

Medicine@Yale

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Of moths and mice: jumping genes make big leap to mammals

Cut-and-paste is a powerful research tool, may advance gene therapy

The Human Genome Project succeeded at the monumental task of assembling a complete parts list for the human body by decoding the sequence of each and every human gene. But an even harder job remains: determining the function of



Tian Xu

Hughes Medical Institute investigator, with colleagues at Fudan University in Shanghai, China, promises to greatly accelerate the work of assign-

ing purpose to thousands of unexplored human genes. The tool is a jumping gene, a small piece of called a transposon that moves around the genome with a preference for settling in other genes and suppressing their activity, which allows scientists to discern their function.

A new tool for genome research, developed by Tian Xu, professor and vice chair of genetics and Howard

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As reported in the August issue of the journal *Cell*, Xu and researchers in Shanghai, at Duke University and at the University of Colorado tweaked a transposon **Genes, page 7**

A major boost for recruiting top doctors

Greenwich philanthropist calls \$10 million gift a "strategic investment"

James M. Allwin, president of Aetos Capital, an investment management firm based in New York, has donated \$10 million to the School of Medicine to attract more of the world's best clinicians and clinical researchers to Yale.

Allwin, a resident of Greenwich, Conn., who serves on the board of the Yale New Haven Health System and on the advisory board of the Howard Hughes Medical Institute, says that his gift mirrors the philosophy he employs in his business: "It's my hope that by investing in world-class practitioners, both the medical school and hospital can achieve their strategic objectives."

The development of the school's clinical mission—the patient care provided by medical school faculty—has been a top priority for Dean and Ensign Professor of Medicine Robert J. Alpern, since he began his work at the School of Medicine in 1997. "The faculty at Yale are excel-



James Allwin (right), at Sterling Hall of Medicine with Dean Robert Alpern, has given Alpern new leverage with a \$10 million gift.

lent doctors," Alpern says, "but in many cases we don't have a sufficient number of them to provide the best service to our local and more national constituency. There are also a number of areas in which we would like to expand our clinical expertise."

Alpern believes that the medical school and its primary teaching affiliate, Yale-New Haven Hospital, both stand to gain by the new gift. "It will allow us to bring outstanding clinicians and clinical researchers to the faculty who will advance the clinical practice at Yale School of Medicine while also advancing the hospital."

For David J. Leffell, deputy dean for clinical affairs, the Allwin gift is a godsend for building Yale's medical services. "At a

time when all academic health care centers are under enormous financial pressure," he says, "James Allwin's generosity, specifically designated for clinical excellence, will allow us to continue to build our practice in breadth, depth and quality."

As an old hand at investing, Allwin has a well-honed appreciation of the power of compounding, and he hopes that over the coming years the benefits of his gift for both the hospital and medical school will grow exponentially. "World-class practitioners attract colleagues and counterparts, and could have an impact on both institutions," he says. "The strategic leverage that comes from a gift like this is many times the value of the gift itself."

Program aims to close the gender gap in medical research

Until the National Institutes of Health (NIH), America's largest funder of biomedical research, required scientists to include women in their studies in 1993, it was generally assumed that data gained from clinical research on men would apply to women.

Women's Health Research at Yale (WHRY), a multidisciplinary program directed by Carolyn M. Mazure, is proving that assumption false. The program, which aims to close the gender gap in biomedical research, got its start



Carolyn Mazure

in 1997 with a \$5 million, five-year grant from the Patrick and Catherine Weldon Donaghue Medical Research Foundation (see related story, p. 1). The initial grant and subsequent funding provide a source for competitive support of pilot studies focusing on health issues unique to or more common in women, and on sex differences in health and disease.

Women's health is often equated with reproductive health. But Mazure, professor of psychiatry and associate dean for faculty affairs, says that while reproductive health is an important focus of women's health, any illness

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Students come north and aid flows south as Yale lends a hand in wake of Katrina

Faculty and staff from all three arms of the School of Medicine—clinical, educational and scientific—quickly mobilized to lend a helping hand to victims of Hurricane Katrina, the worst natural disaster in U.S. history.

The medical school joined an effort led by the Association of American Medical Colleges (AAMC), the American Hospital Association and numerous other organizations to coordinate the care of storm victims, who were transported by the U.S. Department of Defense from the Gulf region to the National Clinical Center in Bethesda and medical centers around the country.

With the aid of the AAMC, two displaced students from Tulane University School of Medicine completed third- and fourth-year clinical rotations at Yale, and three others were accepted at the Yale School of Public Health.

Several researchers and postdoctoral fellows from affected institutions have relocated their labs at Yale as visiting fellows.

The faculty and staff of the School of Medicine responded energetically to a matching-gift payroll deduction program established by the officers, deans and fellows of the Yale Corporation, who collectively pledged to match all relief contributions up to \$1 million made by Yale faculty, staff and students. At press time, university-wide donations for assistance to the Gulf States, including matching gifts from the Corporation, totaled \$1.2 million.

Medicine@Yale

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Gail D'Onofrio, seen here in the Emergency Department at Yale-New Haven Hospital, thrives on the fast pace of emergency medicine but finds equal satisfaction in prevention.

Medicine at the speed of life

New emergency chief aims to shorten patients' stays—and stop visits altogether

When Gail D'Onofrio, M.D., finally makes it home after a 10-hour shift, her three children always ask the same question: "Did you save anyone's life today?"

The deep satisfaction of helping patients through medical crises—and sometimes saving lives

Lifelines

Gail D'Onofrio

—first drew her to emergency medicine, says D'Onofrio, who was recently appointed as both chief of adult emergency services for Yale-New Haven Hospital and chief of the section of emergency medicine at the School of Medicine.

Her two jobs carry a long list of duties. In addition to managing the Emergency Department (ED) at YNHH and at the Yale-New Haven Shoreline Medical Center in Guilford, Conn., D'Onofrio is an associate professor in the medical school's Department of Surgery, conducting research, teaching medical students and training emergency physicians in residency.

But D'Onofrio says she would gain the deepest satisfaction if more people were able to avoid visits to the ED altogether; to that end, her

efforts are devoted as much to changing lives as saving them.

As medical director of New Haven's Women's Heart Advantage program, D'Onofrio teaches patients and clinicians about the risks of cardiovascular disease in women.

Because half of the major trauma injuries seen by ED physicians are related to drugs or alcohol, she also heads Project ASSERT, a program in which peer counselors conduct brief interviews of emergency patients to determine whether they abuse alcohol or drugs and to suggest options for treatment if necessary. While similar programs elsewhere target injured patients, such as those involved in car crashes or falls, Yale screens all patients well enough to be interviewed, even those with minor illnesses such as sore throats.

Like any other unmanaged chronic illness, addiction will likely land patients in the ED again and again. But thanks to partnerships that ASSERT has formed with community agencies, D'Onofrio can point to former repeat patients who no longer show up in the ED because they are succeeding in substance-abuse treatment.

According to the American College of Emergency Physicians, 70 percent of Americans believe emergency departments are approaching a crisis because of overcrowding,

and D'Onofrio does not disagree. She thinks of her department as "a canary in a coal mine" that lays bare every deficiency of the larger health-care system, particularly unequal access to care, which places particular stress on her EDs. But she believes that emergency physicians can take positive steps to improve their own departments.

"We need better ways to be efficient," D'Onofrio says, citing as an example a new center within her department where patients who have chest pain can get stress tests and blood work done very rapidly—evaluating such patients may now take from nine to 20 hours, as opposed to several days if they were admitted to the hospital. She believes that using similar evidence-based protocols for other common ED complaints will reduce unnecessary admissions and move patients through her department more quickly.

Increasingly, D'Onofrio is putting her energy into planning and adjusting systems to ease the overcrowding that plagues ED patients and clinicians alike nationally. But she remains passionate about the fast-paced environment that first attracted her to emergency medicine, a realm where bringing all one's clinical knowledge and skill to bear in an instant can—as her children remind her—save a life.

Diabetes expert is named dean of nursing

Margaret Grey, M.D., M.P.H., the Annie Goodrich Professor of Nursing and associate dean for scholarly affairs at the Yale School of Nursing (YSN), has been named dean of the 100-year-old institution, one of Yale's professional schools.

A pediatric nurse, Grey is author of over 100 publications and is internationally known for her research on how children adapt to chronic illness, especially diabetes mellitus. As principal investigator for grants totaling over \$10 million, Grey has developed ways to manage diabetes and improve the quality of life for young diabetes patients and their parents and to



Margaret Grey

prevent type 2 diabetes in high-risk youth.

Grey has received numerous awards, and she is also a distinguished fellow of the National Association of Pediatric Nurse Associates and Nurse Practitioners. She is a member of the board of directors of the American Diabetes Association, where she has been instrumental in developing standards of care for youth with diabetes.

As dean, Grey will address the school's most pressing needs—fund-

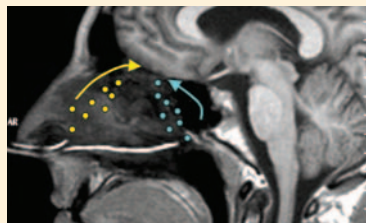
raising and expanding professorships and programs, said Yale President Richard C. Levin, who announced her appointment.

"Margaret Grey has been a leader in strengthening the nursing school over the last 20 years," Levin said. "She has had an outstanding record of attracting research grants and acting as a mentor for young faculty. With her history here, and as a graduate of the school, she had all the important qualities we were looking for."

Yale is ranked sixth among nursing schools receiving funding from the National Institutes of Health.

Advances

Health and science news from Yale



When it comes to taste, the nose knows

Anyone whose enjoyment of food has been blunted by a bad cold knows that a good part of taste involves the sense of smell. Our taste buds distinguish five elemental sensations—sweet, sour, salty, savory and bitter—but food's flavor arises from pleasant odors that enter our nasal passages through the back of the mouth.

In new research published in the August 18 issue of *Neuron*, Dana Small, PH.D., assistant professor of surgery, and colleagues at Yale, the John B. Pierce Laboratory and the University of Dresden Medical School in Germany inserted tubes that pumped odors, such as chocolate and lavender, into study subjects' noses, either to the front of the nostrils (yellow arrow above) or "retro-nasally," to a region at the back of the nasal cavity (blue arrow).

Using functional magnetic resonance imaging, the team found that a single odor could activate different brain regions depending on which nasal route it traveled. Odors presented retro-nasally activated brain areas devoted to the mouth, which Small says is "evidence of the existence of distinct olfactory subsystems," one specialized for sensing objects at a distance, the other for sensing objects in the mouth.

A stubborn inequity in heart treatments

Illness is a great leveler, but social and economic factors have profound effects on health, in terms of both vulnerability to disease and the treatments patients receive.

After a series of studies in the 1980s and early 1990s showed that black and female patients were not treated as aggressively as white males after heart attacks, public health initiatives were launched to redress the problem.

But in the August 18 issue of *The New England Journal of Medicine*, researchers at Yale and Emory reported that black patients, especially black women, are still less likely than white patients to receive standard tests or therapies after heart attacks.

"We found persistence of an elevated risk of death among African-American women," says senior author Harlan M. Krumholz, M.D., professor of medicine and public health and director of the Robert Wood Johnson Clinical Scholars Program. "This finding, along with evidence of differences in treatment, requires attention and remedy."

Yale and Donaghue partnership treats research advances as a practical matter

Like pathbreaking creator, foundation ventures into uncharted research territory

When the trustees and staff of the West Hartford, Conn.-based Patrick and Catherine Weldon Donaghue Medical Research Foundation meet to make final decisions on the grant proposals they receive, they use a variety of criteria, but one—known at Donaghue as the "but for" test—best captures the foundation's unique philanthropic vision.

"But for the availability of Donaghue Foundation support," the foundation's guidelines read, "what will become of the proposal?"

For the more than 100 faculty members and fellows at the School of Medicine who have received over \$10 million in grants and fellowships from the foundation since its founding in 1986—often for unconventional but promising clinical research not well supported by other funding sources—the answer is obvious: But for the Donaghue Foundation's long-standing and generous relationship with Yale, entire lines of groundbreaking research with real-world impact on the delivery of health care would never have been undertaken.

Ethel Donaghue, one of Connecticut's first female lawyers, chose her language carefully, stating in her will that the foundation's mission would be to support research "of practical benefit to the preservation, maintenance and improvement of human life." The trust she bequeathed to endow the foundation, more than \$10 million, was intended not to advance knowledge for its own sake, but to prevent the kind of suffering she had witnessed in her own parents, the organization's namesakes.

Women *continued from page 1*

that afflicts women falls under the purview of the foundation.

Researchers funded by the foundation are generating new data on women's health in studies on a wide range of topics, including breast cancer, osteoporosis and hormone therapy, and they are finding significant gender differences in diverse areas of study, including epilepsy, addiction and heart disease.

"We are broadening the scope of women's health," Mazure says, adding that identifying gender differences in health and disease has "benefits for men as well as for women."

The foundation's strategy of funding pilot studies allows scientists to obtain preliminary data so that they can approach agencies like the National Institutes of Health for grants to support larger investigations. Women's health investigators have received a total of \$10 million in grants from the foundation and have gone on to garner an additional \$10 million from the foundation and other organiza-

Her father, Patrick, was an Irish immigrant who built a fortune, only to have his life cut short by heart disease. Her mother, Catherine Weldon Donaghue, died of cancer in their grand Hartford house.

The foundation, with over \$100 million in assets, has distributed nearly \$10 million in grants since its inception, including \$10 million in 2005.

When asked about the foundation's support for the School of Medicine, Raymond S. Andrews Jr., one of the foundation's two trustees, offers a straightforward reply: "It's what Ethel Donaghue would have done."

The wishes of "Miss Donaghue" are invoked frequently, respectfully and affectionately by Andrews, but Donaghue's aims have been realized at Yale over the years in ways that she perhaps could not have imagined. For example, the foundation has funded studies of delirium in the elderly as well as predictors of metastatic breast cancer, and it provided the seed money for the Donaghue Women's Health Investigator Program at Yale (see related story, page 10).

Yale has also been the recipient of several major grants under the foundation's aptly named Practical Benefit Initiative (PBI). The PBI projects are "the ones with the most risk," says Executive Director Lynne Garner, M.D., as they tend to be large-scale initiatives that venture into new research realms. As with all proposals, she says, if a project could be easily funded elsewhere it will probably be

turned down, but an inspired, outside-the-box request might gain support from the foundation.

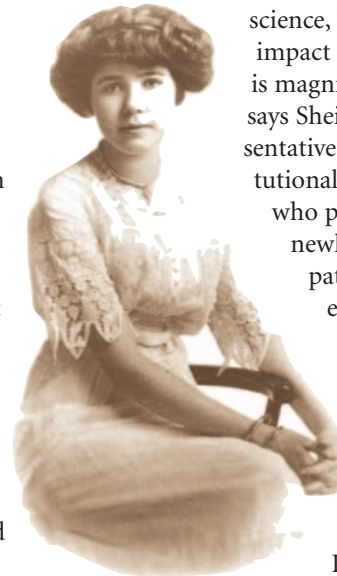
Such projects can be harder to evaluate than conventional bench science, but the foundation's impact on day-to-day health care is magnified by supporting them, says Sheilah B. Rostow, the representative of the foundation's institutional trustee, Bank of America, who points with pride to a newly launched \$10 million patient safety initiative as an example.

The School of Medicine has also received grants under the foundation's Research in Clinical and Community Health Issues and Donaghue Investigator programs. The latter is unique in its flexibility, allowing investigators to pursue the most promising avenues for arriving at a practical outcome.

"The Donaghue Foundation is a unique resource for Connecticut. Its focus on improving the quality of life is similar to our own," says Robert J. Alpern, M.D., dean of the medical school. "We are honored to have such a long-standing relationship, and we are inspired by the foundation's support of such a broad range of projects, which has had an impact on many aspects of our mission."

Andrews sees the foundation's relationship to Yale as a mutual one, in that academic medical centers like Yale are critical to the foundation's own mission. Thanks to the foundation's support, he says with a smile, "they are talking about 'practical benefit' at Yale today."

Miss Donaghue would be pleased.



Ethel Donaghue (1896–1989)

tions to further their work. Mazure, an expert on stress, depression and tobacco and drug addiction in women, collaborates with many scholars under the PBI umbrella.

When the Donaghue Foundation made its PBI award, it came with a stipulation that the recipient must strive to make practical contributions to women's health. Mazure says that the PBI increases its impact through public education, offering an informative website (www.yalewhr.org) and producing publications on topics such as bone health and how to interpret research findings reported in the media. Faculty who are associated with the program frequently speak on women's health topics at large workshops, and at smaller gatherings on request.

Mazure says that the PBI has made a real difference in the careers of the faculty it has supported, sometimes in unexpected ways. When assistant professor of psychiatry Julie

K. Staley-Gottschalk, M.D., needed a statistician for a neuroimaging study comparing smokers and non-smokers, she agreed to help if Staley-Gottschalk looked for sex differences in her results.

Though she expected to find no such differences, Staley-Gottschalk agreed, and she was surprised to find higher numbers of the brain transporters that regulate serotonin and dopamine in women than in men.

This unexpected result set Staley-Gottschalk on a course of research, now supported by the PBI, to understand sex differences in brain chemistry in male and female smokers. She hopes that her research will help to explain why the nicotine replacement therapies used by smokers do not work as well for women as they do for men.

The influence of the PBI has had "a huge impact on me," says Staley-Gottschalk. "It has opened my eyes to a new view of science."

Benefit bike ride raises \$, for Yale survivors' clinic

Champion bicyclist Lance Armstrong, whose yellow bracelet has become a cultural icon, may be



Jeff Keith

Earth's most famous cancer survivor. Along with millions of others, Jeff Keith, survivor of a childhood bout with the disease that claimed much of his right leg,

credits Armstrong with "elevating survivorship" and raising public awareness of survivors' special needs.

So it seems fitting that Keith, of Fairfield, Conn., and others climbed onto the saddles of their bikes on a Sunday morning in August to start the first Connecticut Challenge (see *Out & About*, right), an annual event Keith has launched with friend John Ragland Jr. to raise funds for a cancer survivorship clinic at the Yale Cancer Center ().

With chemotherapy, radiotherapy and surgery, more people beat cancer than ever before, but long-term physical and psychological consequences of the disease, such as heart problems, decreased fertility and cancer recurrence, are often overlooked.

"Survivorship is almost a 'black box,'" Keith says. "Not enough attention has been focused on it, but it's as important as basic care and research because there are million survivors walking around in the United States."

Survivorship is a "silent need," agrees Nina Kadan-Lottick, M.D., medical director of Yale's Clinic, a program for childhood cancer survivors funded by the Tommy Fund for Childhood Cancer. "The vast majority of survivors do not even recognize that they have unique health needs or psychosocial needs, because when their therapy was ended it was at a time when we didn't plan for the future," Kadan-Lottick says. "They were told, 'You're done.'"

The has taken a major step toward an adult cancer survivorship program to parallel Kadan-Lottick's with the recent recruitment of Kenneth D. Miller, M.D., an oncologist with special interest and expertise in this broad subject.

With Keith and Ragland's help, Kadan-Lottick and Miller hope to combine forces to create the first center in Connecticut for survivors of all cancers, including adult cancers, a model of care that would be one of the first of its kind in the nation.

Richard L. Edelson, M.D., director of the , rode miles in the Challenge, which netted \$, for the proposed clinic. The ride was a "tremendously invigorating and inspiring experience, for an extraordinarily important purpose," he says. "The Yale Cancer Center is privileged to join hands with the Connecticut Challenge in our joint development of a cancer survivorship program that provides the very best possible care for survivors."

Out & about



May : Members of the Mashantucket Pequot Tribal Nation gathered at the Yale Child Health Research Center () for the

unveiling of a plaque marking the establishment of in memory of a tribal member who died from a primary immune deficiency in at age . The fund supports both basic and clinical research by the Section of Pediatric Immunology. **1.** From left: **Danielle Bachinski, Honey Carter, Roxanne Young-Perry, Keri Spears**, mother of Timber Spears, and **Lake Spears Jr.**, brother of Timber Spears. **2.** Tribal Council Chairman **Michael Thomas** (left) with Ensign Professor of Medicine and Dean **Robert J. Alpern**, M.D., after the unveiling. **3.** Keri Spears tours the research area. **4.** From left: Professor of Pediatrics and Director **Scott A. Rivkees**, M.D., speaks with **Joey Carter** and **Crystal Whipple**.



July : A celebration at the medical school's Child Study Center marked the christening of



formerly the Bush Center, in honor of **Edward F. Zigler**, M.D., the center's founder and Sterling Professor Emeritus of Psychology at Yale. Zigler, a leading researcher of programs and policies for children and families, was instrumental in the planning and implementation of the Head Start program, the Family and Medical Leave Act, and the Schools of the 21st Century initiative. **1.** **Timothy P. Shriver**, M.D., chair of Special Olympics (left), meets **Edmund W. Gordon**, M.D., John M. Musser Professor Emeritus of Psychology at Yale. **2.** From left: U.S. Sen. **Christopher J. Dodd** (D-CT), U.S. Rep. **Rosa L. DeLauro** (D-CT), former Bush Center Senior Fellow and U.S. Rep. **John B. Larson** (D-CT). **3.** **John DeStefano Jr.**, mayor of New Haven. **4.** Zigler (left) and **Walter S. Gilliam**, M.D., assistant professor in the Child Study Center and director of the newly named center.



July : A kickoff party for the Bike Across America ()

, a bicycle ride to raise funds to build Connecticut's first comprehensive cancer survivorship clinic at the Yale Cancer Center (www.ctchallenge.org), was held at the Fairfield, Conn., home of co-founder **Jeff Keith** and his wife, Karin (see related story, left). The party and items auctioned that evening raised over \$, . **1.** From left: **Steve and Meg Stanton** with **Mitch McManus**, owner of Bridgeport and event sponsor. **2.** From left: **Drs. Michael and Elizabeth Brennan** with **Suzie Manegia**. **3.** **John Ragland Jr.** and **John Ragland Sr.** **4.** From left: **Dr. Mel and Linda Coolidge**, **Richard L. Edelson**, M.D., director of the Yale Cancer Center, and **Karin Keith**.



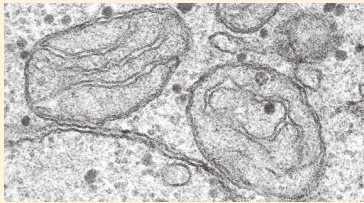
August : Medical school alumni, spouses and guests gathered in Sterling Hall of Medicine's Beaumont Room for the

, which followed the annual ritual in which newly admitted medical students receive a physician's coat from leaders of the School of Medicine. **1.** From left: **David J. Leffell**, M.D., professor of dermatology and surgery and deputy dean for clinical affairs, speaks with **Maureen and Harold D. Bornstein Jr.**, M.D. **2.** From left: **Samuel D. Kushlan**, M.D., **Ethel Kushlan**, and **Paula Del Guercio**. **3.** **Marie-Louise T. Johnson**, M.D., and **Maria Kayne** and **Martin Gordon**, M.D.



Advances

Health and science news from Yale



Cellular power plants help explain diabetes

Every cell in our bodies contains bacteria-sized powerhouses called mitochondria (seen as ovals in photo), where sugar combines with oxygen to produce adenosine triphosphate (ATP), the fuel for cells' most important functions.

Insulin, which escorts sugar into cells, is a crucial player in this process. In type 2 diabetes, which affects 171 million people worldwide, cells become resistant to insulin and cellular energy production plummets.

A study in the September issue of *PLoS Medicine* led by Kitt F. Petersen, M.D., associate professor of medicine, suggests that insulin resistance results from an inherited flaw in mitochondrial function.

Petersen's team used magnetic resonance spectroscopy to zoom in on the effects of insulin in muscle cells of children whose parents have type 2 diabetes and in a control group. They found a striking difference: insulin spiked ATP production by mitochondria in the control group's muscle cells by 90 percent, but insulin-resistant offspring of parents with type 2 diabetes had only a 5 percent increase.

An upside to aneurysms?

It's never a good thing to have an aortic aneurysm, a weakness in the walls of the body's largest artery, which rises from the heart's left ventricle to supply the body with oxygenated blood. But in the September issue of the journal *Chest*, John Elefteriades, M.D., chief of cardiothoracic surgery, and colleagues reported a "silver lining in the cloud of aneurysm disease."

Atherosclerotic plaques, which can cause heart attacks or strokes if they rupture, begin to form in most people's arteries by age 20. But Elefteriades and other Yale surgeons had noticed that even elderly patients with aortic aneurysms seemed to have virtually plaque-free arteries, "like a baby's or a young child's."

When the team tested this naked-eye clinical observation with precise radiological measurements, they found that patients with ascending aortic aneurysms were indeed far less prone to plaques. Elefteriades has shown in other studies that aortic aneurysms are inherited, and he suggests that examining the same genes could bring new insights into atherosclerosis. Any breakthrough there would be invaluable, since cardiovascular disease, Elefteriades notes, is "the leading cause of death in the Western world."

Liver transplantation program formed with an international team of experts

The School of Medicine has launched an ambitious new liver transplant program with a team of doctors recruited from across the United States and Europe.

David C. Cronin, M.D., M.P.H., one of the world's most experienced pediatric and adult liver transplant surgeons, joined the Department of Surgery in December as chief of the Liver Transplantation Program. An associate professor of surgery, Cronin came to Yale from the University of Chicago, where he performed or participated in more than 100 adult and pediatric liver transplants.

Cronin spent a year working to assemble a team of surgeons, anesthesiologists, nurses, social workers, dietitians, pharmacists and transplant coordinators. In addition, Mario Strazzabosco, M.D., M.P.H., medical director of the adult liver transplantation program at the Ospedali Riuniti di Bergamo in Italy, joined the Yale faculty in September as chief of transplant hepatology and professor of medicine. Strazzabosco, who trained as a fellow at Yale from 1998 to 2001 under James L. Boyer, M.D., Ensign Professor of Medicine and director of the Yale Liver Center, helped create Italy's third-largest liver transplant program six years ago in Bergamo. Last year, the Bergamo program performed 100 liver transplants.

Cronin had previously recruited transplant surgeon Sanjay Kulkarni, M.D., from Chicago and anesthesiologist Stephen Luczycki, M.D., from the University of Rochester, one of the world's busiest live-donor programs.

Between 1998 and 2001, there were 100 liver transplants performed at Yale, but the program was curtailed for re-evaluation after a series of poor outcomes. The revamped transplant service, the result of joint investment by the medical school and Yale-New Haven Hospital through the New Clinical Program Development Fund,

Database promises early alerts of outbreaks

Until they were replaced by electronic devices in 1900, caged canaries were a fixture in British coal mines, where their high sensitivity to deadly carbon monoxide gas—odorless to humans—made them invaluable sentinels for miners' safety. If the canaries showed any signs of distress, miners took warning.

The colorfully named Canary Database, a new project overseen by Peter M. Rabinowitz, M.D., M.P.H., associate professor of medicine, also relies on animals as lookouts of a sort, by comprehensively cataloging animal illnesses around the world that might portend outbreaks of disease in humans. "If you have an animal that is sick from an environmental hazard, should human health professionals be concerned?" Rabinowitz asks.



Meriden, Conn., resident Ray Bellemare (left) expresses his gratitude to David Cronin at a press conference following Bellemare's successful liver transplant.

"Amazing" operation gives patients new life

Even after performing hundreds of liver transplants, surgeon David Cronin still marvels at the capacity of a healthy liver to rejuvenate a direly ill patient. "It's amazing what happens when you get a new liver that works. You get better so quickly," he says. "By the time the breathing tube is out the next day, I always ask the patients, 'How do you feel?' And they always tell me, 'I feel great! I've never had so much energy before in my entire life.'"

Cronin's colleague, hepatologist Mario Strazzabosco, agrees. "After this operation, their whole appearance and demeanor change so dramatically. You sometimes don't recognize your own patient," Strazzabosco says.

One of Cronin's patients, Ray Bellemare of Meriden, Conn., received a liver during a six-hour

operation on July 11 and left the hospital 18 days later. He had been on the waiting list only three weeks, but rose to the top because of the severity of his condition.

Bellemare, whose liver was damaged by alcohol before he stopped drinking two years ago, was overwhelmed by his new lease on life. "Every day when I wake up, I can feel my body getting stronger and stronger," he said at a news conference in August. "The good Lord gave me a second chance and now I'm going to go for it. I'm going to change my life around and help other people. I want to give something back."

"His life expectancy was three months without a transplant," Cronin said at the press conference. "Now he can expect to live a normal lifespan."

listed its first patient in April and performed its first two liver transplants in July and a third in September. Cronin estimates that 100 liver patients will receive transplants by the end of December and another 100 during 2005, given the service's current capacity.

A search is under way for a third liver transplant surgeon, and Robert Udelsman, M.D., M.P.H., the chair and Lampman Memorial Professor of Surgery and Oncology, expects the program to grow rapidly, to 100 liver transplants annually. Since few sur-

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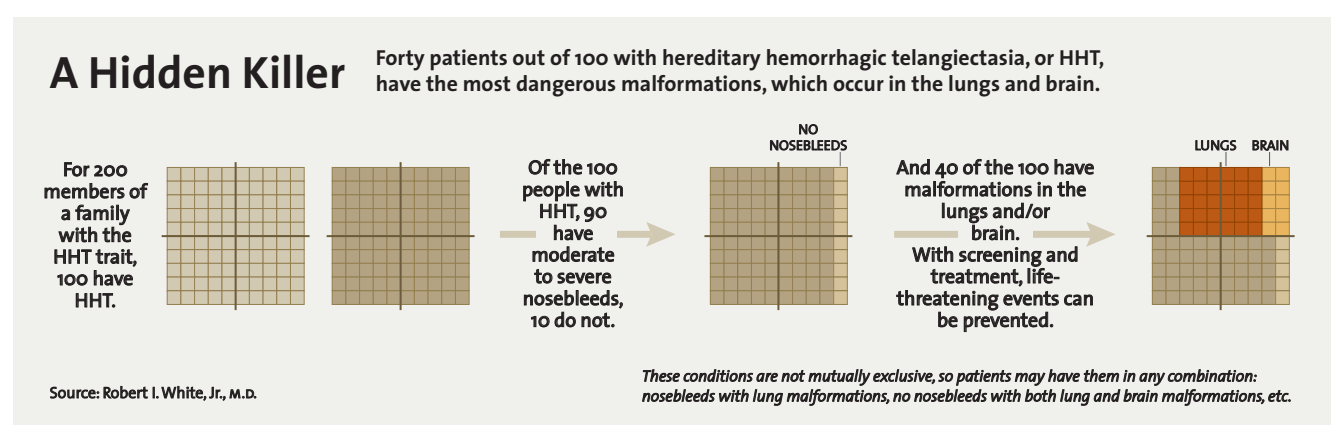
Defusing vascular “time bombs” calls for group effort

Screening, treatment model for uncommon disorder has worldwide impact

For most of us, nosebleeds are no more than an occasional nuisance, but for a million people worldwide they are a warning sign, the clearest manifestation of an uncommon and potentially fatal genetic disorder known as hereditary hemorrhagic telangiectasia (HHT).

In people with HHT—sometimes called Osler-Weber-Rendu syndrome—blood vessels in certain parts of the body tend to form without capillaries. The tiny, narrow capillaries are crucial go-betweens that depressurize blood as it flows through tissues and organs from arteries to veins. In the absence of capillaries, high-pressure arterial blood flows directly into veins with full force, creating fragile sites that are prone to ruptures and bleeding.

HHT-related weak spots in small vessels, such as those inside the nose or at the surface of the skin, are known as telangiectases. Defects in the larger blood vessels of the gastrointestinal tract, liver, lungs and brain are called arteriovenous malformations, or AVMs. For many people with HHT, recurrent nosebleeds caused by ruptured nasal telangiectases—which occur in 90 percent of cases—are the only medical consequence of the disorder. But 10 percent of those with HHT also have AVMs in the lungs or brain; these malformations usually have no symp-



toms and can cause stroke or sudden death if they rupture.

According to Robert I. White Jr., M.D., professor of diagnostic radiology, there are straightforward and highly effective therapies for the life-threatening AVMs seen in HHT. But far too often, he says, a widespread lack of knowledge of the disorder, even among physicians, means that recurrent nosebleeds can be ignored or misdiagnosed, needlessly turning easily treatable AVMs into “vascular time bombs.”

“Why isn’t this well-known?” asks White. “Because HHT affects five organs, and each specialist takes care of their organ, and doesn’t know anything about the other organs.”

But White is spreading the word. For more than two decades, in conjunction with the Hereditary Hemorrhagic Telangiectasia Foundation International, an organization he helped to found in 1994, White has been a globetrotting evangelist for HHT screening and treatment, and he

has guided the creation of Centers of Excellence across the United States and in Europe and Japan. These centers, each based on a successful model for HHT management that White pioneered at Yale, give patients access to multidisciplinary clinical teams—otolaryngologists, dermatologists, neurologists, gastroenterologists, pulmonologists and radiologists—whose overlapping clinical expertise embraces all the organ systems affected by HHT, along with genetic counseling and specialized nursing services.

At Yale, patients who believe they may have HHT are given CT scans to screen for brain AVMs and contrast echocardiography (commonly known as a “bubble test”) to search for vascular malformations in the lungs. Because any child of a parent with HHT has a 50 percent chance of inheriting the disorder, patients are urged to refer members of their extended family to screening and treatment centers.

If AVMs are found, they can be treated with embolization, a procedure in which doctors guided by ultrasound, X-ray or CT images thread a catheter through veins to the malformation and shut off its blood supply with platinum coils or a medical-grade “Super Glue.”

In addition to White, members of the Yale HHT team include Douglas A. Ross, M.D., associate professor of surgery (otolaryngology); Guadalupe Garcia-Tsao, M.D., professor of medicine (digestive diseases); Lawrence H. Young, M.D., professor of medicine (cardiology); Deborah D. Proctor, M.D., associate professor of medicine (digestive diseases); Jeffrey S. Pollak, M.D., associate professor of diagnostic radiology; Katharine J. Henderson, M.D., genetic counselor; and Cinda J. D’Addio, senior administrative assistant.

“We work together, and we all gain something from it,” says White, “so it’s the ideal multidisciplinary collaboration.”

New lens implant for cataracts is a bionic-style bifocal

For most of us, wearing eyeglasses is an inevitable part of getting older. But for some patients, reaching for a pair of spectacles may soon be a thing of the past. A new lens implant for cataracts that corrects both distance and near vision, allowing 90 percent of patients to see clearly after surgery without wearing glasses or bifocals, is now available at the Yale Eye Center.

“It really represents a whole new technological advance, because it’s able to provide patients with a quality range of vision, both near and distance, all in one optical system,” says Brian M. DeBroff, M.D., associate professor and vice chair of the Department of Ophthalmology and Visual Science. DeBroff, who has been performing lens implant surgery for more than a decade, is one of just a handful of physicians in Connecticut trained and licensed to use the new lenses.

More than 20 million people age 40 and older have cataracts, and many opt to undergo surgery to remove cloudy lenses and replace them with permanent lens implants. Cataract patients who receive implants usually see more clearly, but many still need



Brian DeBroff is enthusiastic about a newly approved lens implant for cataracts.

glasses for reading. With the new lens, however, most patients achieve optimal vision that won’t deteriorate, even as the eye muscles around the lens grow weaker with age.

The new implant, known as the AcrySof ReSTOR lens, uses a technology found in microscopes and telescopes in which a series of concentric circular zones ranging in thickness from 10 to 150 microns (a human hair is 75 microns thick) allows the lens to focus light from both near and distant objects without relying on the muscles of the eye.

Approved by the FDA in March, the new implant has been used outside the U.S. since 2004. Although lens implants are usually used as a treatment for cataracts, in theory the new implant could also help those over 40 with presbyopia—a common

condition affecting near vision in which the lenses become less elastic—who do not wish to wear reading glasses. However, DeBroff says he would not recommend the new lens implants for patients with a high degree of astigmatism or those who do a lot of night driving, because they cause some patients

to experience halos around lights.

DeBroff performed his first implant surgery with the new lens in September, and he soon hopes to conduct a study on its use in pediatric cataract patients. Though the surgery to implant the new lens is similar to the procedure used for traditional lenses, doctors must undergo special training on taking proper measurements to achieve the best results.

“One of the important aspects of this implant is the necessity to determine very accurately the power of the lens for the individual patient,” DeBroff says. “At the Yale Eye Center we have some sophisticated equipment that uses computerization to determine the proper power of the implant to put in place once the cataract is removed.”

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geons have Cronin’s experience with pediatric cases, Yale’s program is likely to become the first significant pediatric transplant program in New England.

More than 1,000 people are registered on the national waiting list for livers, including 100 in New England, according to the United Network for Organ Sharing. Only 10 liver transplants were performed in 2007 due to a shortage of donor organs. Cronin



Mario Strazzabosco

estimates that two-thirds of liver patients on the national list will die before an organ is available. It is Cronin’s goal to introduce live-donor transplants, a remarkable procedure in which a healthy donor gives only a portion of his or her liver to the patient.

“Liver transplantation is an extremely challenging operation,” Udelsman says. “It’s also the ultimate kind of transplantation in that the patient will not survive without the organ. Unlike kidney and pancreas [cases], where the patients have other options to keep them alive, these patients have no other options, and they will die from their disease. That’s why it’s so gratifying to see the operation being performed.”

Grants and contracts awarded to Yale School of Medicine

May/June

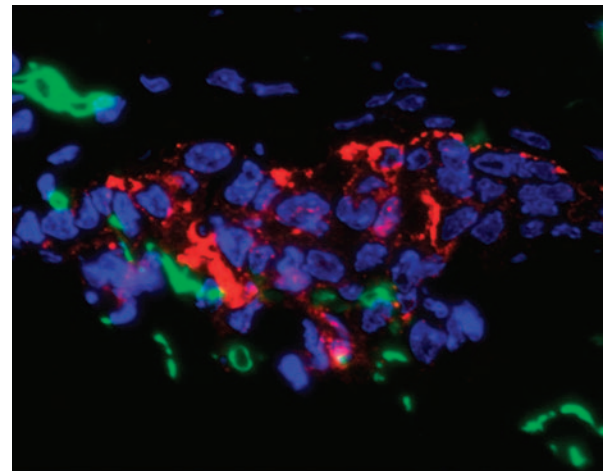
Federal

Vikki Abrahams, NIH, *Innate Immune Responses of Trophoblasts in Pregnancy*, years, \$, , • **Anton Bennett**, NIH, *Myogenesis by Protein Tyrosine Phosphatases*, years, \$, , • **Hilary Blumberg**, NIH, *Genetics of Hippocampal Deficits in Bipolar Disorder*, years, \$, , • **Kathleen Carroll**, NIH, *Maximizing CBT's Efficacy with Medication and CM*, years, \$, , • **Tian Chi**, NIH, *BAF Complexes in T Cell Development and Beyond*, years, \$, , • **Jonathan Dranoff**, NIH, *Regulation of Bile Ductular Proliferation*, years, \$, , • **Gerald Friedland**, NIH, *New England Program for AIDS Clinical Trial-PROACT*, year, \$, , • **Xiao-Bing Gao**, NIH, *Crosstalk of Hypocretin and MCH in Feeding Regulation*, years, \$, , • **Sankar Ghosh**, NIH, *Regulation of NF- κ B Transcriptional Activity*, years, \$, , • **Karl Insogna**, NIH, *Role of CSF-1 in Osteoclast Function*, years, \$, , • **Akiko Iwasaki**, NIH, *Antiviral CTL Mobilization to the Genital Mucosa*, years, \$, , • **Susan Kaech**, NIH, *Regulation of Memory CD4 T Cell Development*, years, \$, , • **Harriet Kluger**, NIH, *Predicting Melanoma Response to BAY-1707903/Chemotherapy*, years, \$, , • **Brian Leaderer**, NIH, *Indoor and Outdoor NO₂ and Asthma Severity in Children*, years, \$, , • **Thomas McGlashan**, NIH, *Collaborative Longitudinal Study of Personality Disorder*, years, \$, , • **Sherry McKee**, NIH, *Negative Affect and Smoking Behavior in Women and Men*, years, \$, , • **Sukanya Narasimhan**, NIH, *Early Tick Salivary Antigens as Vaccine Targets*, years, \$, , • **Godfrey Pearlson**, NIH, *fMRI Imaging of Alcohol-Intoxicated Driving*, years, \$, , • **Vincent Quagliarello**, NIH, *Intervention Planning to Reduce Nursing Home Pneumonia*, year, \$, , • **David Rimm**, NIH, *Predicting Metastasis to Lymph Nodes*, years, \$, , • **Michael Robek**, NIH, *Modulation of HBV Replication by the Immunoproteasome*, years, \$, , • **Gerard Sanacora**, NIH, *Measurement of GABA Synthesis in Depression*, years, \$, , • **David Schatz**, NIH, *Targeting of Somatic Hypermutation and Gene Conversion*, years, \$, , • **Albert Shaw**,

NIH, *Top Homologues in Lymphocyte Genome Stability and Aging*, years, \$, , • **David Stern**, NIH, *Protein Kinases in Yeast DNA Checkpoint Pathways*, years, \$, , • **Brian Wong**, NIH, *Mechanisms of Drug Resistance in *Candida albicans**, years, \$, ,

Non-Federal

Diana Beardsley, RAM Capital Group, LLC, *Perinatal Immune Thrombocytopenia*, year, \$, , • **Alfred Bothwell**, L2 Diagnostics, LLC, *Protection Against West Nile Virus by RNA Interference*, years, \$, , • **Janet Brandsma**, Anacor Pharmaceuticals, *Screening Anacor Compounds for in vivo Efficacy in the Cottontail Rabbit Papillomavirus (CTV) Assay*, year, \$, , • **Michael Cappello**, University of California - San Diego, *Function/Optimization of a Nematicidal Cry Toxin Arsenal*, years, \$, , • **Sonia Caprio**, Children's Hospital, Boston, *Health Values and Treatment of Pediatric Type 2 Diabetes*, 1 year, \$, , • **Idil Cavus**, The Epilepsy Project, *Controlling Brain Excitability by Electrical Stimulation*, year, \$, , • **Gina Chung**, Susan G. Komen Breast Cancer Foundation, *The Role of Chemokines and Their Receptors in Breast Cancer*, years, \$, , • **R. Todd Constable**, Pfizer Inc., *Magnetic Resonance Imaging for Non-Invasive Characterization of Liver Fibrosis, Cirrhosis, and Hemodynamics with Application to Other Organs*, year, \$, , • **Ronald Duman**, Organon Inc., *Influence of Org₁ and Org₂ on Neurogenesis in Adult Hippocampus*, year, \$, , ; National Alliance for Research on Schizophrenia and Depression, *Proliferation and Survival of Glia: Regulation by Stress and Antidepressants*, year, \$, , • **John Geibel**, AstraZeneca, A.B., *Multi-Tissue Analysis of AstraZeneca's Compound Coded as AZD0865*, months, \$, , • **Joel Gelernter**, Medical University of South Carolina, *Florida Hurricanes and Older Adults: Outcomes/Resiliency*, years, \$, , • **Harriet Kluger**, Breast Cancer Alliance Inc., *Prediction of Lymph Node Involvement in Breast Cancer*,



With funding from the National Institutes of Health, Akiko Iwasaki, assistant professor of immunobiology, studies immune responses to herpes simplex virus type 2 (HSV-2) infection, one of the most common sexually transmitted diseases. In this section of mouse vaginal tissue, immune-system cells (green) are seen in proximity to cells infected with HSV-2 (red).

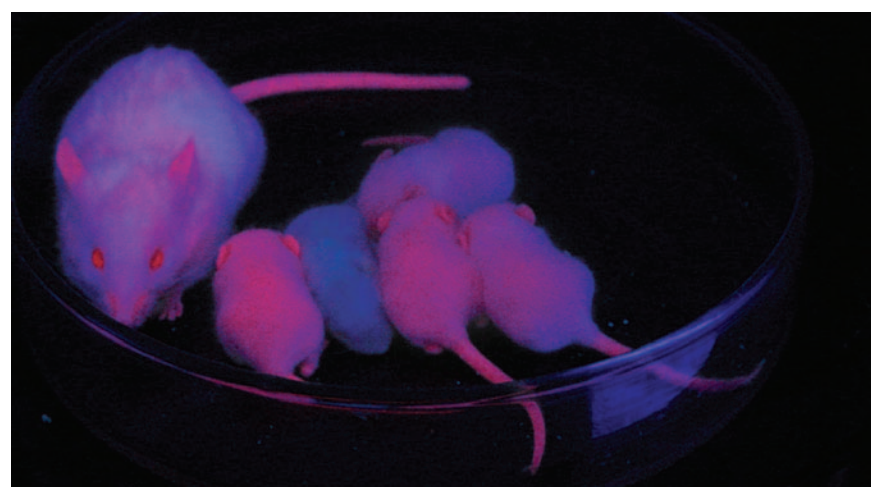
years, \$, , • **Harlan Krumholz**, Mid-America Heart Institute, *sccor in Cardiac Dysfunction and Disease-Project*, years, \$, , • **Daniel Mathalon**, American Psychiatric Association, *APIRE/Kemp Fund Award for Research*, years, \$, , • **Russell Matthews**, University of Georgia, *GlcNAcT-V Regulation of Cell Surface Structure/Function*, years, \$, , • **Linda Mayes**, Community Foundation for Greater New Haven, *Minding the Baby Home Visiting Program for First-Time Parents*, year, \$, , • **Diane McMahon-Pratt**, Fort Dodge Animal Health Division of Wyeth, *Visceral Leishmaniasis Vaccine Efficacy in Intradermal BALB/C Mouse Model*, years, \$, , • **Wang Min**, AtheroGenics Inc., *AtheroGenics Testing Agreement*, year, \$, , • **Guillermo Mor**, Wayne State University, *Studies of Toll-Like Receptors and Apoptosis in the Maintenance of Innate Immunity During Pregnancy*, year, \$, , • **Alexander Neumeister**, Anxiety Disorders Association of America, *Genetic Determinants of Noradrenergic Function in Panic Disorder*, year, \$, , • **Scott Rivkees**, March of Dimes, *Prevention of Brain Injury of Prematurity by Prenatal Adenosine Antagonists*, year, \$, , • **Sara Rockwell**, Susan G. Komen Breast Cancer Foundation, *Interactions of Black Cohosh Extracts with Doxorubicin: Possible Mechanisms*,

years, \$, , • **Nenad Sestan**, March of Dimes, *Molecular and Cellular Characterization of Dominant Ataxia with Hydrocephalus in the Clunisy Mutant Mouse*, years, \$, , • **Mark Solomon**, March of Dimes, *Substrates of the Anaphase Promoting Complex*, years, \$, , • **Stephen Strittmatter**, Dr. Ralph and Marian Falk Medical Research Trust, *Axonal Regeneration Therapy for Spinal Cord Injury*, years, \$, , • **Patrick Sung**, Susan G. Komen Breast Cancer Foundation, *Role of BRCA2 in Homology-Directed Repair of DNA Breaks*, years, \$, , • **Agnes Vignery**, Unigene Laboratories Inc., *Targeted Induction of Bone Formation in vivo*, years, \$, , • **Fred Volkmar**, Oregon Health Sciences University, *Measuring Expressive and Receptive Prosody in Children with Autism*, years, \$, , • **Sherman Weissman**, University of Massachusetts, *Gene Expression in Mature Neutrophils*, years, \$, , • **Jason Wilken**, Elsa U. Pardee Foundation, *Inhibitory Potential of SERB3: A Soluble ErbB3 Isoform*, year, \$, , • **Scott Woods**, National Alliance for Research on Schizophrenia and Depression, *Glycine vs. Placebo in Patients with Schizophrenia*, year, \$, , • **Derek Yach**, Open Society Institute, *Reducing Deaths from Tuberculosis and Tobacco Together*, year, \$, ,

Genes continued from page 1

called *piggyBac*, originally identified in the cabbage looper moth by Malcolm J. Fraser, Ph.D., of the University of Notre Dame, so that it can be easily cut and pasted into the genomes of higher organisms, including mice and humans. "With this transposon, we now have the ability to systematically inactivate each and every gene in a model organism like the mouse," Xu says. David Largaespada, Ph.D., an expert on human genetics at the University of Minnesota who developed another transposon that he and his colleagues recently used in mice to identify genes involved in cancer, agrees: "Researchers now have what is essentially a furry fruit fly."

Scientists have traditionally relied on mutagenesis, using chemicals to modify mouse genes, but this is painstakingly slow, and it is often difficult to locate the genes that have been mutated. The *piggyBac* transposon, when injected into fertilized mouse eggs along with an enzyme known as transposase, is remarkably efficient at inserting itself into important coding regions of the genome, and, as its name implies, it can carry genetic tags that allow researchers to locate mutations quickly.



With genetic tags like red fluorescent protein (RFP), scientists can easily determine whether a mouse carries a transgene or a mutation caused by *piggyBac* insertion. Under ultraviolet light, a mother mouse and three of her pups express RFP and glow bright red, but one (second from left) did not inherit the gene and appears violet.

PiggyBac has the added feature of total reversibility, which allows scientists to verify that particular mutations have particular effects. In the presence of transposase, *piggyBac* easily hops into genes, and it remains stably in place in any mice of subsequent generations that do not inherit the gene for the enzyme. But when these mice are mated with others that produce transposase, *piggyBac* hops back out of genes, leaving no trace of the mutation in their offspring.

This combination of traits makes *piggyBac* a "dream tool" for geneticists, Xu says: "This new technology will completely change the game of using mutagenesis to understand the function of mouse genes, and by extension their human counterparts."

PiggyBac could also be a promising new vehicle for human gene therapy, according to Xu, who says that, in addition to carrying tags that mark mutated genes, *piggyBac* can be engineered to carry whole blocks of

containing one or more new genes into the genome.

To demonstrate this genetic piggybacking, Xu and his colleagues used *piggyBac* to insert a gene for a protein that glows red under ultraviolet light. As seen in the photo at left, a mother mouse with the gene and any offspring that carry it cast an obvious red hue under the light, but pups without the gene do not. However, many more experiments will be required to know whether the transposon, or some variation of it, could reliably and safely transfer therapeutic genes to humans.

Xu's immediate goal is to use *piggyBac* to systematically inactivate every gene in the mouse, one by one, a project that would be unthinkable with traditional mutagenesis methods. "For the past two decades, it has routinely taken about a year to mutate one gene in a mouse, and altogether about 10,000 genes have been knocked out in mice, out of a total of about 20,000 that are in the genome," Xu explains. With the help of *piggyBac*, he says, "in three months, with two students, we have done 100 genes. We plan to produce mutant mice inactivating most of the genes in three years."

Neuroscientist Horvath will chair Comparative Medicine

Tamas L. Horvath, DVM, MS, PhD, associate professor of obstetrics, gynecology, and reproductive sciences, and associate professor of neurobiology, has been named chair of the Section of Comparative Medicine. Horvath takes over from Robert O. Jacoby, DVM, MS, PhD, who has led the section since 2003.

Comparative Medicine, founded in 1963 and made a free-standing section in 1997, conducts infectious disease research and provides veterinary services for animals used in research. However, during his long tenure, Jacoby oversaw the creation of the Yale Animal Resources Center as



Tamas Horvath

an independent administrative entity within the section devoted to animal care, and the section has since been refashioning itself to become a predominantly academic enterprise.

Horvath followed his father and grandfather into veterinary medicine in his native Hungary, but his training sparked a passion for basic research. He is an expert on the hypothalamus, the brain region that regulates such basic functions as reproductive behavior, eating, biological

rhythms and the body's hormonal responses to stress.

Horvath says his intellectual history mirrors that of the section he will head. "I came here as a veterinarian into the medical school, so personally I had to go through the same transition to become a full-blown academic researcher," he says. "That's the sort of philosophy that I would like to translate now to Comparative Medicine, to make this section in the next couple of years an even more integral component of the academic life of the medical school."

At a reception to mark his new appointment, Horvath said, "It really

is an honor and a privilege to follow in the footsteps of Bob [Jacoby]. It's going to be a major challenge for me to fill his shoes."

Jacoby says that Horvath's background is well suited to the section's 50th-century mission. "Ten or 20 years ago it was tilted toward diseases of laboratory animals. You're going to see much more attention paid to mechanisms of human diseases expressed in animal models," Jacoby says, adding that he expects Horvath to strike "the right balance between the section's regulatory and health care mandates with the need to keep Yale's research at the forefront."

Borgstrom named president/CEO of Yale-New Haven

Since she joined Yale-New Haven Hospital (YNH) in 2003 as an administrative fellow just out of graduate school, Marna P. Borgstrom,



Marna Borgstrom

PhD, has risen in the ranks to become a vice president, the chief operating officer and, as of October 2008, the president of the hospital and Yale New Haven Health

System (YNHHS). She succeeds Joseph A. Zaccagnino, MD, who retired in September after a 25-year career.

During more than a quarter-century at the hospital she has watched it grow into the 1,000-bed flagship of a health system that stretches along Long Island Sound from Rye, N.Y., to Westerly, R.I.

As the second-in-command at the hospital, Borgstrom helped develop YNHHS, an affiliation of several dozen organizations including

Yale University and two other large hospitals, Bridgeport and Greenwich. She managed the hospital's \$1.5 billion budget and served as primary liaison with the School of Medicine, and also oversaw construction of the \$1.5 billion Yale-New Haven Children's Hospital, which opened in 2006.

Because of YNHHS's size and scope, Borgstrom sees opportunities to create better health care by coordinating its provider networks with one another and with the medical school. In particular, she looks forward to the construction of a \$1.5 billion cancer center that is awaiting zoning approval by New Haven officials.

Many joint programs—in epilepsy, endocrine surgery and maternal-fetal medicine, to name a few—already bring patients to New Haven from across the country, and a new liver transplantation program (see related story, page 10) is expected to draw pediatric patients from the region and beyond. Borgstrom would like to see more out-of-state patients come to the city for care, and to see continued growth in YNHHS's list of nationally recognized programs.

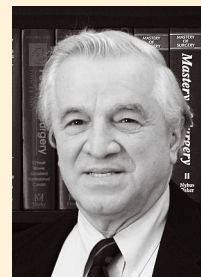
Awards & honors



Roland E. Baron,

MD, PhD, professor of orthopaedics and rehabilitation and cell biology, has received the D. Harold Copp Award from the International Bone and

Mineral Society. The award, presented in Geneva, Switzerland, in June, cites Baron's research on the mechanisms of skeletal development as having "led to significant changes in understanding of physiology or disease."



Stanley J. Dudrick,

MD, PhD, professor of surgery, has received the Jacobson Innovation Award from the American College of Surgeons.

Dudrick was honored for his research contributions in nutritional support for surgical patients and infants. In 2007, Dudrick was the first to demonstrate that infants could develop normally when fed intravenously.



Marie Louise Landry,

MD, PhD, professor of laboratory medicine and director of the Clinical Virology Laboratory at Yale-New Haven Hospital, is the

recipient of the Diagnostic Virology Award. The award, from the Pan American Society for Clinical Virology, recognizes her outstanding contributions to the field in the area of rapid detection of viruses for clinical diagnosis.



Stephen M. Strittmatter,

MD, PhD, the Vincent Coates Professor of Neurology and professor of neurobiology, has received the Senator Jacob Javits Award in

the Neurosciences from the National Institute of Neurological Disorders and Stroke. Strittmatter studies the development of the nervous system, and has discovered proteins involved in regeneration and repair after injury.



Michael B. Bracken,

MD, PhD, the Susan Dwight Bliss Professor of Epidemiology in the Division of Chronic Disease Epidemiology at the School of Public Health,

has been named president-elect of the Society for Epidemiologic Research, the largest epidemiological society in the world. Bracken's research is focused on the epidemiology of diseases of pregnant women and newborns.



Ronald S. Duman,

MD, PhD, Elizabeth Mears & House Jameson Professor of Psychiatry and professor of pharmacology, has received an Director's Merit Award from the National Institute

of Mental Health for his research on depression and stress. Duman studies the effects of stress on the hippocampus, and how antidepressant drugs stimulate neurotrophic and neurogenic actions in that structure.



Richard P. Lifton,

MD, PhD, chair and Sterling Professor of Genetics and professor of medicine and molecular biophysics and biochemistry, has been named a

Distinguished Scientist of the American Heart Association. The honor is "in recognition of seminal research that has importantly advanced our understanding and management of cardiovascular disease and stroke."



Derek K. Toomre,

MD, PhD, assistant professor in the Department of Cell Biology, has been named the Bayer Fellow in Medicine and Management for

2007. The fellowship, established by Bayer Pharmaceuticals Corp. in 1997, will support Toomre's application of advanced imaging techniques to study the dynamics of protein traffic and the cytoskeleton in migrating cells.



Michael Cappello,

MD, PhD, professor of pediatrics and director of the Yale Program in International Child Health, has been elected to the American Society for

Clinical Investigation, a society of biomedical researchers with outstanding records of scholarly achievement. Cappello's laboratory studies the molecular pathogenesis of hookworm anemia, a major global health problem.



Thomas M. Gill,

MD, PhD, associate professor of medicine and co-director of the Yale fellowship in geriatric medicine and clinical epidemiology, has been

inducted into the American Society for Clinical Investigation, one of the nation's oldest and most respected medical honor societies. Gill studies strategies to prevent functional decline and disability among the elderly.



Bruce L. McClellan,

MD, PhD, professor of diagnostic radiology, has been elected president of the American Roentgen Ray Society (ARRS), the oldest radiol-

ogy society in the United States. McClellan, who specializes in genitourinary radiology, began his term in July. The ARRS, founded shortly after the discovery of the X-ray, is dedicated to the advancement of radiology.



Edward M. Uchio,

MD, PhD, assistant professor of surgery, has received a

Dennis W. Jahnigen Career Development Scholars Award from the American Geriatrics Society (AGS). The \$100,000 award, one of 10 granted nationwide by the AGS to support geriatric research, will support Uchio's research on the effects of aging on a cancer-suppressing pathway in the kidney.