemistry*

Andrew D. Miranker, PH.D., *associate professor of molecular biophysics and biochemistry*

Anna M. Pyle, PH.D., *William Edward Gilbert Professor of Molecular Biophysics and Biochemistry, Howard Hughes Medical Institute investigator*

Gordon M. Shepherd, M.D., D.PHIL., *professor of neurobiology*

Three faculty members named to the Institute of Medicine

In October, three School of Medicine faculty members were named to the Institute of Medicine (IOM), a part of the National Academies that is charged with providing science-based advice on medicine and health to policymakers, professionals and the public at large. These latest additions bring the number of IOM members at Yale to 42.

Among the 65 new members inducted this year were Dean Robert J. Alpern, M.D., Ensign Professor of Medicine; Harlan M. Krumholz, M.D., the Harold H. Hines Jr. Professor of Medicine and professor of epidemiology and public health and investigative medicine; and Mary E. Tinetti, M.D., the Gladys Phillips Crowfoot Professor of Medicine and professor of epidemiology and public health and of investigative medicine.

Alpern is a nephrologist whose research has focused on the regulation of kidney transport proteins. His early work helped to define the mechanisms by which kidney cells sense excess acid and initiate a signaling cascade that alters the expression, cellular location and function of many proteins in the cell, resulting in enhanced acid transport and urinary excretion. Before coming to Yale, Alpern was dean of the University of Texas Southwestern School of Medicine.

Dean Robert Alpern, Mary Tinetti and Harlan Krumholz at a reception marking their membership in the Institute of Medicine.

Krumholz, the director of the Robert Wood Johnson Clinical Scholars Program, is noted for research aimed at determining optimal clinical strategies and identifying opportunities for improvement in the prevention, treatment and outcome of cardiovascular disease.

His research group has pioneered innovative approaches to identifying key success strategies for top-performing health care organizations and translating the knowledge into practice.

Tinetti is the director of the Yale Program on Aging. Her recent work focuses on the effect of multiple diseases on health outcomes and on appropriate decision-making in the face of multiple competing diseases. She has been the director of the Claude D. Pepper Older Americans Independence Center at Yale since 1992.