



ABOVE • K-9 Wally White hangs up his leash at RML. See story on p. 2.

# nih record

## Uncovering Unconscious Bias

### Is the 'Hidden Brain' Behind Some Health Disparities?

By Carla Garnett

**T**urns out, it wasn't the devil that made you do it. It was your "hidden brain." That's what Shankar Vedantam suggested at a recent lecture on unconscious bias at work, part of the 2013-2014 Deputy Director for Management Seminar Series. Vedantam said he "coined the term 'hidden brain' to describe mental activities that happen outside our conscious awareness.

"Is it possible," he wondered, "that some of the [health] disparities we're seeing are not the result of bad people behaving badly, but of well-intentioned people who are unintentionally doing the wrong thing? Is it possible that unconscious biases of well-intentioned people are responsible for these disparities that we observe?"

SEE **HIDDEN BRAIN**, PAGE 6

### Despite Progress, Challenges Remain in Fight Against HIV/AIDS

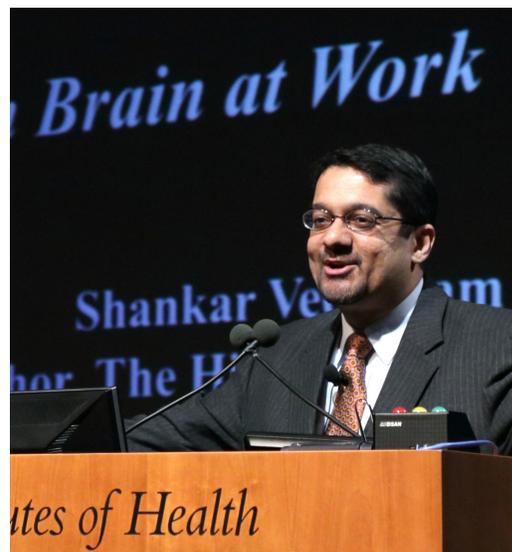
By Eric Bock

The steps that led to AIDS being a treatable disease rather than an automatic death sentence and attempts to identify the best treatments for AIDS were topics at a recent Great Teachers Grand Rounds lecture in Lipsett Amphitheater.

Dr. Henry Masur, chief of the Clinical Center's critical care medicine department, said scientists have made great progress in the fight against AIDS. Dr. Cliff Lane, NIAID clinical director, cautioned that there is still much to learn about AIDS.

Since the disease was first recognized, scientists have made great advances in AIDS research. In 1984, NCI's Dr. Robert Gallo developed an AIDS blood test. In 1987, the Food and Drug Administration approved the first AIDS treatment, zidovudine, a drug initially tested in AIDS patients at the CC by Drs. Sam Broder and Robert Yarchoan of

SEE **HIV/AIDS**, PAGE 4



Shankar Vedantam, a science correspondent with National Public Radio, delivers a recent Deputy Director for Management seminar.

### NIH Celebrates a Decade of Brain Disorders Research

By Cathy Kristiansen

Scientists gathered at Kirschstein Auditorium recently to explore frontiers in neuroscience for global health and to mark the 10th anniversary of the Fogarty International Center's brain disorders program, which is designed to focus attention and resources on this neglected area.

"There is no health without mental health," observed Dr. Thomas Insel, NIMH director. He said it is "critical" this profound public health need is addressed as



Fogarty's brain disorder program trains researchers such as Congolese neuroscientist Dr. Desire Tshala-Katumbay.

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NIH...Turning Discovery Into Health

## briefs

### **Bike to Work Day, May 16**

Join the NIH Bicycle Commuter Club in celebrating National Bike Month and Bike to Work Day on Friday, May 16 from 7 - 9:30 a.m. in front of Bldg. 1; 6:30 - 8:30 a.m. at Rock Spring business park; and 6:30 - 9 a.m. at Rockville-Fallsgrove (near NCI Shady Grove). Complete your free registration at [www.biketoworkmetrodc.org/register-now/](http://www.biketoworkmetrodc.org/register-now/) and help NIH defend its title as local employer with the most bike commuters. You must pre-register for the pit stop you plan to visit to receive a BTWD 2014 T-shirt, which will be available while supplies last. At the Bldg. 1 pit stop, all employees and contractors who show up riding a bicycle and wearing a helmet may enjoy breakfast snacks and participate in a raffle drawing.

### **APAO Hosts Annual Ethnic Food Fair, May 21**

Come enjoy a sampling of Asian cuisines at the Ethnic Food Fair on Wednesday, May 21 from 11:30 a.m. to 1:30 p.m. on Bldg. 31A's patio. This annual celebration of food, culture and community is sponsored by the NIH Asian & Pacific Islander American Organization (NIH APAO). Area restaurants will have food for sale. Learn about organizations and activities that promote diversity and inclusion at NIH. APAO donates a portion of the proceeds from sales to the Children's Inn at NIH.

### **ORWH Presents Neuroscience Forum for Women's Health Week, May 14**

As part of National Women's Health Week May 11-17, NIH's Office of Research on Women's Health will present its annual scientific forum on Wednesday, May 14 from 2 to 4 p.m. in Lipsett Amphitheater, Bldg. 10. The title this year is "Sex Differences and Neuroscience: Past, Present and Future Perspectives." The forum is intended to motivate and inform the broad NIH community on scientific issues relevant to women's health research. Featured speakers include Dr. Story Landis, NINDS director; Dr. Cheryl Bushnell, associate professor of neurology and director, Wake Forest Baptist Stroke Center; and Dr. Margaret McCarthy, professor and chair, department of pharmacology, Program in Neuroscience, University of Maryland School of Medicine. In addition, Dr. Vicky Holets Whittemore will moderate the panel discussion. For more information, contact Dr. Leah Miller at [leah.miller@nih.gov](mailto:leah.miller@nih.gov) or visit [www.nih.gov/women](http://www.nih.gov/women).

### **Career Symposium Set, May 16**

The NIH Office of Intramural Training & Education invites all NIH grad students and postdoctoral trainees to participate in the 7th NIH Career Symposium on Friday, May 16 at Natcher Conference Center from 8:30 a.m. to 5 p.m. The symposium provides an opportunity to learn about scientific career options and to explore factors that lead to career success. Keynote speaker Dr. Gail Cassell, former vice president, Eli Lilly, begins at 8:40 a.m. Panel sessions cover academic, government, industry and non-profit career paths. For details and registration, visit [www.training.nih.gov](http://www.training.nih.gov).

### **Chang To Present Jeang Memorial Lecture, May 15**

*The Kuan-Teh Jeang Memorial Lecture, part of NIH's observance of Asian American and Pacific Islander Heritage Month, will be held on Thursday, May 15 from noon to 1 p.m. in Lipsett Amphitheater, Bldg.*

*10. This year's speaker, Dr. Yuan Chang of the University of Pittsburgh Medical Center (UPMC), will present "KSHV and MCV: Two views on virus-induced cancer." Chang is American Cancer Society research professor, distinguished professor of pathology and UPMC chair in cancer virology at the University of Pittsburgh Cancer Institute. She is co-discoverer of Kaposi's sarcoma-associated herpesvirus and Merkel cell polyomavirus. For more information about the lecture, contact Dr. Roland Owens of the NIH Office of Intramural Research, (301) 594-7471, [owensrol@mail.nih.gov](mailto:owensrol@mail.nih.gov). The lecture is open to the public. No registration is required.*



### **Police Dog Retires from Service**

*K-9 Wally White, a chocolate Labrador retriever, retired on Feb. 28 from service with the NIH Division of Police at NIAID's Rocky Mountain Laboratories*

*(RML). Wally, who turned 9 recently and began having hip problems, started work at RML in March 2007 with handler Cpl. Danny White, with whom Wally still resides. The RML staff celebrated Wally's retirement on Apr. 23 with dog treats, a tennis ball and plenty of ear rubs.*



### Former NIAID Scientist To Give Chanock Lecture, May 27

Dr. Raphael Dolin, the Maxwell Finland professor of medicine and of microbiology and molecular genetics at Harvard Medical School and Beth Israel Deaconess Medical Center, will present the annual

NIAID Robert M. Chanock Memorial Lecture. His talk, titled "Approaches to HIV Vaccine Development," will take place on Tuesday, May 27, at 9 a.m., in the Bldg. 50 1st floor conference room. The lecture honors Chanock, who served as chief of NIAID's Laboratory of Infectious Diseases for more than three decades.

Dolin will discuss future directions in HIV vaccine research. Clinical trials of HIV vaccines over the last 30 years have faced a number of challenges, including the apparent absence of a model of naturally acquired immunity to HIV, the limitations of experimental animal models and the complexity and cost of the trials themselves.

During this time, substantial progress has been made toward novel candidate HIV vaccines, including the development of adenovirus and orthopox vectors and "mosaic" gene inserts designed to improve the immune system's recognition of HIV. Particularly noteworthy has been the identification of highly potent, broadly neutralizing antibodies against HIV. Dolin will talk about using clinical studies to better understand how these antibodies could prevent or treat HIV infection.

A graduate of Harvard College and Harvard Medical School, Dolin trained at NIAID's Laboratory of Infectious Diseases and led the medical virology section of NIAID's Laboratory of Clinical Investigation. He has authored more than 200 articles, books, chapters and reviews. He has directed the Harvard Medical School HIV vaccines clinical trials unit and currently is a co-editor of *Principles and Practice of Infectious Diseases*, a leading textbook in the field of infectious diseases.

Dolin is a fellow of the American College of Physicians, the Infectious Diseases Society of America and chair of the board of scientific counselors for NIAID's Vaccine Research Center.



ASM fellows are (clockwise, from above) Dr. Jeffrey Cohen, Dr. Kim Green, Dr. Peter Kwong, Dr. Thomas Nutman, Dr. Theodore Pierson, Dr. Alan Rein and Dr. Zhi-Ming Zheng.

### Seven NIH Scientists Honored by ASM

Seven NIH scientists are among 88 new fellows recently elected to the American Academy of Microbiology in recognition of their records of scientific achievement and original contributions that have advanced microbiology. The fellows will be honored at the American Society for Microbiology's annual meeting in Boston on May 20.

They are:

Dr. Jeffrey I. Cohen, chief, Laboratory of Infectious Diseases, NIAID

Dr. Kim Y. Green, chief, caliciviruses section, Laboratory of Infectious Diseases, NIAID

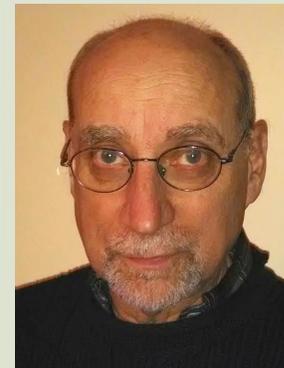
Dr. Peter Kwong, chief, structural biology section and structural bioinformatics core section, Vaccine Research Center, NIAID

Dr. Thomas Nutman, head, helminth immunology section and head, clinical parasitology section, Laboratory of Parasitic Diseases, NIAID

Dr. Theodore Pierson, chief, viral pathogenesis section, Laboratory of Viral Diseases, NIAID

Dr. Alan Rein, head, retroviral assembly section, HIV Drug Resistance Program, NCI-Frederick

Dr. Zhi-Ming Zheng, senior investigator and head, tumor virus RNA biology section, Gene Regulation and Chromosome Biology Laboratory, NCI



## HIV/AIDS

CONTINUED FROM PAGE 1

NCI. In 1988, scientists concluded that prophylactic antibiotics could prevent *Pneumocystis pneumonia*.

Masur said he's discouraged that, in the United States, the number of new HIV infections hasn't decreased since the 1980s. Scientists understand the life cycle of the virus, have developed more than two dozen antiretrovirals and have fashioned prevention strategies.

"The fact that we still have 50,000 new HIV infections a year suggests that we're not doing a very good job changing the public's behavior," Masur said. "We have to find better strategies."

Masur also said that many patients with AIDS are not receiving proper treatment. In Washington, D.C., for example, only 39 percent

of patients known to be HIV-positive stay in treatment. Many of these patients still develop treatable opportunistic infections.

Lane said researchers still have a lot to learn about the disease and how best to treat it. As patients with AIDS survive longer due to the success of antiretroviral therapy, Lane said that fewer are dying from AIDS-related infections. Antiretroviral drugs can suppress the virus that causes AIDS. Some of the drugs have significant side effects, however, including: glucose intolerance, hyperlipidemia, fat redistribution, osteoporosis and kidney and liver disease. Patients may also develop chronic inflammatory states that appear to accelerate the aging process, leading to cardiovascular, cerebrovascular, kidney and liver diseases.

Lane also touched on current guidelines for antiretroviral therapy. Today, there are 25 antiretrovirals on the market. Many of these are combination drugs. They contain two or more drugs that inhibit the AIDS virus at different stages of the life cycle.

Current HHS treatment guidelines recommend that all patients with HIV infections take antiretrovirals. Lane said the strength of the recommendation depends on CD4 cell count. CD4 cells are a type of white blood cell that coordinates the immune system's response to pathogens. A normal CD4 count



is greater than 500 cells per cubic milliliter of blood. Typically, patients with AIDS do not contract opportunistic infections when their CD4 count falls below 200.

Lane noted that observational cohort studies have given conflicting results on whether or not there is clinical benefit to starting antiretrovirals in patients with CD4 counts greater than 500. He noted that a randomized control trial known as the START study is addressing this question.

Lane said scientists are still intrigued by how one well-described patient was cured of AIDS. The patient received a bone marrow transplant to cure a leukemia that was unrelated to his AIDS infection. The donor was immune to an HIV infection because of a genetic mutation in one of the co-receptors of the virus. Since the extensive conditioning regimen and the transplant, the patient has been off all antiretroviral drugs and the virus has not reappeared. So far, however, no other AIDS patient has been cured.

"We've learned quite a bit about AIDS," Lane said. "But we still have more to discover." 🔍



**Above:** Clinical Center director Dr. John Gallin (l) enjoys a chat with Grand Rounds presenters Dr. Cliff Lane (c) and Dr. Henry Masur prior to their talks.

**Right:** Masur (above) said he's discouraged by the stubborn persistence of new HIV infections. Lane (below) said that while AIDS patients treated with antivirals are living longer, better treatments are still needed.

PHOTOS: BILL BRANSON



### **Iwasaki To Give Annual Dyer Lecture, May 14**

Dr. Akiko Iwasaki, a Howard Hughes Medical Institute investigator and professor of immunobiology and molecular, cellular and developmental biology at Yale School of Medicine, will present the annual WALS Rolla

PHOTO: KIKE CALVO

E. Dyer Lecture at 3 p.m. on Wednesday, May 14. Her talk is titled “Antiviral Defense Mechanisms at the Mucosal Surfaces.”

Iwasaki’s laboratory is trying to understand how immunity is initiated and maintained at mucosal surfaces for pathogens that are of significant worldwide health concern. Her lab is investigating how viruses are recognized (innate immunity) and how that information is used to generate protective adaptive immunity. In particular, she studies immune responses to herpes simplex viruses in the genital tract and influenza infection in the lung.

The Dyer Lecture features internationally renowned researchers who have contributed substantially to medical as well as biological knowledge of infectious diseases. Established in 1950, the lecture series honors former NIH director Dr. Rolla E. Dyer, a noted authority on infectious diseases.

### **HHS Green Champion Awards at NIH**

Employees are invited to the 2014 HHS Green Champion Awards Ceremony for NIH recipients on Tuesday, June 3 at 9 a.m. in Kirschstein Auditorium, Bldg. 45. The awards recognize excellence and innovation by HHS employees for sustainability efforts in 10 categories including environmental stewardship, sustainable acquisitions and water-use efficiency and management.

Seating for the ceremony will be first-come, first-served. Sign language interpreters will be provided. A meet & greet event will be held at 8:30 a.m. with pastries and beverages for awardees and guests. Individuals with disabilities who need reasonable accommodation to participate should contact Amy Blackburn at (301) 496-7990 or amyb@mail.nih.gov.

### **Drew To Deliver NINR Director’s Lecture, May 20 at Natcher Bldg.**

Dr. Barbara J. Drew will deliver the first of two NINR Director’s Lectures for 2014. Her presentation, “Electrocardiographic Monitoring: Two Decades of Discovery,” will be held on Tuesday, May 20 from 10:30 to 11:30 a.m. in Natcher Bldg., Balcony C.

Drew is the David Mortara distinguished professor of physiological nursing and clinical professor of medicine in cardiology at the University of California, San Francisco. The primary goal of Drew’s research is to improve cardiac monitoring techniques and clinical practices in hospital and pre-hospital settings for more accurate diagnosis of cardiac arrhythmias, myocardial ischemia and drug-induced long QT syndrome. Her research has shaped the development of commercial cardiac monitors, including the introduction of multi-lead ECG monitoring, ST-segment and QT interval monitoring and strategies to reduce clinical alarm fatigue. She also founded the ECG Monitoring Research Lab in the UCSF School of Nursing and mentored numerous graduate students pursuing studies in the field of electrocardiology.

The NINR Director’s Lecture series brings the nation’s top nurse scientists to the NIH campus to share their work and interests with a transdisciplinary audience. The second 2014 lecture, which will take place in September, will be given by Dr. Barbara Medoff-Cooper, who is internationally recognized for her research on infant development, feeding behaviors in high-risk infants and infant temperament.

Drew’s lecture will be videocast live and archived at <http://videocast.nih.gov>. For details, visit [www.ninr.nih.gov/directorslecture](http://www.ninr.nih.gov/directorslecture).



### **Symposium on Women’s Health Research, May 16**

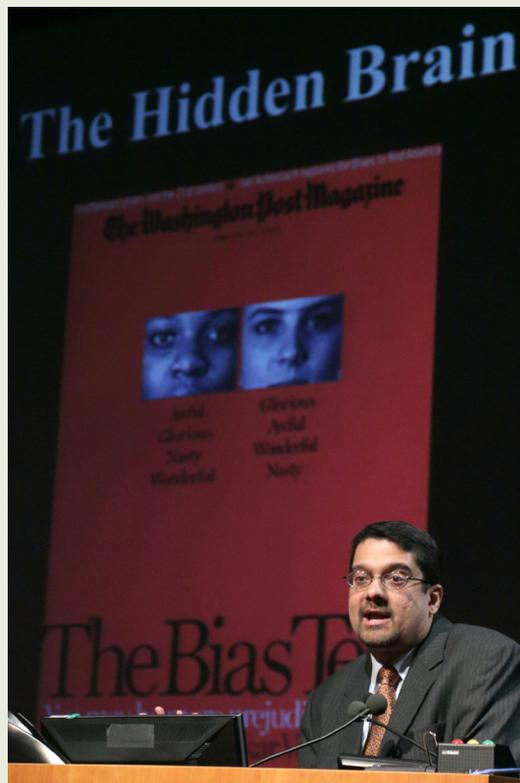
The first annual C. Everett Koop Memorial NIH Symposium on Women’s Health Research will be held on Friday, May 16 in Masur Auditorium, Bldg. 10, in conjunction with National Women’s Health Week.

The theme for this daylong scientific event is “Empowering Women with Uniformed Service.” The symposium features more than a dozen speakers, including acting surgeon general Rear Adm. Boris Lushniak, presenting on a range of women’s health issues. Topics include the epigenetic reprogramming of the female reproductive tract, community-based participatory research and military medicine.

All are welcome. Registration opens at 7:30 a.m. and introductory remarks begin at 8 a.m. The symposium is sponsored in part by the NIH Office of Research on Women’s Health and the National Institute of Child Health and Human Development.

*Vedantam suggested that sometimes the preconceived notions we exhibit turn out to be wrong not because we're evil people but because we're not concentrating on what we're doing.*

PHOTOS: BILL BRANSON



## HIDDEN BRAIN

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*“Our minds change reality to reflect the biases that we have inside our own heads.”*

A science correspondent with National Public Radio whose reporting focuses on human behavior and the sciences, Vedantam suggested that sometimes the snap judgments or preconceived notions we exhibit turn out to be wrong not because we're evil people but because we're not concentrating on what we're doing. Our brains are, in a sense, functioning on autopilot.

To illustrate false moves we make automatically, Vedantam showed several optical illusions that indicated how unconscious bias doesn't just distort perception, but often alters the way things really are.

“Our minds change reality to reflect the biases that we have inside our own heads,” he explained.

Reading, Vedantam said, is a perfect example of the hidden brain at work. Once you learn to read and are accustomed to reading, he said, your mind takes shortcuts. You naturally skip or fill in, without consciously thinking about it. Unlike a new reader, then, you don't register every single word on a page. Otherwise, you'd spend all day reading just one page.

In the same way, Vedantam argues, your mind in many cases anticipates—pre-judges—situations throughout daily life.

Where do these pre-judgments come from and how do they develop? Vedantam said prejudices are evident in the brain as early as age 2 or 3. He suggested that while the shape that bias takes is often determined by our culture, our minds are in some ways hardwired to be receptive to bias-

es, that “the brain has a built-in architecture for bias.” Our experiences shape brain content in subtle ways we don't even perceive.

“The hallmark of these biases is that they affect us without our awareness,” he noted. “We have no awareness that we are making these mistakes as we make them.”

Vedantam has conducted in-depth observations of bias in behavior and documented his insights in a 2010 book, *The Hidden Brain: How Our Unconscious Minds Elect Presidents, Control Markets, Wage Wars and Save Our Lives*.

When it comes to hidden biases that allow us to read effortlessly or walk without paying attention to our balance, “these are not biases that suggest there's something wrong with you,” Vedantam explained. “In fact, they suggest there is something right with you. This is exactly how you would want the brain to work. Much of the time the hidden brain plays a useful purpose...[but] there are times when the biases lead us astray.”

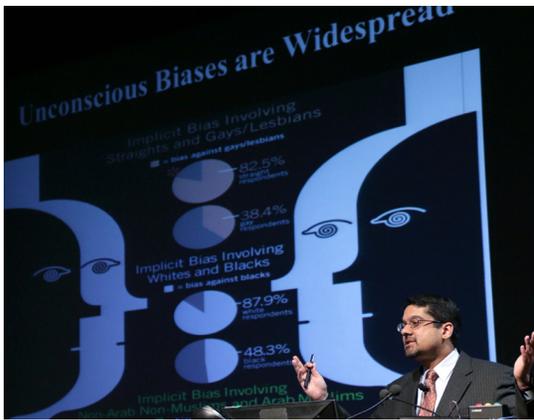
Indeed, some instances in which we're led astray may have serious—even life-altering—consequences. Take the well-documented gaps in health among racial, ethnic and gender groups, for example. Vedantam shared several published studies of medical studies revealing bias:

- Blacks are less likely to receive early stage lung cancer surgery than whites
- Doctors are less likely to offer HIV drugs to African Americans possibly because of a fear of poor compliance
- Hispanics with long-bone fractures were twice as likely as whites to get no pain meds in one medical setting
- Knee replacement surgery has been documented to be recommended to men 22 times more often than to women.

“The effects of unconscious bias can actually be greater in our daily lives than the effects of conscious bias,” he said.

To prove his point, he showed data from several psychological tests in which respondents from across the nation made subtly discriminatory decisions on hiring/promoting a lab assistant, made judgments about the ability to study advanced math or decided who should receive medicine/surgery as well as who may have committed a crime. Results of each exercise revealed that large numbers of Americans may be vulnerable to such bias.

“Thinking about unconscious bias complicates our notion of what bias is and how bias works because it suggests that we cannot neatly divide



Vedantam showed data from several psychological tests in which respondents from across the nation made subtly discriminatory decisions.

the world into two groups, where one group is perpetrator and one group is victim,” Vedantam explained. “It suggests that at different times we can all be perpetrators and simultaneously we can all be victims.”

So, how do we overcome the effects that unconscious biases have on us? Vedantam says we can pay closer attention to our decision-making in certain situations, recognize the way we’re leaning and simply tug our minds in the opposite direction. In addition, since our environment shapes our mind, we can surround ourselves with experiences and friendships outside our comfort zone. If you broaden what goes into your thinking, then you broaden what comes out of it.

“Unconscious biases sometimes require conscious effort to overcome,” he acknowledged. “It’s hard to do everything consciously. At the same time, there are times when you are making decisions about the well-being or lives of other people. It’s at those times that it’s important not to rely on the quick, intuitive...approach. Choose instead the more deliberate, the persistent and careful approach.”

Vedantam answered audience questions that ranged from how to uncover the general origins of bias to how we can detect it in ourselves, despite the difficulty in becoming conscious of unconscious brain processes. He pointed out that in individual cases hidden brain choices can be hard to distinguish from legitimate decision-making. We should look at whole groups of cases and not try to identify wrongful prejudice in single incidents or encounters.

“Intuition is not a good guide to unconscious bias,” he concluded, “because in our hearts we always think of ourselves as good people without any biases.”

To learn more about Vedantam’s work on the topic, visit [www.hiddenbrain.org/](http://www.hiddenbrain.org/).

## NIAAA’s Warren Receives Lifetime Achievement Award

The Research Society on Alcoholism has selected NIAAA deputy director Dr. Kenneth R. Warren to receive the RSA Lifetime Achievement Award. The award recognizes a person with a long, balanced career whose contributions to alcohol research, training, service and advocacy have had a lasting impact on the field.

Warren is a distinguished scientific administrator and a foremost expert on the effects of alcohol use during pregnancy. More than 30 years ago, he initiated NIAAA’s research program on fetal alcohol syndrome (FAS). For his work on the development of the first Surgeon General’s Advisory on Alcohol Use in Pregnancy, Warren received a Superior Service Award from the Public Health Service in 1982. Currently, Warren chairs the interagency coordinating committee on fetal alcohol spectrum disorders.

Warren joined NIAAA in 1976 and has provided leadership in various roles, including as associate director for basic research. In February 2008, he was appointed deputy director. He served as NIAAA acting director from November 2008 to January 2014.

The RSA has honored Warren previously with the Seixas Award for Service and the Henry Rosett Award from the FAS study group. The National Organization on Fetal Alcohol Syndrome (NOFAS) inducted him into the Tom and Linda Daschle FASD Hall of Fame and more recently honored him with the NOFAS Excellence Award.

## NEI’s Brooks Honored

Dr. Brian Brooks of NEI has been elected to the American Society for Clinical Investigation (ASCI). The society publishes the *Journal of Clinical Investigation* and elects the journal’s editor-in-chief from its ranks.

ASCI accepts membership nominations internationally and elects a maximum of 80 new members each year based on a record of achievement in biomedical research. Because new members must be 50 years of age or younger, the society particularly recognizes scientists who are productive early in their careers.

Brooks leads NEI’s unit on pediatric, developmental and genetic ophthalmology. His research focuses on the genetic and developmental causes of uveal coloboma, a potentially blinding condition in which tissue in or around the eye is missing from birth. He also performs clinical and basic research on potential treatments for vision loss associated with albinism.

He was inducted into ASCI at a ceremony on Apr. 25 as part of the 2014 joint meeting between ASCI and the Association of American Physicians in Chicago.





## BRAIN

CONTINUED FROM PAGE 1

### *Above, from 1:*

*More than 350 researchers attended Fogarty's brain disorders conference to network and share discoveries.*

*NIH leaders discussed a number of significant accomplishments of the brain disorders program, which receives broad support across the institutes and centers.*

PHOTOS: ERNIE BRANSON

efforts are made to improve health care globally.

Yet an “unconscionable” gap exists between access to treatment for neurological conditions for people living in wealthy countries as compared to populations living in low-resource settings, said Dr. Steven Hyman of Massachusetts Institute of Technology and Harvard University. This brings “huge societal costs,” not only for patients but also for their caretakers and communities, he said. “It degrades human capital formation.”

Research is key to improving patient care and must be conducted in-country to be viable and effective, said Dr. Gwen Collman of NIEHS. With community engagement and involvement, she noted, “you can translate the results more quickly.”

Recognizing this research need, Fogarty launched its program called Brain Disorders in the Developing World: Research Across the Lifespan in 2003. With broad support across NIH, the initiative has provided at least \$85 million to fund more than 150 projects that investigate conditions afflicting populations in low-resource countries. The disorders range from neurodevelopmental, such as autism, to neurodegenerative diseases, including Alzheimer's, to neuropsychiatric, as in depression.

One grantee who collaborates with researchers on different continents is Dr. Richard Guerrant at the University of Virginia. His projects in Brazil and South Africa have shown how child malnutrition impairs cognition and can be prevented by low-cost interventions such as zinc supplements and reducing diarrhea. Research evidence such as this, Guerrant noted, are essential for “driving future policy decisions.”

Indeed, this is what happened in Barbados when researchers, starting in the 1960s, amassed records on malnutrition and child mortality. “We worked very hard with the government of Barbados to make malnutrition a reportable disease,” said Dr. Janina Galler of Harvard. The government adopted a comprehensive nutrition program to age 12 and malnutrition was eliminated by 1980.

“All children should have the chance to achieve their full potential,” said Dr. Alan Guttmacher, director of NICHD. He added this means protecting cognitive development not only prenatally and in the first months of life, but also “well beyond.”

Fogarty's brain program covers disorders that strike at all ages, including adult onset neurodegenerative disorders and dementias. NIA director Dr. Richard Hodes noted about 15 percent of the world's population will be over 65 in a few years. “The challenges are going to be absolutely enormous, in particular those posed by age-related diseases,” he said. To maximize progress, he urged researchers to share their data widely and in interpretable forms.

One new arena for brain researchers is HIV/AIDS, where antiretrovirals have dramatically extended patients' lives. But little is known about the long-term neurological impact of either the virus or the drugs. Fogarty brain program projects include studies of cognition in children exposed to HIV at birth and the link between HIV and cerebral malaria.

The knowledge gleaned from global health research can bring insight into health everywhere, noted Dr. Story Landis, director of NINDS. She cited a Peruvian study of a tape worm disease transmitted from pigs to people and noted in one U.S. public hospital, a third of patients with epilepsy had eaten infected pork. “So it's not just a developing country issue,” she said. “It's also an issue in this country.”

Researchers seeking low-cost interventions in developing countries have produced novel, inexpensive approaches relevant for developed countries as well. Dr. Benjamin Warf, a current Fogarty grantee, in earlier research in Uganda devised a minimally invasive procedure for treating hydrocephalus. The procedure, now also adopted in the U.S., has greatly reduced the number of patients receiving brain shunts, which carry a higher infection risk.

In another example of two-way benefit, a study

in Latin America compared treatment of traumatic brain injury using expensive high-tech equipment commonly used in the U.S. with its own practice of clinician monitoring and found no difference in patient outcome. "It has caused us to rethink our care and ask what really, truly is important," said Dr. Randall Chesnut of the University of Washington. "By corroborating across borders, we can come to a better understanding of what we do."

As well as producing science to expand knowledge about brain disorders and ways to diagnose, prevent and treat them, a key aspect of Fogarty's brain program has been to provide significant training from more than 140 developing country researchers to expand capacity in their countries.

Chesnut's traumatic brain injury project, for example, involves 13 intensive care units in Latin America where many former trainees are conducting their own research and training programs. With Fogarty brain program grants, "you're making researchers as you're doing research," he said. "It's a bit like building the bridge as you're driving across it. We need to integrate the idea that research is not what you read in a journal, it's what you do in the educational process and in the machinery of medicine."

Links to the symposium webcast and more information about the program are available at <http://bit.ly/braindisorders>. 



### Volkow Marks 10<sup>th</sup> Year as NIDA Director

*NIDA director Dr. Nora Volkow receives a pin from deputy director Dr. Wilson Compton marking her 10-year anniversary as director on Apr. 17. Volkow has pioneered the use of brain imaging to investigate the effects of drugs in the human brain and has been instrumental in demonstrating that drug addiction is a brain disease. She has published more than 600 scientific articles and edited 3 books. She has received multiple awards including membership in the Institute of Medicine. She has also been named one of Time magazine's "Top 100 People Who Shape Our World," included as "One of the 20 People to Watch" by Newsweek magazine and named "Innovator of the Year" by U.S. News & World Report.*

### Heart Institute Alumnus Sjoerdsma Mourned

Dr. Albert Sjoerdsma, 89, whose research at NIH in the 1950s and 1960s helped define the field of clinical pharmacology, died Feb. 27 in Southern Shores, N.C. He suffered cardiac arrest after an extended illness.

Sjoerdsma arrived at the National Heart Institute in 1953. For nearly 20 years, he explored a range of biochemical and medical targets in the Experimental Therapeutics Branch, first as senior investigator (1953-1958) and later as chief (1958-1971). He diagnosed and defined the carcinoid syndrome, an unusual cancer characterized by serotonin-filled tumors; established the mechanism of action of the first antidepressants, monoamine oxidase inhibitors; and measured serotonin, dopamine and other amines in bananas and other foods. He also discovered the antihypertensive Aldomet, a drug still used today; developed treatments for pheochromocytoma and scleroderma; probed the biochemical nature of rapid-eye-movement sleep and more.



Dr. Albert Sjoerdsma, circa 1966

PHOTO: NATIONAL LIBRARY OF MEDICINE

"We had a factory going, practically speaking," he said of his NIH work. "We were a wild bunch." Sjoerdsma also admitted some of the first patients to the Clinical Center when it opened in 1953.

Sjoerdsma trained in cardiology at Michael Reese Hospital in Chicago. He received two bachelor's degrees, a doctorate in pharmacology and a medical degree from the University of Chicago. He also served in the Army Reserves from 1942 to 1944.

He retired in 1971 from the Public Health Service after 20 years of service and left NIH for a pharmaceutical company. He went on to develop drugs for epilepsy, African sleeping sickness and an antihistamine. He eventually became president of Merrell Dow Research Institute.

In 1996, he retired to the Outer Banks of North Carolina. Sjoerdsma published more than 300 scientific papers, received numerous awards and honors and held a dozen patents.

He is survived by his wife of 63 years, Dr. Fern MacAllister Sjoerdsma of Southern Shores; daughters Leslie Swink of Jacksonville, Fla., Ann Sjoerdsma of Southern Shores and Britt Sjoerdsma of Sarasota, Fla.; son, Albert Sjoerdsma Jr. of Ann Arbor, Mich.; brother Peter Sjoerdsma of Punta Gorda, Fla.; two grandchildren, three nephews, a niece and numerous cousins.

A memorial service will be held in Kitty Hawk, N.C., in September.

### Scientists Enhance Technology for Brain Circuit Study

Scientists have bioengineered, in neurons cultured from rats, an enhancement to a cutting-edge technology that provides instant control over brain circuit activity with a flash of light.

The research, funded by NIH, adds the same level of control over turning neurons off that, until now, had been limited to turning them on.

“What had been working through a weak pump can now work through a highly responsive channel with many orders of magnitude more impact on cell function,” said Dr. Karl Deisseroth of Stanford University. It is like going from a squirt to a gushing hose.

Deisseroth and colleagues reported on what is being hailed as a marvel of genetic engineering in the Apr. 25 issue of the journal *Science*.

“This latest discovery by the Deisseroth team is the type of neurotechnology envisioned by President Obama when he launched the BRAIN Initiative a year ago,” said NIMH director Dr. Thomas Insel, whose institute helped fund the study, along with NIDA. “It creates a powerful tool that allows neuroscientists to apply a brake in any specific circuit with millisecond precision, beyond the power of any existing technology. This will be vital for understanding brain circuits involved in behavior, thinking and emotion.”

### Muscle Weakness in Alcoholism Linked to Mitochondrial Repair Issues

Muscle weakness from long-term alcoholism may stem from an inability of mitochondria, the powerhouses of cells, to self-repair, according to a study funded by NIH.

In research conducted with rats, scientists found evidence that chronic heavy alcohol use affects a gene involved in mitochondrial repair and muscle regeneration.

“The finding gives insight into why chronic heavy drinking often saps muscle strength and it could also lead to new targets for medication development,” said NIAAA director Dr. George Koob, whose institute funded the study.

The study is available online in the April issue of the *Journal of Cell Biology*.

### Glaucoma Drug Helps Women with Blinding Disorder Linked to Obesity

An inexpensive glaucoma drug, when added to a weight loss plan, can improve vision for women with a disorder called idiopathic intracranial hypertension (IIH), according to a study funded by NIH.

IIH, also called pseudotumor cerebri, predominantly affects overweight women of reproductive age. An estimated 100,000 Americans have it and the number is rising with the obesity epidemic. The most common symptoms are headaches and visual problems, including blind spots, poor side vision, double vision and temporary episodes of blindness. About 5-10 percent of women with IIH experience disabling vision loss.

“Our results show that acetazolamide can help preserve and actually restore vision for women with IIH, when combined with a moderate but comprehensive dietary and lifestyle modification plan,” said Dr. Michael Wall, professor of neurology and ophthalmology at the University of Iowa.

The trial was funded by NEI. The results were published Apr. 23 in the *Journal of the American Medical Association*.

### Jump-Starting Natural Resilience Reverses Stress Susceptibility

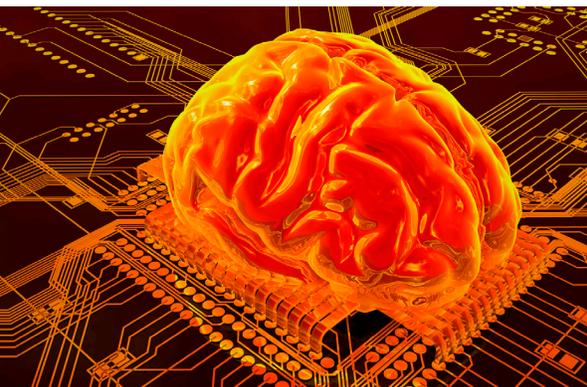
Scientists have traced vulnerability to depression-like behaviors in mice to out-of-balance electrical activity inside neurons of the brain’s reward circuit and experimentally reversed it—but there’s a twist.

Instead of suppressing it, researchers funded by NIH boosted runaway neuronal activity even further, eventually triggering a compensatory self-stabilizing response. Once electrical balance was restored, previously susceptible animals were no longer prone to becoming withdrawn, anxious and listless following socially stressful experiences.

“To our surprise, neurons in this circuit harbor their own self-tuning, homeostatic mechanism of natural resilience,” said NIMH grantee Dr. Ming-Hu Han of Icahn School of Medicine at Mount Sinai, New York City.

Han and colleagues reported on their discovery Apr. 18 in the journal *Science*.

*Scientists have bioengineered, in neurons cultured from rats, an enhancement to a cutting-edge technology that provides instant control over brain circuit activity with a flash of light.*





# feedback

Have a question about some aspect of working at NIH? You can post anonymous queries at [www.nih.gov/nihrecord/index.htm](http://www.nih.gov/nihrecord/index.htm) (click on the Feedback icon) and we'll try to provide answers.

**Feedback:** May 4-10 is Public Service Recognition Week. What, if anything, does NIH have planned to celebrate/recognize/show appreciation for NIH staff?

**Response from the Office of Human Resources:** A variety of activities will be offered to recognize employees' public service. Institutes/centers and offices will celebrate their employees through separate endeavors. Many may implement ideas from the Partnership for Public Service's toolkit ([http://publicservicerecognitionweek.org/celebration\\_toolkit](http://publicservicerecognitionweek.org/celebration_toolkit)). All employees received a message from NIH director Dr. Francis Collins on Apr. 24 that expressed his pride in and appreciation for their depth of dedication to the work being done here at NIH. Employees may express their own pride in their work and service by participating in the I "Heart" Public Service whiteboard photo campaign. Here is how to participate:

- ◆ Take a photo of yourself with the completed "I love Public Service" template ([www.feea.org/storage/documents/iheartpublicservice.pdf](http://www.feea.org/storage/documents/iheartpublicservice.pdf)).
- ◆ Upload your photo to Facebook, Twitter and/or Instagram using the following hashtags: #Proud2ServeUSA #PSRW #NIH. The #NIH hashtag allows NIH to find our employees. This can be done during the week of May 4-10.
- ◆ Or send your photo to [NIHforJobs@od.nih.gov](mailto:NIHforJobs@od.nih.gov). Images will be posted on NIH social media outlets.

If you have questions about how your office might celebrate Public Service Recognition Week, contact Vickie Southers at [southersv@mail.nih.gov](mailto:southersv@mail.nih.gov). If you have questions about the I "Heart" Public Service campaign, contact Lillian Amaechi at [NIHforJobs@od.nih.gov](mailto:NIHforJobs@od.nih.gov).

**Feedback:** When leaving campus at Center Dr. and Old Georgetown Rd., the left lane allows for left or right turns. I have noticed an increase in the number of people in that lane who are turning right on red. Should right turns only be allowed when the light is green?

**Response from the Office of Research Services:** Yes. Per the NIH Police, a motorist has to be in the furthest right lane to turn on red. The next

lane to the left can only make right turns on a green light. The Montgomery County Police Department would be responsible for enforcement of any violations on Old Georgetown Rd.

**Feedback:** On Wilson Dr., just before the intersection of Wilson Dr. and Center Dr., there is a fancy electronic orientation board giving visitors information [about] which way to turn to find buildings they are looking for. One of the arrows points to the left but Bldgs. 2, 5 and 8 are not among numbers shown. Could you, please, explain why? I hope it is not because work in some buildings is considered more important than in others.

**Response from the Office of Research Facilities:** Determining which buildings to assign a permanent designation on the interior electronic signage was a difficult decision. We have over 100 buildings on the main campus. Listing them all would have been distracting, would slow down traffic and, paradoxically, reduce the chance anyone could read any building numbers because the tiny font necessary to fit all building numbers on the board would have rendered all numbers unreadable.

The ORF Division of Facilities Planning and a traffic consultant studied vehicle traffic and identified the most likely destinations for visitors entering via Wilson Dr. to determine which buildings would benefit most from the directory. This decision had absolutely nothing to do with the importance of the building, functions performed or what institute/center occupies a particular building.

**Feedback:** I'm a patient at the NIH and have been one since May 2004, being an outpatient since September 2004. On a recent trip to the NIH pharmacy to get a prescription, I had my 7-year-old daughter with me. I entered through South Dr. and tried to enter using my Extended Visitor badge. The security guard stopped me because my daughter was there. He asked me to go to the new non-commercial visitor's gate turning right and again right out of South Dr. I then had to go through that gate and my daughter had to walk through a metal detector and then get processed to get a badge. This took at least 15 minutes and I ended up having to go to the inpatient pharmacy since by then the outpatient pharmacy was closed. I understand the need for security given 9/11 and the threats against us, but surely there are ways to allow patients or employees to enter with their kids if it's obvious those kids are way too young to be a threat? This is a waste of not only my time, but also your security personnel's time and your money. Please understand that I owe my life to the NIH and this is in no way too much of an inconvenience for [the] future. It is however completely unnecessary in my view. Thanks.

**Response from ORS:** Recognizing the sensitive nature of screening children, NIH strives to administer a minimum amount of screening on a child (under 16 years of age). The screening of children is not a security matter, but rather a public safety issue. A visitor's badge provides NIH with a form of identification and a degree of protection for the child in the event a child becomes lost or separated from the parent/guardian while on campus.

It may be prudent for the outpatient to apply for an Extended (Patient) Visitor's badge for the patient's 7-year-old daughter, especially if she frequently accompanies the patient to NIH. Once the daughter possesses an Extended Visitor's Badge, she will not have to undergo physical screening. The patient's doctor may sponsor the daughter as a patient visitor.

## Biophysicist Ha Eavesdrops on Single Molecular Conversations

What you want, when you attend a lecture by a biophysicist, is the leavening effect of humor, especially when the crucial tool under discussion is FRET, or fluorescence resonance energy transfer. Dr. Taekjip Ha's Wednesday Afternoon Lecture on Apr. 9 met that requirement and then some.

Ha, an HHMI investigator and professor in the department of biophysics and chemical biology at the University of Illinois at Urbana-Champaign, is a pioneer in the field of single-molecule dynamics and single-molecule FRET. His lab has recently developed a tool that enables direct visualization of individual cellular protein complexes.

His list of "firsts" in experimental biological physics, available in a handout outside Masur Auditorium, had members of the audience remarking about his achievements before he began speaking: first detection of FRET between two single molecules; first observation of "quantum jumps" of single molecules at room temperature; first detection of the rotation of single molecules.

His other first, at least before an NIH audience, was illustrating DNA mismatch repair by showing a movie titled "The Power of Speed Dating," set to a pop tune by artist Coolio.

Ha, whose postdoctoral advisor at Stanford University was Nobel laureate Dr. Steven Chu, repeatedly used popular culture references to ground and illustrate his edge-cutting science.

He suggested that his interest in DNA repair is founded in harsh evidence. "The DNA in our body undergoes insults every day," he said. "All I have to do is look in the mirror every morning to realize I'm getting older."

Human DNA replenishes so relentlessly that, in a lifetime, Ha said, we make enough to stretch a distance equal to one light year.

A common form of DNA mismatch repair is known as homologous recombination. "If DNA could have sex, this would be it," Ha noted. When DNA repair can be illustrated by a short film showing lengths of DNA "finding a soul-mate," biophysics becomes more approachable.

Ha's metaphor for how DNA wraps around a protein core was custom-made for sports fans: "It's like the seams on a baseball or tennis ball."

His illustration of FRET technology itself became clearer when he set an animation of the process to Psy's internationally popular dance tune *Gangnam Style*.

And what else conveys the concept of optical trapping of single molecules better than a pair of chopsticks?

While it helps to know in advance what reputation is and what kymograms are (if for Scrabble points if nothing else), you can watch the full lecture at <http://videocast.nih.gov/summary.asp?Live=14054&bhcp=1>.

It may turn out that the stem of STEM education is Ha's gift of metaphor and affable sense of humor. When science reaches this far over the podium to be understood, it's bound to attract adherents.—**Rich McManus** 🗣️



Dr. Taekjip Ha spoke at NIH on Apr. 9.

## Merck Renews Commitment to Woodmont House

The Children's Inn at NIH on Apr. 17 announced a \$5 million contribution from the Merck Foundation to support and maintain programs and services at the inn's Woodmont House, a transitional home for patients who are participating in pediatric research at the Clinical Center.

Woodmont House is "A Place Like Home" for up to five families whose children are no longer in the acute phase of their illness but still require treatment. The grant is the foundation's second major gift to Woodmont House since the home, adjacent to the NIH campus on Battery Ln., opened in 2010.

The partnership with Merck began 25 years ago with its initial gift of \$3.7 million to build the inn. Merck's total giving now tops \$20 million.

"The inn and the Woodmont House would not exist today without Merck's support," said Kathy L. Russell, inn CEO. "With more than two decades of generous support of the Children's Inn, Merck and the Merck Foundation have built a legacy of philanthropy that has touched thousands of lives and will benefit many more seriously ill children and their families who will stay at the inn in the future."

