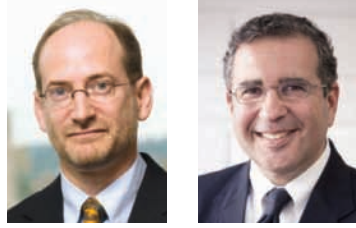


Experts on mental illness, multiple sclerosis are newest chairs

School of Medicine names leading researchers to head clinical neuroscience teams

Summer brought the appointment of two renowned physician-scientists as chairs of the School of Medicine's departments of psychiatry and neurology.

John H. Krystal, M.D., an internationally recognized expert on the neurobiology and treatment of



John Krystal

David Hafler

schizophrenia, alcoholism, depression, and post-traumatic stress disorder (PTSD), was named chair of the Department of Psychiatry and

chief of psychiatry at Yale-New Haven Hospital (YNHH), effective July 1. David A. Hafler, M.D., a leader in the worldwide effort to better understand the molecular basis of multiple sclerosis (MS), was named chair of the Department of Neurology and chief of neurology at YNHH. Hafler's appointment was effective September 1.

Krystal, the Robert L. McNeil Jr., Professor of Translational Research, is director of the Center for

the Translational Neuroscience of Alcoholism, funded at Yale by the National Institute on Alcohol Abuse and Alcoholism. He also heads the Clinical Neuroscience Division of the Veterans Affairs National Center for Post-Traumatic Stress Disorder and the Veterans Affairs Alcohol Research Center at Yale, both located at the VA Connecticut Healthcare System (VACHS) in West Haven, Conn.

Chairs, page 7

Three decades at the helm, and a legacy

Venerable director of Yale's M.D./PH.D. program makes a \$1 million gift

Launched in 1969 and continuously supported by competitive grants from the National Institutes of Health (NIH) since 1973, the School of Medicine's Medical Scientist Training Program (MSTP)—known informally on campus as the M.D./PH.D. Program—is one of the oldest and most successful of its kind. And for 29 years of the last four decades, Professor of Cell Biology James D. Jamieson, M.D., PH.D., has been the program's director.

"I believe I have the distinction of being the oldest living M.D./PH.D. program director in the world," says Jamieson, who recently added to this legacy of leadership a \$1 million gift to fund scholarships for Yale M.D./PH.D. students and to help support programmatic activities.

Unlike many of its counterparts at the School of Medicine's peer institutions, until recently Yale's M.D./PH.D. program hasn't enjoyed the benefits of a substantial privately funded endowment. That situation began to change in 2006, when an anonymous donor bequeathed



HAROLD SHAPIRO

Frequent voyages on Long Island Sound and beyond on his beloved Cape Dory sailboat *CYLAN II* provide a frequent respite for James Jamieson, who has overseen the medical school's M.D./PH.D. program for nearly thirty years. A recent donation from Jamieson will provide the program with a much-needed fund to provide scholarships to Yale's future physician-scientists.

\$2 million of his estate to sustain and expand the program. Jamieson has enhanced this foundation with his new donation, which establishes the James D. Jamieson and Family M.D./PH.D. Scholarship Fund. Jamieson's gift comes at a time when Dean Robert J. Alpern, M.D., hopes to increase the program's yearly enrollment from about 12 students to 20, a number that is comparable to that seen at other major medical schools.

The aim of Yale's M.D./PH.D. Program, one of 40 nationwide

funded by the NIH's National Institute of General Medical Sciences (NIGMS), is to prepare students for careers as physician-scientists and academic leaders, and Jamieson points out that in a recent survey of the 235 people it has graduated since 1973, Yale's reputation as one of the nation's premier M.D./PH.D. programs is borne out by the numbers.

"In preparing for our eighth five-year competitive renewal with the NIGMS, we contacted 222 of the 235 graduates. Twenty-seven

Jamieson, page 7

Emergency Medicine rises to independent academic department



Gail D'Onofrio

Emergency physicians at Yale gained new status on July 1, when the Yale Corporation elevated the Section of Emergency Medicine, part of the Department of Surgery since 1981,

to a full-fledged academic department.

Recognizing the section's academic excellence, a medical school faculty committee had unanimously recommended that the Corporation establish the new Department of Emergency Medicine, which will be able to recruit its own faculty.

Gail D'Onofrio, M.D., M.S., who has served as section chief since 2005, has been named chair of the new department. D'Onofrio also serves as chief of adult emergency services for Yale-New Haven Hospital, where faculty and residents are responsible for nearly 100,000 patient visits per year.

An emphasis on screening and intervention for emergency patients sets Yale's department apart from many of its peers. D'Onofrio sees hospital emergency departments not merely as a place to serve patients' immediate needs, but also as venues where public health

Emergency Medicine, page 8

Lifelines

Child psychiatrist and autism expert Fred Volkmar sees clear agreement on diagnosis as key to progress in research, p. 2

Rowing toward a cure

In memory of his mother, a young man rows alone across the Atlantic to raise money for Yale Cancer Center, p. 2

Reaching out

Yale program that assists young mothers with child rearing may soon be replicated in other communities, p. 5

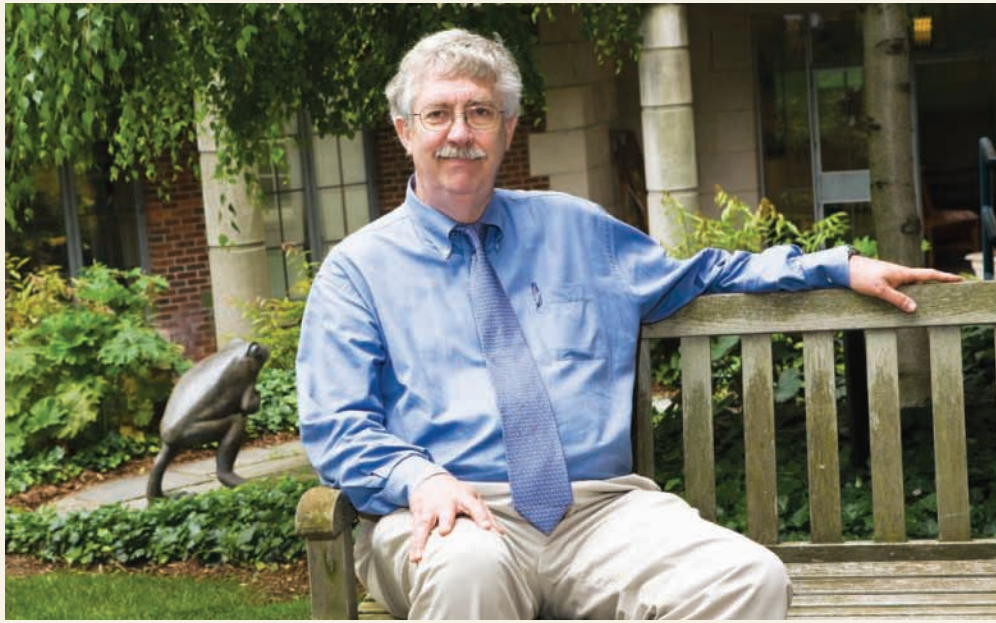
Also

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Online: Yale Netcasts

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TERRY DAGRADI

Through his work at Yale's Child Study Center in the early 1990s, Fred Volkmar was instrumental in building an international consensus around the diagnosis of autism and related disorders. With Lisa Wiesner, he has just published a new book, *A Practical Guide to Autism: What Every Parent, Family Member, and Teacher Needs to Know* (John Wiley & Sons, 2009).

Making sense of autism

Yale expert's role in refining diagnosis has advanced autism research worldwide

These days, autism is a hot topic, but the disorder's high profile is a relatively recent development, says Fred R. Volkmar, M.D., director of the School of Medicine's Child Study Center (CSC). Oftentimes during the 1980s, when he would tell people he worked with autistic children, "they'd say, 'Oh, artistic children. We need more childhood artists,'" Volkmar recalls with a chuckle.

Volkmar can claim some credit for the far greater public awareness and understanding of autism seen today. Between 1990 and 1994, he spent much of his time coordinating a nationwide trial to refine the formal classification of autism that appears in *DSM-IV-TR*, the most recent revision of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, the bible of psychiatric diagnosis. The data-based trial involved more than 20 sites and the evaluation of about 1,000 people by more than 100 raters, and was funded by both the MacArthur Foundation and the National Institutes of Health (NIH).

A native of Southern Illinois, Volkmar, Irving B. Harris Professor of Child Psychiatry, Pediatrics, and Psychology and CSC director since 2006, came to Yale in 1980 after graduate training at Stanford Medical School.

It was a propitious time: 1980 was the year in which autism was first formally recognized as a diagnosis in the *DSM*. Yet, despite the four decades that had elapsed since Johns Hopkins psychiatrist Leo Kanner, M.D., published a seminal description of autism in 1943, the disorder was still poorly understood, and it was frequently misdiagnosed as mental retardation or schizophrenia. Volkmar set out to

Lifelines **Fred Volkmar**

provide the world with a clearer picture. "The thing that's so compelling about childhood autism is that these are children who seem to live in their own world, they're not so socially connected to other people," says Volkmar, "but they're also paying a lot of attention to the nonsocial world. Why that paradox?"

As defined in the *DSM-IV-TR*, autism is actually a spectrum of conditions that fall along a continuum. At one end is full-blown autism, which features major language difficulties; repetitive, sometimes self-destructive behavior; virtually complete social isolation; and profound intellectual disability. At the other is Asperger's syndrome, in which social disability accompanies verbal fluency and normal or high intelligence. In between is the less-well-defined diagnostic realm of PDD-NOS, "pervasive developmental disorders, not otherwise specified."

For many psychiatric disorders, diagnostic standards in the *DSM* do not align with its international counterpart, the World Health Organization's *International Classification of Diseases (ICD)*. "We worked with the *ICD* people, so that the American and international systems are congruent," Volkmar says. "We believed this compatibility would stimulate research. In fact, research has exploded over the last five to 10 years."

Volkmar continues to focus on sharpening the diagnosis of autism. In a January paper in the *Journal of Child Psychology and Psychiatry*, Volkmar and CSC colleagues review the changes in our understanding of autism and its diagnosis since the publication of *DSM-IV-TR*. They present a plan for the next 10 years, emphasizing the diagnosis of young infants and more cognitively able adults, and ways to utilize findings from the latest genetic research

Under Volkmar's direction, the CSC, an NIH-designated Autism Center of Excellence, continues to cement its reputation as a world leader in autism research (see related story, p. 3).

"I think there's going to be more agreement," Volkmar says. "The diagnostic part is kind of settled, and we can work on other things. The government is putting more money into research, and parents are willing to come out and advocate for it."

Yale Netcast
"Screening for Autism in Infancy"

To honor his mother and fight melanoma, a rower shows his mettle

When his mother, Kathie, died from melanoma in 2001, Paul Ridley, of Stamford, Conn., resolved to raise money for research and patient care at Yale Cancer Center (YCC), and he took a unique approach to this goal.

"There are easier ways to raise money, but I happened to be a rower," says Ridley, who rowed crew as an undergraduate at Colgate University. On March 29, Ridley completed an 88-day, 3,500-mile solo row across the Atlantic Ocean, becoming just the third American—and, at 25, the youngest—to row across the Atlantic alone.

Ridley's odyssey, "Row for Hope" (www.rowforhope.com) began January 1 in the Canary Islands, as he

climbed into a narrow, 400-pound custom-built fiberglass boat, determined to row 10 to 13 hours a day to reach the shores of the Caribbean island of Antigua and to eventually raise \$500,000 for YCC, his partner in the effort. Although Ridley's mother wasn't treated at YCC, the \$100,000 raised so far by his feat will fund work directed by Associate Professor of Medicine Mario Sznol, M.D., who specializes in cancer immunotherapy for melanoma and renal cell carcinoma.

"We're very honored that he came to us," says Sznol, "and we'll work very hard to make sure his incredible effort is put to good use."



ROWFORHOPE.COM

Oarsman Paul Ridley paid a visit to the construction site of the new Smilow Cancer Hospital after completing his transatlantic voyage to benefit Yale Cancer Center.

Immunobiologist earns new award for top young scientists



Susan Kaech

Associate Professor Susan Kaech, Ph.D., is one of 50 U.S. researchers in the inaugural group of Early Career Scientists named by the Howard Hughes Medical Institute (HHMI).

The award, which includes a research grant of \$1.5 million over six years, will support Kaech's research on memory T cells, immune system cells that provide long-term protection by "remembering" pathogens that have previously caused infection.

When so-called naïve T cells encounter a new pathogen, they become activated and multiply into millions of effector T cells. These effector cells are armed with weapons that potently inhibit the replication and spread of the pathogen, or directly kill cells in the body that have already succumbed to infection. When the infection subsides, most effector T cells die, but a small number (5 to 10 percent) survive as memory T cells, providing continuing protection against reinfection by the same agent. It is this process that underlies the immunity seen after common infections such as chickenpox or that provided by most vaccines used today.

By using genetic techniques to better understand how and why this small proportion of effector cells becomes memory T cells, Kaech hopes to find ways to develop more effective vaccines.

"I feel extremely fortunate that my lab's contributions have been recognized so highly by my colleagues," says Kaech. "This is a very exciting time for the field, and my lab is well positioned to make significant progress in understanding the molecular mechanisms that regulate memory T cell development. This award will allow us to work faster and to pursue novel and riskier ideas that will hopefully lead to several interesting discoveries."

Medicine@Yale

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Medicine@Yale is published five times each year by the Office of Institutional Planning and Communications, Yale School of Medicine, 300 George St., Suite 773, New Haven, CT 06511.
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Advances

Health and science news from Yale



Best use of flu shots? Kids and young adults

To prepare for outbreaks of influenza, both seasonal flu and the H1N1 ("swine flu") strain, the Centers for Disease Control and Prevention (CDC) and its Advisory Committee on Immunization Practices (ACIP) have compiled mass vaccination guidelines.

But in the August 20 issue of *Scienceexpress*, Alison P. Galvani, PH.D., associate professor of epidemiology, and Clemson University's Jan Medlock, PH.D., published mathematical models predicting that current CDC/ACIP recommendations would produce far from optimal results in a pandemic.

The team found that prioritizing vaccination for the 5 to 19 age group—which is responsible for most flu transmissions—and the 30 to 39 age group would be more effective than CDC/ACIP guidelines.

For example, the model showed that if 40 million doses of H1N1 vaccine were distributed by ACIP guidelines in an outbreak following the pattern seen in the 1918 flu epidemic, there would be 59 million infections, 853,000 deaths, and a total cost of \$939 billion. Under Medlock and Galvani's proposal, those numbers were cut to 44 million, 645,000, and \$703 billion, respectively.

How to unleash an appetite suppressant

First isolated by the late Aaron B. Lerner, M.D., PH.D., a renowned Yale researcher and dermatologist, α -melanocyte-stimulating hormone, or α -MSH, is a pituitary hormone with a variety of effects. In the skin and hair, α -MSH stimulates the release of melanin, causing dark pigmentation; in the brain, the hormone acts as a powerful, but short-lived, appetite suppressant.

To discern why α -MSH is deactivated so rapidly, a group led by Sabrina Diano, PH.D., associate professor of obstetrics, gynecology, and reproductive sciences and of neurobiology, examined two closely related mouse strains, one fat and one lean.

As Diano and her colleagues report in the July 20 issue of *The Journal of Clinical Investigation*, the leaner mice lacked a gene that codes for an enzyme known as PRCP. The team then demonstrated that PRCP blunts α -MSH's action by knocking off a single amino acid. Moreover, the group showed that PRCP is abundant in nerve cells of the hypothalamus, a brain region known to govern eating behavior.

"Our findings provide a possible new target for the development of drugs to control metabolic disorders such as obesity and type 2 diabetes," says Diano.

In Yale autism research, the eyes have it

An experiment's unexpected result leads School of Medicine scientists to fresh new insights on autism

Attaining a perplexing result in an experiment can be frustrating for scientists, but sometimes unexpected findings lead researchers to a place of far greater clarity. Such is the case with a recent Yale study of children with autism spectrum disorder (ASD), which was inspired by a puzzling result obtained in earlier experiments. Published in May in the journal *Nature*, the study provides researchers with rich new ground to explore in the quest to understand this mysterious and socially debilitating disorder.

Investigators at the School of Medicine's Child Study Center (CSC) have long been in the vanguard of research on ASD, a developmental disability that emerges in early childhood marked by deficits in social interaction, problems with verbal and nonverbal communication, and repetitive, stereotyped behaviors.

Early behavioral and educational interventions are known to significantly improve the lives of children with ASD, but limitations of present diagnostic techniques mean that many children are not diagnosed until age 3 or after. For the past decade, Yale researchers led by Ami Klin, PH.D., Harris Professor of Child Psychology and Psychiatry and director of the CSC's Autism Program, have strived to change this picture, using innovative technologies to search for signs of ASD at its very earliest stages.

With support from the Simons Foundation, the National Institutes of Health, and the advocacy group Autism Speaks, Klin and Warren Jones, PH.D., a CSC neuroscientist, have pioneered the use of eye-tracking technology, which allows researchers to monitor precisely where a person is looking at any given time, in autism research. They have developed a novel apparatus that allows them to track eye movements remotely, while concealed from research subjects, which is particularly useful when working with infants and toddlers.

Using eye-tracking, Klin and Jones have discovered that children and adults with autism view the world in quite different ways than typically developing subjects, often ignoring important sources of information that could help them build bridges to the social world.

One realm in which eye-tracking reveals sharp differences between children with ASD and other children is biological motion, a term scientists use to describe the distinctive manner in which living things move. A sensitivity to and preference for viewing biological motion over other types of movements (of machinery, for example) can be observed in a broad range of species, from newly hatched chicks to monkeys, and it can be demonstrated in human infants as young as 2 days old. It is believed that this inclination is widespread because it aids familial and social bonding, so Klin and Jones surmised that it may be impaired in children with ASD.

This has proved to be the case. Klin and Jones devised point-light animations—depictions in which joints and other important body parts are represented by single dots—of people playing children's games such as peek-a-boo or pat-a-cake. When two versions of these animations, one upright and the other upside-down and backward, are presented side-by-side on a screen, typically developing children direct their gaze significantly more toward the properly presented animations, but children with ASD exhibit no preference.

However, as Klin and Jones reported in 2008 in the journal *Developmental Science*, one child they studied, a 15-month-old girl with ASD, unexpectedly exhibited a normative pattern when viewing the pat-a-cake animation, choosing to view the conventional upright animation over the inverted, backward version more than 90 percent of the time. "Then we sat back and thought we should be adventurous," Klin

told *Nature's* news staff in an interview, "in order to learn the profound lesson this little girl was teaching us."

All five of the animations Klin and Jones had created had sound tracks with human voices, but they soon realized that the pat-a-cake movie was unique, because it featured a distinctive sound—clapping—that occurred whenever dots representing the hands came together. They called this phenomenon audiovisual synchrony, or AVS.

In the new study published in *Nature*, Klin, Jones, and Associate Research Scientist Gordon J. Ramsay, PH.D.—along with Philip C. Gorrindo and David J. Lin, now medical students at Harvard Medical School and Vanderbilt University, respectively—analyzed eye-tracking data for just the pat-a-cake animation, and discovered that, like the 15-month-old girl, children with ASD as a group showed a strong preference for the conventional, upright version of that animation.

Convinced of a strong correlation between ASD and a heightened sensitivity to synchronized sounds and images, the team performed finer-grained mathematical analyses of all five animations to identify all instances of AVS, and they found that over 90 percent of the changes in gaze direction among toddlers with ASD occurred in tandem with instances of AVS, even though most of these sound/motion correlations were far subtler than the hand-clapping seen in the pat-a-cake animation.

As a final test of the idea that AVS may be more salient to children with ASD than biological motion, the researchers designed two new point-light animations in which instances of AVS were plentiful. They then created a

Autism, page 8



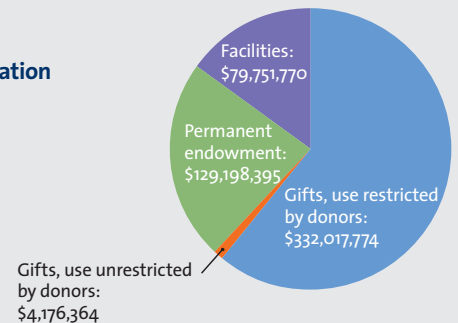
One child's unexpected performance in an experiment has led autism researchers Ami Klin (left) and Warren Jones to a new understanding of the disorder.

MEDICINE » tomorrow

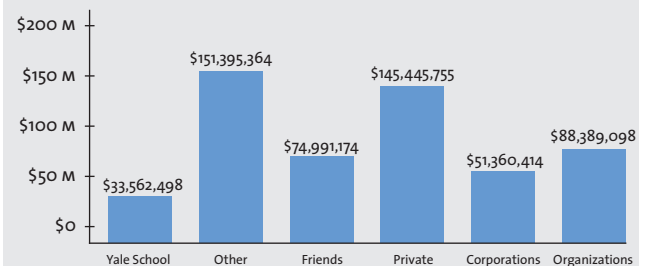
Campaign update

Campaign goal: \$750 million
Results through 6/30/09: \$545,144,303

Results by gift designation



Results by source



Out & about

April 18: The 10th annual LA CASSA MAGICA, a black-tie gala to benefit Yale Cancer Center (YCC), was held at The Belle Haven Club in Greenwich, Conn. The event raised \$213,000 to support clinical trials of cancer treatments at the new Smilow Cancer Hospital, which opens its doors in October. **1.** Broadcaster and YCC board member **Paula Zahn** was the event's host. **2.** (From left) **Amanda Adams** with YCC board member and gala chair **Kathryn Anderson Adams**. **3.** **Margery Baker-Riker** and **Stephen Riker**. **4.** (From left) **Laura Pappano**; **Thomas J. Lynch Jr., M.D.**, YCC director and physician-in-chief at Smilow Cancer Hospital; **Richard L. Edelson, M.D.**, chair and Aaron B. and Marguerite Lerner Professor of Dermatology, and former YCC director; and **Ruth Edelson**.



CHI CHI LUBINA (4)



MICHAEL MARSLAND

June 15: Yale University's Maurice R. Greenberg International Conference Center was the setting for **STRATEGIC PROBLEM SOLVING IN GLOBAL HEALTH**, the first annual conference of the Global Health Leadership Institute (GHLI). The GHLI, a collaborative effort between the Yale School of Public Health and the Whitney and Betty MacMillan Center for International and Area Studies at Yale, works with leaders in numerous countries to improve the performance of health systems. **Elizabeth H. Bradley, PH.D.** (kneeling, third from left), founder of the GHLI and professor at the School of Public Health, invited representatives from six countries that have made exceptional improvements in health systems in recent years despite resource obstacles—Ethiopia, Ghana, Liberia, Mexico, Rwanda, and Singapore—to attend the conference.

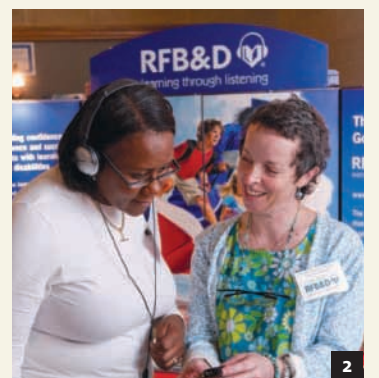
April 28: The 30th annual **SETON ELM AND IVY AWARDS** were given in the President's Room at Yale's Woolsey Hall. The awards, which honor people and organizations that further partnership between New Haven and Yale, were established with the support of Fenmore Seton, a 1938 Yale College alumnus, and his wife Phyllis, who created an endowment at the Community Foundation for Greater New Haven in 1979. Elm Awards are given to members of the New Haven community, and Ivy Awards are given to Yale staff, faculty, and students. **1.** **Erin Lavik, SC.D.**, associate professor of biomedical engineering and co-organizer of Science Saturdays, a series of weekend presentations by Yale scientists that bring the excitement and passion of research to "kids of all ages" in New Haven. **2.** **Michael Ma** and **Sachin Shah** of the School of Medicine's Class of 2011, organizers of this year's Yale Health Professional Schools Annual Hunger and Homelessness Auction, which raised \$32,000 for New Haven-area charities in 2008. **3.** New Haven Mayor **John DeStefano Jr.** (left) and **Bruce Alexander** (right), vice president for New Haven and State Affairs and Campus Development at Yale, present an Ivy Award to **Forrester A. Lee, M.D.**



Lee, assistant dean for multicultural affairs and professor of medicine at the School of Medicine, is a leader in the Hill Regional Career High School partnerships with Yale and in local celebrations of African-American history.



MICHAEL MARSLAND (3)



June 23, 24: The Yale Center for Dyslexia & Creativity (YCDC) held its **FIRST ANNUAL EDUCATORS' SYMPOSIUM**. **1.** (From left) YCDC Co-Director **Bennett A. Shaywitz, M.D.**, the Charles and Helen Schwab Professor in Dyslexia and Learning Development; visionary educator **Audrey G. Ratner**; YCDC Co-director **Sally E. Shaywitz, M.D.**, the Audrey G. Ratner Professor in Learning Development. **2.** Conference participant **Jennifer Sheridan** of the Yale Divinity School's Class of 2009, visits an exhibit of assistive technology. **3.** **Linda Koch Lorimer, J.D.**, vice president and secretary of Yale University, presented the conference's closing keynote address.

HAROLD SHAPIRO (3)

Advances

Health and science news from Yale



Genetic footprints on the trail of Lyme disease

In post-Colonial America, settlers' need for fuel, building materials, and tillable land led to unprecedented deforestation. Between 1830 and 1880, nearly 80 percent of New England's forests disappeared.

A genetic analysis of the bacterium that causes Lyme disease, reported by School of Medicine scientists in the August 14 online issue of *Proceedings of the National Academy of Sciences*, suggests that the disease, which is transmitted by deer ticks, largely disappeared from New England along with the trees, but roared back when the region was reforested and deer returned.

Samples of the Lyme disease bacterium *Borrelia burgdorferi* from ticks in the Midwest and Northeastern U.S. showed genetic variations that suggest the disease was widespread for thousands of years but retreated to pockets of the northern Midwest and isolated islands off the New England coast after deforestation.

"The current epidemic of Lyme disease is the result of infected ticks expanding their range independently from these isolated refuges," says Durland Fish, Ph.D., professor of epidemiology and senior author of the paper. "This expansion is likely to continue until the ticks, and the diseases they carry, return to their former range."

Viruses make a move to infect new cells

Retroviruses, which cause HIV/AIDS and some forms of leukemia, spread 1,000 times more efficiently when uninfected cells are in physical contact with infected cells. But scientists have been unsure exactly why cell-to-cell contact has such a strong influence on this process.

Walther Mothes, Ph.D., associate professor of microbial pathogenesis, and colleagues used four-dimensional imaging (in 3-D space over time) to track the assembly and movement of individual particles of murine leukemia virus (MLV) in living cells.

As reported in the July issue of *PLoS Biology*, the study, led by Post-doctoral Fellow Jing Jin, Ph.D., found that MLV expresses an adhesion protein that docks with uninfected cells and recruits other viral proteins to these sites to assemble new viruses. When the team deleted the "tail" of this protein, new viral particles did not assemble at the jumping-off point between cells.

"We are just opening the door to this whole process," Mothes says. "Our hope is that somewhere down the road we will have a completely new antiviral strategy based on targeting cell-to-cell transmission."

Keeping needs of young families in mind

At-home visits from Minding the Baby improve family life

Linda C. Mayes, M.D., likens her role in the School of Medicine's Minding the Baby initiative to that of a matchmaker. In 2002, with the goal of establishing a program aimed at combating early maternal depression, Mayes introduced Lois S. Sadler, Ph.D., to Arietta Slade, Ph.D.

Thinking they would make a great team, she paired Slade, who was doing influential research on "parental reflective functioning"—parents' capacity to understand and express their child's mental state by observing the child's behavior—with Sadler, an associate professor at Yale School of Nursing and the medical school's Child Study Center (CSC), who had worked extensively with young pregnant and adolescent parents.

Now, nearly eight years later, the community-based program, which affords underprivileged mothers nursing and mental health services during pregnancy and after childbirth, has seen such success that it is positioned to be replicated in other local communities.

The clinical staff of Minding the Baby, a collaborative effort between Yale and the Fair Haven Community Health Center (FHCHC) in New Haven, includes two part-time social workers and a full-time nurse practitioner, who work with young mothers in their homes.

In designing the program, "we worked from a very well-known model called the Nurse-Family Partnership," says Sadler, referring to a program developed by David Olds, Ph.D., and Harriet Kitzman, Ph.D., R.N., in which vulnerable mothers are assigned home-visiting nurses. Slade, professor of clinical and developmental psychology at City University of New York-City College and visiting research scientist at the CSC, and her team sought to expand on this model by adding a mental health component. To that end, they turned to the work of pioneering infant-parent psychotherapists, Alicia F. Lieberman, Ph.D., of the University of California, San Francisco, and Christoph Heinicke, Ph.D., of the University of California, Los Angeles.

In the Minding the Baby program, mothers are taught to pay close attention to, and to respond to, a child's emotional state, and in particular, the baby's "needs, their desires, their emotions, their wants," says Sadler, who is also assistant dean for academic affairs at the School of Nursing. The goal, she says, is "to develop and test this intervention and evaluate the outcomes for high-risk families."

The program's efficacy is gauged by measuring a number of factors and comparing results from families in the program to those from control families who are not provided with home visitation. Factors being measured include the base rate of security for infants (71 percent in the intervention group, which is considered high and indicates that babies receiving the intervention are more securely attached than babies in the control group) and the base rate of "disorganized attachment" (28 percent, which is low and indicates that babies receiving the intervention are at lower risk for later psychopathology and other maladaptions). Other positive results include a high retention rate of families in the study (90 percent); also, rates of breast-feeding that are well above the national average for high-risk populations. Rapid subsequent pregnancies and referrals to child protective services are also much lower among families in the program than among control families.



(Above, from left) Denise Webb, Sarah Fitzpatrick, and Tanika Simpson make home visits in the Minding the Baby program, an innovative partnership between faculty at the Yale School of Nursing and Child Study Center and the Fair Haven Community Health Clinic. The program, co-directed by (at left, left to right) Arietta Slade, Linda Mayes, and Lois Sadler provides young mothers with home visitation from both nurse practitioners and social workers.

"The impact of this program has been tremendous in terms of helping young parents and their babies. This is outside the exam room. It's what happens the other 24 hours a day," says Katrina Clark, M.P.H., executive director of the FHCHC. "I heard a wonderful story, in fact—a young woman who was a high school drop-out who came into the program, was motivated by these folks to get her G.E.D., get her clinical assistant degree, and actually is now an employee here. She was very proud, in fact, to speak to one of the funders recently. She said, 'I want my child to be proud of me.'"

Minding the Baby is supported by grants from The Irving B. Harris Foundation, The FAR Fund, The Annie E. Casey Foundation, The Patrick and Catherine Weldon Donaghue Medical Research Foundation, the Pritzker Early Childhood Foundation, the Seedlings Foundation, and the National Institutes of Health's National Institute of Nursing Research and National Institute of Child Health and Human Development.

Mayes, the Arnold Gesell Professor of Child Development at the CSC and professor of epidemiology and public health, pediatrics, and psychology, says that Minding the Baby is poised to be launched in other communities. By using a program manual the staff has written, she says, "we could train a number of different communities, community health care centers, to replicate it exactly." But future programs could also be based only on certain core theoretical ideas used in Minding the Baby—particularly the idea that "it's helping parents to become more reflective about their own psychology as a parent, and their baby's own emotional life," Mayes says. "One can teach a lot of clinicians to think in that way by teaching them the basic principles and then letting people go put those principles in place in ways best suited to their individual practice settings."

Grants and contracts awarded to Yale School of Medicine

September–December 2008

Federal

Deane Aikins, Dept. of Defense (U.S.), *Using Propranolol to Block Combat Memory Reconsolidation in Female Veterans with PTSD*, 3 years, \$90,577 • **Laura Almstead**, NIH, *Identification of Genes Required for Cellular Senescence*, 2 years, \$96,472 • **Frederick Altice**, NIH, *Intervention of HIV Drug Use and the Criminal Justice System in Malaysia*, 5 years, \$2,733,430; SAMHSA, *Targeted Capacity Expansion Program for Substance Abuse Treatment and HIV/AIDS*, 5 years, \$2,256,027 • **Karen Anderson**, NIH, *Mechanism and Inhibition of HIV Reverse Transcriptase*, 4 years, \$1,786,819 • **Jacob Appelbaum**, NIH, *A Small Molecular Approach to Detect Specific Peptide-MHC Complexes*, 2 years, \$92,148 • **Peter Aronson**, NIH, *George M. O'Brien Kidney Center at Yale*, 5 years, \$4,056,990 • **Lisa Barry**, NIH, *Depression and Disability in Older Persons: Untangling Complexities*, 5 years, \$628,425 • **Jennifer Bordeaux**, Dept. of Defense (U.S.), *Met (HGF Receptor) in Breast Cancer*, 3 years, \$97,200 • **Michael Bracken**, NIH, *National Children's Study Centers*, 5 years, \$10,673,273 • **Jerrica Breindel**, Dept. of Defense (U.S.), *HER2 and Genomic Instability*, 3 years, \$96,210 • **Michael Caplan**, NIH, *Cellular and Molecular Studies of Renal Transport*, 5 years, \$5,655,475 • **Zhe Chen**, NIH, *Prostate Edema in Permanent Interstitial Brachytherapy*, 3 years, \$810,000 • **Geoffrey Chupp**, NIH, *Gene Expression Profiling in Asthma Severity: CH13L1 Genotypes & Serum YKL40*, 4 years, \$3,223,586 • **Daniel Colón-Ramos**, NIH, *Synaptic Target Selection in the Thermotaxis Neural Circuit of C. elegans*, 3 years, \$748,598 • **Pietro De Camilli**, Nat'l Science Foundation (NSF), *MRI: Acquisition of a 200 kV Electron Tomography Microscope for Quantitative High Resolution Imaging of Cells in 3 Dimensions*, 3 years, \$718,000 • **Kavita Dhodapkar**, NIH, *Immune Resistance to Glioma via Dendritic Cells*, 18 months, \$169,048 • **Madhav Dhodapkar**, NIH, *Immunity to Stem Cell Antigens in Preneoplastic Gammopathy*, 5 years, \$1,349,000 • **Gail D'Onofrio**, NIH, *Models of SBIRT for Opioid Dependent Patients in the Emergency Department*, 5 years, \$4,921,509 • **Gerald Friedland**, NIH, *Drug Interactions in Substance Abusers with HIV and Related Comorbid Conditions*, 5 years, \$1,861,875 • **Daniel Goldstein**, NIH, *Impact of Aging on Atherosclerosis*, 5 years, \$737,100 • **Rosana Gonzalez-Colaso**, Department of Health and Human Services, *Early Childhood Literacy Project*, 2 years, \$2,500 • **Elena Grigorenko**, NIH, *Reading Disabilities in Zambian Children*, 4-5 years, \$748,428 • **Cary Gross**, NIH, *Multimorbidity and Screening Colonoscopy: A Framework for Patients and Policy Makers*, 2 years, \$304,215 • **Jonas Hannestad**, Dept. of Defense (U.S.), *Validation of the SPECT Ligand CLINDE as a marker of Microglial Activation in Baboons*, 18 months, \$223,583 • **Whitney Harris**, NIH, *The Role of Protein TUG in Glucose Homeostasis*, 4 years, \$163,888 • **Richard Hochberg**, NIH, *¹²⁵I Ligands for SPECT Imaging the Estrogen Responsive Regions of the Brain*, 2 years, \$409,613 • **Dennis Jones**, NIH, *The Role of BMX in Lymphangiogenesis*, 5 years, \$155,200 • **Richard Kibbey**, NIH, *Characterization of Mitochondrial GTP as an Intramitochondrial Metabolic Signal*, 5 years, \$759,208 • **Kenneth Kidd**, Nat'l Science Foundation (NSF), *ALFRED: Making Very High Throughput Data Accessible*, 1 year, \$200,000 • **Yilun Liu**, NIH, *Understanding the Role of RAD51C Complexes in Recombination and Repair*, 5 years, \$1,373,650 • **Shuangge Ma**, NIH, *Efficient Microarray Meta-Analysis and Cancer Biomarker Selection*, 2 years, \$191,142 • **Steve Martino**, NIH, *Options in Psychotherapy Training for Four Scientifically Validated Behavioral Treatments*, 5 years, \$161,062 • **Susan Mayne**, NIH, *Yale/NCI Cooperative Training Program in Cancer Epidemiology*, 5 years, \$994,275 • **Wang Min**, NIH, *Thioredoxin and Endothelial Cell Function*, 5 years, \$2,068,750 • **Andrew Miranker**, NIH, *Small Molecule Interference of Bilayer Catalyzed Fiber Formation*, 2 years, \$428,925 • **Linda Nicolai**, NIH, *Potential for HIV Transmission in Relationships of Drug-Using Women in Russia*,

1 year, \$146,581 • **A. David Paltiel**, NIH, *Evaluating the Link Between HIV Prevention and Treatment*, 3 years, \$2,328,711 • **Chirag Parikh**, NIH, *Progression of Acute Kidney Injury to Chronic Kidney Disease*, 5 years, \$2,502,987 • **Godfrey Pearlson**, NIH, *Alcohol Use in College Students: Cognition and fMRI*, 5 years, \$3,067,554 • **Kevin Pelphrey**, NIH, *Functional Neuroimaging of Children with Autism*, 16 months, \$180,854; NIH, *Neuroimaging of the Development of Neural Mechanisms for Number Processing*, 4-5 years, \$1,222,089 • **Pasko Rakic**, NIH, *Origin of Cortical Species-Specific Distinctions*, 5 years, \$3,817,515 • **Michael Robek**, NIH, *IL-22 in HBV Pathogenesis*, 2 years, \$398,720; NIH, *Viral Vaccine Vectors to Prevent Hepatocellular Carcinoma*, 3-5 years, \$1,091,448 • **James Rothman**, NIH, *Mechanisms of Intracellular Membrane Fusion*, 2 years, \$1,116,182 • **Matthew Scotch**, NIH, *Informatics for Zoonotic Disease Surveillance: Combining Animal and Human Data*, 2 years, \$180,000 • **Erik Shapiro**, NIH, *Single Cell MRI of Directed Cell Migration to Stroke*, 5 years, \$2,477,533 • **Robert Sherwin**, NIH, *Glucoregulatory Hormone Interactions in Diabetes*, 5 years, \$3,208,724 • **Arthur Simen**, NIH, *Epigenetic Factors in Vulnerability to Aging and Stress*, 3 years, \$324,000 • **Michael Simons**, NIH, *Angiogenesis and Ischemia*, 4-5 years, \$2,598,413; NIH, *Syndecan Function in Endothelial Cells*, 4-5 years, \$3,049,367 • **Elenoe Smith**, NIH, *Effect of MKL1 on Murine Embryonic Megakaryocytopoiesis*, 3 years, \$122,916 • **Julie Staley-Gottschalk**, NIH, *Tobacco Smoking, Genes, and Nicotinic Receptors*, 5-5 years, \$2,231,440 • **Denis Sukhodolsky**, NIH, *Neurobiology of Behavior Therapy for Children with Tourette Syndrome*, 5 years, \$846,035 • **Mary Tomayko**, NIH, *Elucidating Functional Properties of Memory B Cells*, 5 years, \$673,650 • **Christopher van Dyck**, NIH, *Guanfacine Treatment for Prefrontal Cognitive Dysfunction in Elderly Subjects*, 3 years, \$1,164,123 • **Nadia Ward**, Dept. of Education (U.S.), *Yale University Gear Up Partnership Grant*, 6 years, \$6,945,598 • **Allison Welsh**, Dept. of Defense (U.S.), *The Presence of Non-Nuclear Estrogen Receptor-Alpha in Breast Cancer and its Prognostic/Predictive Value*, 3 years, \$97,200 • **Scott Woods**, NIH, *8/8 Predictors and Mechanisms of Conversion to Psychosis*, 4-5 years, \$3,209,370

Non-Federal

Ali Abu-Alfa, Baxter Health Care Corporation, *Baxter Education Grant*, 15 months, \$5,002 • **Karen Anderson**, Bill and Melinda Gates Foundation, *A Targeted Stealth Weapon of Viral Destruction for HIV*, 18 months, \$100,000 • **Nancy Angoff**, American Medical Association Foundation, *Pedestrian Safety Month at Yale*, 1 year, \$2,000 • **Francisco Barrera Olivares**, Foundation Alfonso Martin Squire, *Activation against Tumors of Specific Immune System Pathways Via Labeling*, 2 years, \$90,474 • **Colleen Barry**, Harvard Medical School, *The Effects of Mental Health/Substance Abuse (MH/SA) Parity on Individuals with High MH/SA Spending*, 1 year, \$27,002; Robert Wood Johnson Foundation, *Message Framing and Regulation of Food Marketing to Children*, 2-5 years, \$419,400 • **Diana Beardsley**, American Thrombosis and Hemostasis Network, *Data Quality Counts*, 1 year, \$27,866 • **Kevin Bentley**, Juvenile Diabetes Research Foundation Int'l, *Lymphatic Vessels in T1DM*, 1 year, \$77,000 • **Margaret Bia**, Wyeth Pharmaceuticals, *Wyeth Pharmaceuticals Sponsorship*, 1 year, \$2,500 • **Joshua Breunig**, Connecticut Innovations Inc., *Regulation of hESC-Derived Neural Stem Cells by Notch Signaling*, 2 years, \$188,676 • **Richard Bucala**, Brookdale Foundation, *Aging and Ischemic Injury*, 3 years, \$375,000 • **Lloyd Cantley**, Connecticut Innovations Inc., *Functional Use of Embryonic Stem Cells for Kidney Repair*, 2 years, \$200,000 • **Owen Chan**, Juvenile Diabetes Research Foundation Int'l, *The Role of Inhibitory Neurotransmission in Regulating Glucose Counterregulation*, 5 years, \$750,000 • **Gary Cline**, Juvenile Diabetes Research Foundation Int'l, *G-Protein Coupled Receptor Targeted PET Imaging of Beta-*

Cell Mass, 1 year, \$285,000 • **James Comer**, New Haven Board of Education, *New Haven Public Schools Comer 2009*, 9 months, \$125,000 • **Pietro De Camilli**, Lowe Syndrome Association, *Cell Biology of the Lowe Syndrome Protein OCRL*, 1 year, \$25,000 • **Francesco D'Errico**, Advanced Fuel Research, Inc., *Radio-logical Source Surveillance with Videocentric Radiation Detection*, 2 years, \$35,968 • **Andrew Epstein**, University of Pennsylvania, *Implications of Cardiovascular Technology Diffusion among Medicare Beneficiaries*, 2 years, \$35,230 • **Jason Fletcher**, Robert Wood Johnson Foundation, *Evaluating the Effects of "Easy" State Interventions to Combat Childhood Obesity*, 18 months, \$146,237 • **Jorge Galán**, Bill and Melinda Gates Foundation, *Development of A Type III Protein Secretion System as a Quasi-Synthetic Protein Antigen Delivery Nano Machine*, 2 years, \$100,000 • **Elena Grigorenko**, Tufts University, *Triarchic Intelligence Manuscript*, 4 months, \$11,500 • **Jeffrey Gruen**, Manton Foundation, *Developing a Dyslexia Screening Test for American Children*, 5 years, \$5,256,679 • **Ala Haddadin**, John B. Pierce Laboratory Inc., *Estrogen and Progesterone Effects on Orthostatic Tolerance*, 1 year, \$58,361 • **Lyndsay Harris**, Breast Cancer Research Foundation, *Personalized Medicine: Using Tumor and Host Response to Validate Biomarkers*, 1 year, \$249,898 • **Kevan Herold**, Juvenile Diabetes Research Foundation Int'l, *Circulating Hypomethylated DNA as a Biomarker of Beta Cell Destruction*, 4 years, \$389,400 • **Josephine Hoh**, Rosebay Medical Company, LP, *Developing a Mouse Model to Investigate Predisposition Genes for Age-Related Macular Degeneration*, 5 years, \$2,246,804 • **Changyun Hu**, Juvenile Diabetes Research Foundation Int'l, *B Cell Depletion Therapy and Islet Transplantation for Type 1 Diabetes*, 2 years, \$103,040; Federation of Clinical Immunology Societies, *FOCIS-JDRF Research Scholarship Award*, 2 years, \$37,500 • **Jeannette Ickovics**, Donaghue Medical Research Foundation, *CARE Community Interventions for Health*, 1 year, \$300,000 • **Natalia Ivanova**, Connecticut Innovations Inc., *Molecular Control of Pluripotency in Human ES Cells*, 2 years, \$200,000 • **Elizabeth Jonas**, Gemin X Biotechnologies, Inc., *Fellowship Support Agreement*, 1 year, \$68,580 • **Sven-Eric Jordt**, University of Alabama at Birmingham, *Mechanisms of Chlorine Hypersensitivity in Asthma*, 2 years, \$533,924 • **Roger Jou**, American Academy of Child and Adolescent Psychiatry, *Characterization of Abnormal Neural Connectivity in Girls with Autism Spectrum Disorders*, 1 year, \$15,000 • **Amy Justice**, University of Pittsburgh, *Cardiovascular Disease Mechanisms in HIV Infected and Uninfected Veterans*, 9 months, \$85,595 • **Barbara Kazmierczak**, Bill and Melinda Gates Foundation, *Manipulating Gut Flora to Improve Vaccine Responses*, 1 year, \$100,000 • **Mustafa Khokha**, University of North Carolina at Chapel Hill, *Craniofacial and Cardiac Development in Xenopus: A Genetic*

Approach, 5 years, \$1,105,795 • **Hetal Kocinsky**, Charles H. Hood Foundation, *Child Health Research Grant*, 2 years, \$150,000 • **Sean Landrette**, American Cancer Society, Inc., *Identifying Mutations that Promote Cancer Progression and Metastasis*, 3 years, \$138,000 • **Gregory Larkin**, Te Pou, New Zealand's Nat'l Centre of Mental Health Research, *Geospatial Mapping of Suicide and Suicide Attempt Clusters in New Zealand*, 16 months, \$24,150 • **Patty Lee**, Roche Pharmaceuticals, *Novel Biomarkers in COPD*, 2-5 years, \$27,912 • **Haifan Lin**, Connecticut Innovations Inc., *Maintaining and Enhancing the hESC Core at the Yale Stem Cell Center*, 3 years, \$1,800,000 • **Nita Maihle**, Susan G. Komen Breast Cancer Foundation, *Overcoming Primary Herceptin Resistance in Breast Cancer*, 3 years, \$180,000 • **Robert Makuch**, Bayer Healthcare, LLC, *Regulatory Affairs Program*, 1 year, \$50,000 • **Rory McCrimmon**, Juvenile Diabetes Research Foundation Int'l, *Potassium Channel Openers as a Treatment for HAAF*, 3 years, \$486,750 • **Thomas Melia**, Columbia University, *Autophagy and Neurodegeneration*, 1 year, \$827,500 • **Gilbert Moeckel**, C.B. Fleet Company, Inc., *Acute Phosphate Infusion Study*, 1 year, \$12,958 • **Laura Niklason**, Connecticut Innovations Inc., *Human Embryonic and Adult Stem Cells for Vascular Regeneration*, 4 years, \$449,999 • **James Noonan**, Edward Mallinckrodt, Jr. Foundation, *Elucidating the Regulatory Architecture of Development Using Enhancer Target Capture*, 3 years, \$180,000 • **Brandon Ogbunugafor**, United Negro College Fund, *Defective Interfering Particle in RNA Viral Infections*, 1 year, \$52,000 • **Sachin Paranjape**, Juvenile Diabetes Research Foundation Int'l, *Role of Hypothalamic Insulin Signaling in Glucose Homeostasis*, 2 years, \$96,224 • **Kevin Pelphrey**, Autism Speaks, *Functional Neuroimaging of the Developing Social Brain in Children with Autism*, 16 months, \$104,172; John Merck Fund, *Charting the Normal and Abnormal Development of the Social Brain*, 2 years, \$150,000 • **Joseph Piepmeier**, Chicago Institute of Neurosurgery & Neuroresearch, *Targeted Delivery of Nanoparticle-Based Drugs for Glioma Stem Cells*, 1 year, \$50,000 • **Margaret Pisani**, CHEST Foundation, *Gender Differences as They Relate to Outcome in an Older ICU Cohort*, 1 year, \$10,000 • **Caihong Qiu**, Connecticut Innovations Inc., *Definitive Hematopoietic Differentiation of Human Embryonic Stem Cells under Feeder-Free and Serum-Free Conditions*, 2 years, \$200,000 • **D. Eugene Redmond Jr.**, Connecticut Innovations Inc., *Translational Studies in Monkeys of Human Embryonic Stem Cells for Treatment of Parkinson's Disease*, 3-5 years, \$1,081,476 • **Valerie Reinke**, Connecticut Innovations Inc., *VRK-1 Mediated Regulation of p53 in the Human ES Cell Cycle*, 2 years, \$200,000 • **Anna Rhoades**, University of Washington, *Drug Interactions*, 1 year, \$7,977 • **Scott Rivkees**, Thrasher Research

THE YALE SCIENCE SERIES PRESENTS

Superbugs, Emerging Pathogens, and You

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Jorge E. Galán, PH.D., D.V.M.

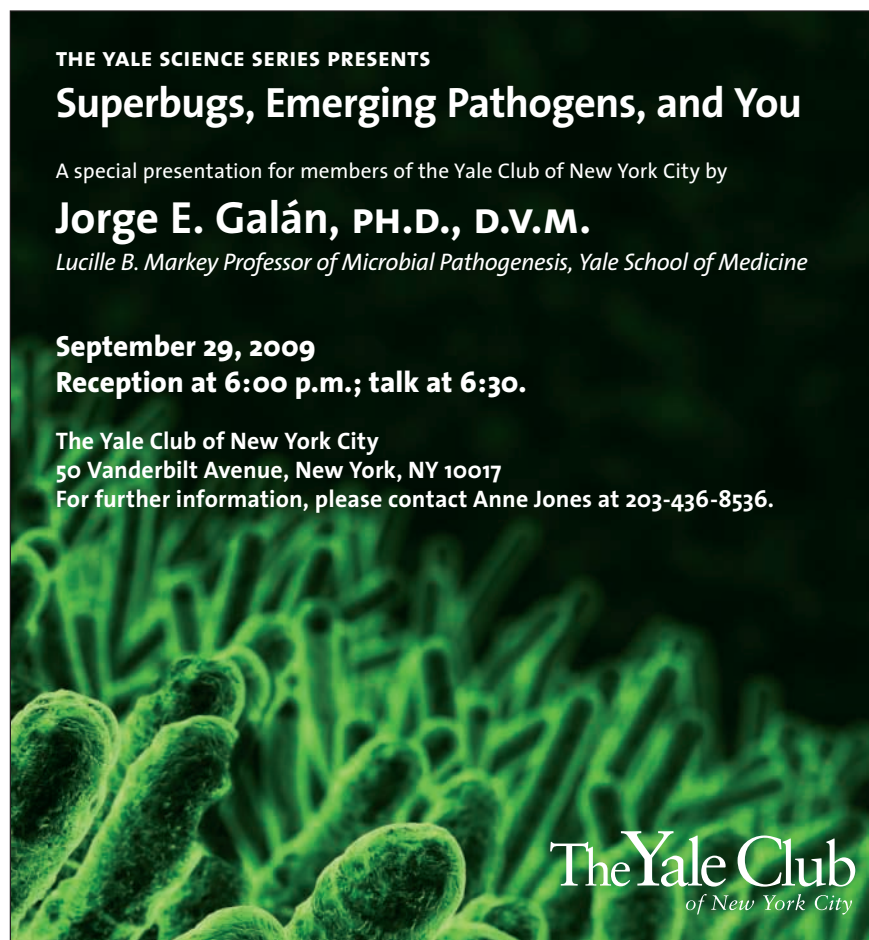
Lucille B. Markey Professor of Microbial Pathogenesis, Yale School of Medicine

September 29, 2009

Reception at 6:00 p.m.; talk at 6:30.

The Yale Club of New York City
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The Yale Club
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Fund, *Identification and Treatment of Biological Clock Dysfunction in Optic Nerve Hypoplasia*, 3 years, \$310,341 • **Elissa Robbins**, Autism Speaks, *CASPR2 Dysfunction in Autism Spectrum Disorder*, 2 years, \$56,000 • **Michael Robek**, Dana Foundation, *Antiviral and Antitumor Activity of IL-29 in the Brain*, 3 years, \$200,000 • **Douglas Rothman**, University of Massachusetts, *Skeletal Muscle Fatigue in Older Adults*, 2 years, \$177,166 • **Joseph Santos-Sacchi**, Stanford University, *Synaptic Specializations in Auditory Hair Cells*, 5 years, \$218,786 • **Masanori Sasaki**, Connecticut Innovations Inc., *Cortical Neuronal Protection in Spinal Cord Injury following Transplantation of Dissociated Neurospheres Derived from Human Embryonic Stem Cells*, 2 years, \$200,000 • **Margretta Seashore**, University of New Hampshire, *Meeting the Challenge of Identifying Urea Cycle Disorders by Newborn Screening*, 9 months, \$20,000 • **Montrell Seay**, Ford Foundation, *High-Throughput Identification of Factors that Contribute to Stem Cell Differentiation Programs*, 9 months, \$40,000 • **Patty Seo-Mayer**, Nat'l Kidney Foundation, *The Role of AMP-Activated Protein Kinase in*

Acute Kidney Injury and Renal Cell Polarity, 1 year, \$50,000 • **Nenad Sestan**, James S. McDonnell Foundation, *Evolutionary Specializations and Development of the Human Frontal Cortex*, 6 years, \$600,000 • **Gordon Shepherd**, University of California - San Diego, *Neuroinformatic-Based Neuroscience Information Framework Operation Maintenance Support and Enhancement of the Neuroscience Information Framework*, 2 years, \$604,854 • **Robert Sherwin**, Juvenile Diabetes Research Foundation Int'l, *Investigation of the Direct Effects of Reg Proteins on Beta Cell Regeneration*, 2 years, \$479,472 • **Michael Simons**, Medstar Research Institute, *Data-Aging and Micro-CT Studies*, 1 year, \$25,818; Dartmouth College, *Mechanisms of PAI-1*, 15 months, \$24,801; Johns Hopkins University, *Molecular Determinants of Pulmonary Arterial Hypertension*, 16 months, \$103,972 • **Steven Southwick**, Dartmouth College, *National Center for Disaster Mental Health Research*, 1 year, \$27,130 • **Patrick Sung**, Susan G. Komen Breast Cancer Foundation, *Role of the Tumor Suppressors BRCA2 and PALB2 in Chromosome Damage Repair*, 3 years, \$180,000 • **Eugene Swenson**,

Nat'l Organization for Rare Disorders, *Bone Marrow Mesenchymal Stem Cell Transplantation for Liver Disease*, 1 year, \$30,000 • **William Tamborlane**, U.S.-Israel Binational Science Foundation, *Early Identification of Traditional and Novel Cardiovascular Risk Factors in Children with Type 1 Diabetes*, 3 years, \$139,725 • **Hugh Taylor**, Environment & Human Health, *Radiofrequency Non-ionizing Radiation Exposure in Pregnancy and Developmental Defects*, 1 year, \$195,125 • **Jane Taylor**, Nat'l Alliance for Research on Schizophrenia and Depression, *Corticolimbic-Striatal Substrates of Cognitive Impulsivity: PCP-Dependent Mechanisms*, 2 years, \$100,000 • **Daniela Tirziu**, American Heart Association, Nat'l Center, *The Role of Endothelial Cell Nuclear Factor Kappa B in Arteriogenesis*, 2 years, \$130,000 • **Alda Tufto**, Emerald Foundation, Inc., *Semaphorins in Kidney Disease*, 1 year, \$50,000 • **Marianne Ulcickas Yood**, Boston Medical Center, *Long-Term Survivorship in Older Women with Early Stage Breast Cancer*, 2 years, \$178,540 • **Elisabetta Ullu**, U.S.-Israel Binational Science Foundation, *RNomics in Trypanosoma brucei—Bioinformatics and Functional Approaches*, 4 years, \$127,529 • **Flora Vaccarino**,

Connecticut Innovations Inc., *Effect of Hypoxia on Neural Stem Cells and their Function in CNS Repair*, 3 years, \$449,692 • **Joshua Van Houten**, Susan G. Komen Breast Cancer Foundation, *The Role of PMCA2 in Mammary Tumorigenesis*, 3 years, \$450,000 • **Qiaqiao Wang**, Connecticut Innovations Inc., *The Role of the piRNA Pathway in Epigenetic Regulation of Human Embryonic Stem Cells*, 2 years, \$200,000 • **Joanne Weidhaas**, Radiation Therapy Oncology Group, *Defining the Prevalence of a Novel microRNA (miRNA) Binding Site SNP in all Cancer Types and Defining its Role as a Biomarker of Outcome and Toxicity*, 1 year, \$50,000 • **Scott Woods**, Biomedisyn Corporation, *Huperzine for Cognitive and Functional Impairment in Schizophrenia*, 1 year, \$146,569 • **Dianqing Wu**, Connecticut Innovations Inc., *Wnt Signaling and Cardiomyocyte Differentiation from Human Embryonic Stem Cells*, 2 years, \$443,665 • **Hitten Zaveri**, ITN Energy Systems, Inc., *Implantable, FET-Based, Multimodal Sensor for Biomedical Applications*, 1 year, \$44,940 • **Yong Zhu**, T.R.U.E. Research Foundation, *Circadian Genes and Risk for Prostate Cancer*, 3 years, \$14,787

Chairs from page 1

Since 2000, Krystal has served as the department's deputy chair for research.

"Yale has always been a remarkable environment for translational neuroscience in neuropsychiatry," Krystal says. "One challenge I have as a new chair is to look for opportunities to bring our faculty together, to take our research to the next level. We can do that by capitalizing on existing strengths and developing new strengths in areas such as neurostimulation treatment, molecular genetics, neuroimaging, and neuroinflammation."

The Department of Psychiatry has 149 primary faculty members and 13 with secondary appointments. In 2008, it ranked second nationally among medical school psychiatry departments receiving funding from the National Institutes of Health (NIH), with a total of \$53 million in NIH awards for the year. Its clinical and research programs are widely recognized for their innovation and quality, and its substance abuse research program was ranked first in the nation by *U.S. News and World Report* in 2008 and 2009. Members of the department provide care to patients at Yale-New Haven Hospital, the VACHS, and the Connecticut Mental Health Center.

Krystal came to Yale as a medical student in 1980, after receiving his undergraduate degree at the University of Chicago. He completed medical

school and psychiatry residency training at Yale before joining the faculty in 1988. His work is distinguished by its emphasis on translational neuroscience, the effort to combine emerging brain imaging and molecular genetic technologies with psychopharmacology to better understand alterations in brain function associated with psychiatric disorders.

Krystal's research on the glutamate neurotransmitter system in the brain has led to new experimental treatments for several psychiatric disorders. Krystal is editor of *Biological Psychiatry*, a leading journal in the fields of psychiatry and neuroscience.

Krystal succeeds Benjamin S. Bunney, M.D., who served as chair for two decades until his retirement in 2008. William H. Sledge, M.D., served the department as interim chair during the past year.

Hafler, an expert on the mechanisms of autoimmunity and inflammatory diseases of the central nervous system, was previously director of molecular immunology in the department of neurology at Brigham and Women's Hospital in Boston. He was the Jack, Sadie, and David Breakstone Professor of Neurology at Harvard Medical School.

He was drawn to Yale, he says, by "the opportunity to build a great program in clinical neurology which integrates a wonderful program in neuroscience, a wonderful program in immunology and a wonderful

program in genetics. It really affords us the opportunity to bring things together around human disease scientifically."

Hafler's research and clinical expertise includes demyelinating diseases, especially MS, as well as experimental autoimmune encephalomyelitis, genetic predisposition to disease, human T-lymphotrophic virus (HTLV-1) infections, and molecular immunology.

Hafler has more than 270 publications in the field of autoimmunity and immunology and serves on the editorial boards for the *Journal of Clinical Investigation* and the *Journal of Experimental Medicine*. He is a co-founder and president of the Federation of Clinical Immunology Societies, a member of the executive council of the International Society of Neuroimmunology, and is active with the NIH's Immune Tolerance Network and Autoimmunity Prevention Center.

He is a founding member of the International MS Genetic Consortium, a group recently formed to define the genetic causes of MS that includes scientists from University of Cambridge and University of California, San Francisco.

Hafler graduated magna cum laude in 1974 from Emory University with combined B.S. and M.S. degrees in biochemistry, and from the University of Miami School of Medicine in 1978. He completed his internship in internal medicine at Johns Hopkins

and a neurology residency at New York Hospital-Cornell Medical Center and Memorial Sloan Kettering Cancer Institute, where he was chief resident. He received training in immunology at Rockefeller University and was a fellow in neurology and immunology at Harvard, where he joined the faculty in 1984.

Hafler has been elected to membership in the American Society of Clinical Investigation, the American Neurological Association, and the Alpha Omega Society, and he was a Harvey Weaver Scholar of the National Multiple Sclerosis Society.

He is an associate member of the Broad Institute at Harvard and the Massachusetts Institute of Technology, where he is spearheading an initiative to elucidate the genetic basis of MS.

Hafler recently received the first five-year National Multiple Sclerosis Collaborative Center Award with Broad Institute director Eric S. Lander, Ph.D., co-chair of President Obama's Council of Advisors on Science and Technology.

Hafler was principal investigator on the NIH Autoimmunity Prevention Center Grant at Harvard, and is a Jacob Javits Neuroscience Investigator Merit Award recipient from the NIH.

 **Yale Netcast**
"Fast-Tracking Lab Discoveries to Help Alcoholics"

Jamieson from page 1

percent are professors and 15 percent are chairs in an academic setting. About 83 percent of those in clinical departments hold research grants, as do 96 percent of those with appointments in basic science departments," recounts Jamieson, adding that graduates of the program have published over 8,000 research papers.

"The bottom line," says Jamieson, "is that this says success."

Students who enter the program come from esteemed undergraduate institutions, and "have their pick" of residencies when they finish, says Jamieson, and while at Yale, they are able to flourish in a research environment that boasts 16 Howard Hughes

Medical Institute investigators and the highest amount of NIH grant funding per faculty member in the nation.

But in addition to the direct advantages for students enrolled in the program, Jamieson argues that the presence of a high-quality M.D./PH.D. program "raises the bar" for Yale medical students as a whole, providing them with a richer educational experience.

As examples, he cites an upper-level course on the cellular and molecular basis of disease taught by eminent scientists. Originally created for M.D./PH.D. students, this course now draws an equal number of M.D.

students with an interest in basic research.

As a young bench scientist working with the legendary cell biologist and Nobel laureate George E. Palade, M.D., at the Rockefeller University and at Yale, Jamieson conducted influential research of his own on secretory cells of the pancreas that laid the foundation for understanding the function of the Golgi complex, the central processing and sorting organelle for the secretory pathway in all cells.

When not teaching or helping to shepherd Yale's M.D./PH.D. students through the demands of classes, research, and clinical rotations,

Jamieson, a native of British Columbia, can be found aboard his 25-foot sailboat, CYLAN II—the name is an acronym coined by his then 5-year-old daughter Anne in honor of Cynthia (Jamieson's wife), Laura (Anne's younger sister), and Anne herself.

Alpern says that the Jamieson and Family M.D./PH.D. Scholarship Fund is just the latest in a very long line of contributions that Jamieson has made to the School of Medicine. "Jim is a treasure of Yale who has been an invaluable part of the life of the medical school over the years as a researcher, course director, departmental chair, M.D./PH.D. program director—and now, philanthropist."

Diabetes expert is appointed inaugural Cowgill Professor

Gerald I. Shulman, M.D., PH.D., an internationally known diabetes researcher, has been named the first George R. Cowgill Professor of Physiological Chemistry.

Shulman's research is aimed at understanding the cellular mechanisms of insulin resistance, the role of the liver and muscle in the pathogenesis of type 2 diabetes, and the benefits of exercise in the management of the disease. His laboratory pioneered the use of magnetic resonance spectroscopy and other noninvasive technologies to study the complex molecular pathway that leads



Gerald Shulman

to insulin resistance in humans. His findings have led to the discovery of a novel mechanism involving alterations in intracellular fat metabolism as the major cause of insulin resistance in liver and muscle.

A professor of medicine and of cellular and molecular physiology, Shulman has been a Howard Hughes Medical Institute investigator since 1997. Shulman is the recipient of the 2008

Stanley J. Korsmeyer Award from the American Society for Clinical Investigation; the Bristol-Myers Squibb Freedom to Discover Award; the Novartis Award in Diabetes; the American Diabetes Association's Outstanding Scientific Achievement Award and Distinguished Clinical Investigator Award; the Juvenile Diabetes Foundation's Diabetes Care Research Award; the Naomi Berrie Award for Outstanding Achievement in Diabetes Research from Columbia University; and an Outstanding Investigator Award from the American Federation for Clinical Research.

He has been elected to the American Society for Clinical Investigation, the Association of American Physicians, the Institute of Medicine, and the National Academy of Sciences.

The new professorship was established in 2008 with a gift from Robert L. McNeil Jr., former chairman of McNeil Laboratories. It is named in honor of renowned Yale School of Medicine researcher George R. Cowgill, PH.D., an authority on the human requirements for vitamin B1 (now known as thiamin) and other aspects of human nutrition.

Leading geriatrics researcher is Humana Foundation Professor

Thomas M. Gill, M.D., newly named the Humana Foundation Professor of Geriatric Medicine, is a leading authority on the epidemiology and prevention of disability among older persons.



Thomas Gill

Gill, co-director of the Yale Program on Aging, focuses on understanding the causes of functional decline and disability among community-living older

persons, and on developing strategies to forestall the onset and progression of disability among at-risk elders.

In 1997, Gill embarked on an ambitious study known as the Precipitating Events Project. Since then, Gill and his team have overturned previous views about chronic disability among the elderly and revealed that older Americans surmount most physical setbacks with remarkable resiliency, and that functional decline can be prevented through targeted preventive measures.

In 2006, the National Institute on Aging (NIA) recognized Gill's accomplishments with a \$3.2 million MERIT award that allowed him to follow his study group for several more years.

Gill's other research interests include the epidemiology and prevention of bathing disability and the epidemiology of frailty. He is currently a key

investigator, with primary responsibility for assessments, for two large, NIA-sponsored multisite clinical trials. Gill's mentorship program in disability and disabling disorders has been supported for the past seven years by a Midcareer Development Award from the NIA.

At Yale, Gill is also the director of the Research Career Development Core at the Claude D. Pepper Older American Independence Center, director of the Section of Geriatrics of the Center for Disability and Disabling Disorders, and co-director of the Yale Fellowship in Geriatric Medicine and Clinical Epidemiology. He received his research training in clinical epidemiology as a Robert Wood Johnson Clinical Scholar at Yale and joined the faculty in 1994 after completing an additional year as a geriatrics fellow, and subsequently competed successfully for an NIA Academic Award, the Paul Beeson Physician Faculty Scholars in Aging Research Award, and the Robert Wood Johnson Generalist Physician Faculty Scholar Award.

For his professional contributions, Gill has been honored with the 2001 Outstanding Scientific Achievement for Clinical Investigation Award from the American Geriatrics Society, the 2009 Ewald W. Busse Research Award in the Biomedical Sciences, and election to American Society of Clinical Investigation and Interurban Clinical Club.

Immunobiologist is named Eugene Higgins Professor

Peter Cresswell, PH.D., the newly designated Eugene Higgins Professor of Immunobiology, has spent most of his career unraveling some of the mysteries of the human immune system.



Peter Cresswell

Cresswell's research focuses on the molecular mechanisms of antigen processing, in which fragments of proteins from viruses, bacteria and other

disease-causing organisms bind to the Major Histocompatibility Complex molecules on human cells during an infection. These molecules are recognized by T lymphocytes and are critical for making effective immune responses to infectious agents. His laboratory is also investigating the antiviral mechanisms of proteins inducible by Type 1 and Type 2 interferons. One such protein, viperin, mediates resistance to infection by influenza virus and human cytomegalovirus.

Cresswell, also professor of dermatology and of cell biology, has been a Howard Hughes Medical Institute investigator since 1991, when he joined the Yale faculty. The Yale researcher earned his undergraduate and master's degrees at the University of Newcastle upon Tyne and his PH.D. at the University of London. He

was a postdoctoral fellow at Harvard University before joining the faculty at the Duke University Medical Center in 1973, where he taught until his appointment at Yale. He was a visiting scientist at the MRC Cellular Immunology Unit at the Sir William Dunn School of Pathology at the University of Oxford in 1981, and was elected Newton-Abraham Professor and a Fellow of Lincoln College, Oxford, during a second visit in 2007. Cresswell has earned numerous honors for his work, including the 1995 Rose Payne Distinguished Scientist Award from the American Society for Histocompatibility and Immunogenetics and a MERIT Award from the National Institutes of Health.

He is a Fellow of the Royal Society in the U.K., and a member of the U.S. National Academy of Sciences.

Since 1994, Cresswell has been an associate editor of *Immunity*, and serves on the editorial boards of several other journals. He was a member of the National Research Council's Committee on Recommendations for U.S. Army Basic Scientific Research from 1987 to 1990, and currently serves on the scientific advisory boards of the Center for HIV/AIDS Vaccine Immunology and the National University of Singapore's Immunology Program.

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Emergency Medicine from page 1

services that improve overall health can be provided to patients who lack access to care and fall through the cracks of the health care system. "Emergency physicians are well-trained in emergency medical and trauma care. That's what we're here for. But we really have a bigger responsibility than that," says D'Onofrio, who has published extensively on substance abuse and women's health interventions in emergency department settings.

Department faculty do research on prehospital care, diagnostic ultrasound, and simulator training for residents. The department boasts three board-certified toxicologists, an active involvement in global health projects, and funding to train 13 residents a year, an unusually large number.

Emergency medicine is a relatively new specialty, with the first

residency founded in 1970 and board certification instituted in 1979. It has achieved full academic departmental status at 76 medical schools nationwide, and is a popular discipline among medical students, with 149 programs in the United States training over 1,400 new residents yearly.

D'Onofrio, who began her career as a nurse and taught Boston's first advanced cardiac life-support classes to physicians, is one of only five female academic emergency medicine department heads in the country. She has aimed for departmental status for the section since taking over as chief in 2005, but credits her colleagues' "phenomenal" research in helping her to make the case.

"When you look at why we're great, it's the depth of our faculty," D'Onofrio says.

Autism from page 3

mathematical model that predicted, based on the presence of these occurrences of AVS, where children with ASD would look if they were shown these new animations paired with upside-down versions as before.

When the experiment was carried out with a new group of 2-year-olds with ASD, the AVS model was spectacularly successful, accurately predicting shifts in gaze by these children over 90 percent of the time.

The new AVS findings dovetail nicely with other discoveries Klin and Jones have made in eye-tracking experiments. For example, they have found that when children and adults with ASD view films of people speaking, they tend to look mostly at the speaker's mouth, whereas typically developing subjects focus mostly on the eyes. Since the mouth is the

region of the face with the greatest correspondence between movement and sound, this behavior is consistent with the new animation data.

With their research on biological motion and other eye-tracking work, Klin and Jones believe they may be homing in on one of the most elusive goals of autism research: a test that could find behavioral signatures of autism at an early age, allowing parents and teachers to put interventions in place that can help children with ASD to more fully integrate into human social interaction. As Klin told *Nature's* news staff, "We want to come up with a behavior assay that will predict vulnerabilities for autism in the first year, if not months, of life."

 **Online Video**
Data from point-light animations can be seen at medicineat Yale.org/autism