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The Second Best Thing About Payday

nih record

ABOVE • *NIGMS says farewell to director Dr. Jeremy Berg; see story on p. 6.*

features

departments

'Start Thinking a Level Up'

Lander Sends Out Clarion Call in 1st Nirenberg Lecture

By Carla Garnett

Attention, next-generation scientists. Dr. Eric Lander has issued you a challenge. In fact, he assigned you a few major projects during the inaugural Marshall Nirenberg Lecture held recently.

"We're not done," declared Lander, referring to work remaining in genome science. "It's time to start thinking a level up."

Been There, Done That?

Here's a question for you. How does DNA encode biology? If that query seems more fit for a history test, Lander said, then you haven't been paying attention to the latest in genome science.

The query recurred often in "From the 'Genetic Code' to the 'Genetic Code,'" the first lecture of what will be an annual scientific tribute to a genome visionary.

While conducting research at NIH in the 1960s, Nirenberg discovered the

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Dr. Eric Lander gives first Nirenberg Lecture.

Loneliness Good for Humanity, but Deadly

Cacioppo Lectures on 'Social Isolation And Health'

By Susan Johnson

"I'm so lonesome, I could cry," sang country star Hank Williams. Although he described the emotion of lonesomeness beautifully, he could not have realized that his feelings were tied up in biological processes that went far beyond crying. On June 2, the fifth Matilda White Riley Lecture in the Behavioral and Social Sciences featured Dr. John Cacioppo of the University of Chicago and honored him for his work characterizing the biological mechanisms and effects of loneliness.

Dr. John Cacioppo

Since 2006, the memorial lecture and award has recognized a researcher whose work

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'Historically Difficult Times'

Budget Concerns Voiced at Director's Advisory Committee

Difficult budget news for both the current and upcoming fiscal years cast a shadow over the 102nd meeting of the advisory committee to the NIH director (ACD) June 1-2.

"These are trying times...historically difficult times," said NIH director Dr. Francis Collins, who reported that NIH suffered a 1 percent budget cut in FY 2011, or $321 million, "which is more like 4.5 percent of our buying power." He said it was only the second time since 1971 that NIH's annual appropriation had been reduced. It was also the first time that across-the-board cuts were applied to NIH grants.

"The final numbers for FY 2012 are indeed sobering," he continued, "and a deep source of concern." Further complicating matters is that, for the first time anyone can recall, the House held no NIH appropriation hearing this spring. "That is sad, because we do have a story to tell," said Collins.

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briefs

Mackay To Lecture on Cancer Prevention

The 2011 annual Advances in Cancer Prevention Lecture will take place on Wednesday, July 27 from 3 to 4 p.m. in Lister Hill Auditorium, Bldg. 38A. Judith Mackay, senior advisor, World Lung Foundation/Bloomberg Initiative to Reduce Tobacco Use and director, Asian Consultancy on Tobacco Control, will speak on "Cancer Control: A Look at the Future."

Her interests include tobacco use in low-income countries, tobacco promotion aimed at women and challenging the transnational tobacco companies. She has received several awards for her work in the area of tobacco control, including the World Health Organization Commemorative Medal and the U.S. Surgeon General's Medallion. She was also selected by *Time* magazine as one of 60 Asian Heroes from the previous 60 years and in 2007 was selected as one of *Time's* 100 World's Most Influential People. Mackay regards it as a particular honor to have been identified by the tobacco industry as "one of the three most dangerous people in the world."

NIH Graduate & Professional School Fair

The Office of Intramural Training & Education invites summer interns and postbacs to participate in the NIH Graduate & Professional School Fair on Friday, July 22 at the Natcher Conference Center and Lister Hill Auditorium from 9 a.m. to 3:30 p.m.

The fair provides an opportunity for NIH summer interns (especially those in college) and postbacs, and college and university students from the Washington, D.C., area to prepare for the next step in their careers by exploring educational programs leading to the Ph.D., M.D., D.D.S., M.D./Ph.D. and other graduate and professional degrees. More than 100 outstanding colleges and universities will be sending representatives of their graduate schools, medical and dental schools, schools of public health and other biomedically relevant programs to the fair in hopes of recruiting NIH trainees.

The day will also include workshops on making successful transitions and interviewing, plus panels on getting to graduate and professional school and careers in public health, pharmacy and psychology. A group of Medical Scientist Training Program directors will discuss M.D./Ph.D. programs. Exhibits will be open from 9:30 a.m. to 3:30 p.m. Workshops will be spread throughout the day.

A list of participating institutions planning to attend and registration information can be found at www.training.nih.gov/gp_fair.

Presidential Management Fellows Join NIH

Hiring young talent is important, especially as more federal employees become retirement-eligible. Each spring, NIH uses the presidential management fellows (PMF) program to hire and develop people who OPM has assessed as having excellent skills to succeed in government.

This year's recruitment has been exceptional. NIH has hired 11 PMF finalists for the class beginning on Aug. 1.

NIH attributes its success to a new approach. Through coordination and planning, a unique "One NIH" recruitment strategy was created by members of the administration training committee, the NIH Training Center and the Office of Human Resources. This provided a streamlined strategy for the six institutes and centers interested in hiring PMFs.

The strategy involved reviewing 857 PMF finalist resumés, creating marketing materials, hosting an all-day hiring event and consolidating responsibility for all PMF human resources actions under the global recruitment unit in the Office of Human Resources.

"Our 'One NIH' recruitment strategy was designed to foster communication and coordination across all of the ICs and to streamline processes to help the NIH identify the highest caliber PMF candidate pool and improve the PMF finalists' understanding of the NIH and the PMF program," said Denise Fioravante, chair of the NIH PMF subcommittee.

Lauren Gavin, one of five PMF finalists hired for the at-large program, said the "One NIH" recruitment strategy made NIH stand out among other agencies.

"NIH really impressed me with how much effort they put into PMF recruiting," she said. "The more I learned about the PMF program at NIH, the more I knew I wanted to be a part of it. While other agencies look to the PMF program to simply fill job openings, NIH creates an enhanced experience designed to truly develop future leaders."

While "One NIH" recruitment efforts have ended, the work continues as the PMF subcommittee and current PMFs prepare an orientation for the incoming class.

Treating Mom's Depression Improves Behavior in Youth

By Jan Ehrman

Attention, mothers—the best prescription for your child may be a dose of your good emotional health, according to a study supported in part by the National Institute of Mental Health.

The importance of a strong emotional bond between mother and child has been well documented. Bonding not only provides compassion and security for children, but may also dictate the course of future childhood events—for example, how they do in school, how youth interact with others and even how efficiently adolescents make the transition to adulthood, some experts maintain.

Dr. Myrna Weissman

However, bonding doesn't always come easy, especially for depressed mothers, who often have difficulty fully connecting with their child. And depression is not uncommon in women; it occurs in nearly one in four females during their adult life and is 70 percent more prevalent in women than men, according to NIMH. The institute further adds that the condition is the third leading cause of disease burden in the world, contributing to a variety of causes of mortality (e.g., suicide, heart disease, etc).

Effects of the disorder harm not only the individual; overwhelming evidence indicates that maternal depressive disorders heighten the risk for mental health problems such as depression, anxiety and stress in children—health issues that could become chronic. Could alleviation of mom's depression help clear up psychiatric symptoms affecting her child?

This theory was investigated by a team of researchers led by Dr. Myrna Weissman and colleagues at Columbia University and the New York State Psychiatric Institute. Writing in the Mar. 31 issue of the *American Journal of Psychiatry*, the researchers assessed children of mothers who were receiving treatment for depression. In the STAR*D Child Study, an observational protocol (youth were not treated by the researchers), children of depressed mothers were evaluated at different time intervals for up to a year to determine rates of depression, anxiety and conduct disorders. Researchers sought to determine whether an association exists between children's behavioral improvement and that of their mothers, and if so, what the time elements related to the improvement were. At baseline evaluation, 151 mother/child pairs were assessed. Children were between ages 7 and 17.

"One thing that was clearly demonstrated in our work was that as the parents got better, the kids got better—whether the issue was childhood depression, anxiety or conduct disorder. More specifically, what really stood out was that the quicker the mother's depression resolved, the more rapidly the child's psychiatric symptoms improved," said Weissman. On the other hand, children whose mothers showed no abatement in their depression not only did not improve, their problem behaviors worsened over time, she added.

Weissman said she was surprised not so much at the link between a mother's depression and her child's behavior, but by just how strong the association of improvement was between the two. Meanwhile she notes the impact depression has on family members.

"We have always argued that depression is a biological illness that is triggered by stress. Think about it, it makes sense: What could be more stressful to a child than a depressed parent?" Weissman asked.

She emphasized the take-home message for despondent mothers. "If you are depressed, get treatment to relieve your symptoms. If one treatment doesn't work, try another," she advises. "It will help both you and your family."

Her future research will pursue similar avenues, including determining whether the same association exists between a father's emotional state and a child's behavioral symptoms—and whether successful treatment for dad would confer similar benefits for the child. One of the challenges will be to find male participants in treatment for depression, Weissman explained, as many men do not seek therapy for the condition.

R&W Salutes Don Bosco Cristo Rey Class of 2011

For the past 4 years, the NIH Recreation & Welfare Association has participated in a program with Don Bosco Cristo Rey High School in Takoma Park, Md. As a part of the program, students go to school 4 days a week and spend 1 day a week in the workplace of one of the school's sponsor companies. Students come from low-income families and will be the first members of their families to attend college. Over the 4 years, R&W has had 11 students from the school assist in the Bldg. 31 store and office. Recently, the school graduated its first class and three of the students—Kiana Lord, Travon Munson and Logan Wallace—were a part of R&W. Wallace (above, c) spent all four high school years assisting at R&W. R&W staffers (from l) Linda Anderson, David Browne, Maryam Boostani, Kallie Wasserman, Hewan Belay and Randy Schools congratulate the Class of 2011 and await more students this fall.

CACIOPPO

CONTINUED FROM PAGE 1

Cacioppo (l) accepts the Matilda White Riley Lecture Award from Dr. Robert Kaplan, director of NIH's Office of Behavioral and Social Sciences Research.

PHOTOS: ERNIE BRANSON

reflects the commitments of Dr. Riley (1911–2004), former associate director for behavioral and social research at the National Institute on Aging. She was "the most important and influential person in gaining recognition for the behavioral and social sciences at NIH," said Dr. Robert Kaplan, director of the Office of Behavioral and Social Sciences Research, which sponsors the event.

Cacioppo's work examines the biological context of the extended social structures that are characteristic of the human species, with a focus on perceived social isolation, or loneliness. His research integrates many levels of inquiry, from genetics to psychology to epidemiology. He described how loneliness has a comprehensive set of negative health effects if it persists over time.

Loneliness over the long term can lead to depression, for example. In addition, loneliness that lasts at least 3 years also conveys cardiovascular dangers, he discovered. A study of Chicagoans found that the average blood pressure of the least lonely people was 0.6 mm/Hg lower than others'. "This is equal to the effect of statins," the cholesterol-lowering prescription medication, said Cacioppo.

Cacioppo's work with his colleagues has uncovered some of the ways that people's bodies respond to perceived social isolation by preparing them for life without contact with others. For example, they found that people who felt lonely had more "microawakenings" throughout the night. In contrast, sleep is sound in the communal Hutterite society, which has an "overall loneliness lower than any other population in the world that we've measured," Cacioppo said.

"If it's hard to survive standing alone with a stick in your hand to defend against wild beasts, think how much more dangerous it is to lay that stick down at night to get some sleep when predators are out and you don't have safe social surroundings," said Cacioppo.

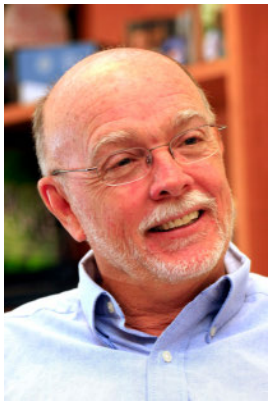
His team's research has also demonstrated that there are about 200 changes in gene expression in people who are very lonely. Some of these are involved in the stress response and others are part of the immune system. These immune changes strengthen the body's response to bacteria, which are present throughout the environment, while sacrificing immunity to viruses, which are primarily spread from person to person.

Loneliness isn't all bad, Cacioppo emphasized. In fact, feeling lonely is an important trigger that encourages our species to stay in groups, which is our best bet for our own and our children's survival. Loneliness can feel awful so we seek to reduce that unpleasant feeling by reconnecting with our group.

Cacioppo said that our species needs to have some people who don't get lonely easily. "We need explorers who are going to go over that next hill, like Lewis and Clark," he said. Humanity needs loneliness-prone people, too, who will stay at home with their families and protect the group against threats while the explorers are away.

Cacioppo is the Tiffany and Margaret Blake distinguished service professor at the University of Chicago and director of the university's Center for Cognitive and Social Neuroscience. He and his colleagues are now working with the U.S. Army on interventions for soldiers' loneliness.

"If we succeed," he said, "we'll translate the intervention into older adults," who can bear a heavy burden of loneliness and its consequences. "That's our ultimate goal."



Suk Honored by Combustion Emissions Group

NIEHS Superfund Research Program founder and director Dr. Bill Suk was recognized by colleagues with the Adel Sarofim Award for Excellence in Combustion Research. He received the award at the 12th International Congress on Combustion By-Products and Their Health Effects held recently at Zhejiang University in Hanzhou, China. The award praised Suk for "outstanding professional achievement in championing research on the origin, fate and health effects of combustion emissions."

PHOTO: STEVE MCCAW

The Clinical Center's Dr. Harvey Alter participates in the recent workshop on chronic fatigue syndrome.

Experts Probe Challenges of Chronic Fatigue Syndrome

NIH recently convened a workshop on myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) research on campus. About 75 percent of individuals with this disease recall a dramatic and abrupt change in their health status following a viral-type illness. After feeling fine one day, they wake up the next unable to move, sensitive to loud noises, dizzy when standing and suffer severe headaches. They can't sleep, have muscle aches, report foggy brains and suffer a debilitating, ongoing and relentless fatigue akin to that experienced with cancer or flu.

However, as is the case with many complex, chronic diseases, a lack of consensus on a case definition and heterogeneity in the patient population is deterring accurate identification of ME/CFS. Diagnosis can take years while symptoms typically devastate the lives of patients and their loved ones. No cure exists for ME/CFS, which is found in about two to four times as many women than men and affects roughly 1 million to 4 million people of all ages, races and ethnic groups in the U.S.

To the frustration of patients and public health officials, the causes of ME/CFS have eluded investigators for more than 35 years. Several virologists highlighted the controversy on the potential association of a retrovirus, XMRV, with ME/CFS, and presented data on the possible role of enteroviruses or herpes viruses in the etiology of the disease. Without known causes, research on ME/CFS has mainly focused on the pathophysiology of the ailment related to immune and neuroendocrine dysfunctions.

Participants at the workshop learned how new systems biology approaches are revealing striking similarities and differences among ME/CFS patients. Still, treatment for these patients is limited to symptom management until a better understanding of the causes is determined.

NLM Holds First Disaster Information Symposium

More than 200 people from 29 states recently attended a first-of-its kind event at the National Library of Medicine—a Disaster Information Outreach Symposium. It highlighted the fast-changing role of librarians and information professionals in providing guidance and resources in emergency and disaster management situations, a role that increasingly is being shaped by rapid advances in mobile technology.

Dr. Nicole Lurie
PHOTO: MICHAEL SPENCER

More than 20 speakers from federal and state government, the military, academia, hospital and university libraries and volunteer organizations discussed their experiences and presented research on a variety of topics ranging from the role of social media in disaster response, the information needs of emergency responders in disasters and public health emergencies, using library facilities and resources and the role of librarians in disaster preparedness, response and recovery.

The symposium was organized by NLM's Disaster Information Management Research Center (DIMRC), established in 2008 to provide critical information resources and tools for disaster preparedness, response and recovery. "The symposium gave information professionals active in disaster information a unique opportunity to present their research, projects and expectations for next steps to their peers," said symposium chair Cindy Love, a medical librarian with DIMRC.

HHS assistant secretary for preparedness and response Dr. Nicole Lurie gave the keynote address. She expressed appreciation for the "time, energy and focus" NLM gives to disaster preparedness and response, and stressed the need for quality information. "In public health decision-making, what we do has to be grounded in the best available science and best available evidence," she said. "The more information that can be in front of me and at my disposal when I make decisions, the better I think we do in preparedness and response."

Attendees said they appreciated the diverse agenda and the opportunity to learn from people who've been on the front lines during disasters. For example, Laura Howe of the American Red Cross talked about the use of social media during disasters. Dr. David Yates, an assistant professor in the College of Information Studies at the University of Maryland and a member of the U.S. Air Force Reserve, talked about his experience handling information and communications in an operations center at the Pentagon after the Haiti earthquake. Diane Brown, deputy state librarian at the State Library of Louisiana, who lived through both Hurricane Katrina and Hurricane Rita in 2005 and was deeply involved in the recovery efforts afterward, discussed using library facilities and resources for response and recovery.

Dolores Judkins, who heads instruction, research and outreach at Oregon Health & Science University Library, said her take-away message from the symposium was to connect with emergency responder groups in the community to let them know libraries are a resource and aren't just about books.

"We can't just sit in a library and expect people to come to us," she said. "We have to go out and let people know what we can do for them."—**Thomas Conuel, Shana Potash**

milestones

NIGMS Director Berg Departs, Leaves Legacy

By Alisa Zapp Machalek

When Dr. Jeremy Berg accepted the directorship of NIGMS in 2003, he admits he had a lot to learn about what the staff did. Now, as he prepares to leave, he says they're what he'll miss most.

Berg is leaving for the University of Pittsburgh. He will be Pitt's first associate senior vice chancellor for science strategy and planning in the health sciences.

NIGMS director Dr. Jeremy Berg at his farewell party

PHOTO: LIZ BOURAS

Before coming to NIH, he was director of the Institute for Basic Biomedical Sciences and professor and director of the department of biophysics and biophysical chemistry at Johns Hopkins University School of Medicine. These posts revealed his ability to achieve his goal of making positive, productive changes to large organizations.

Berg made many positive changes at NIGMS. He developed a new grant mechanism to support paradigm-shifting ideas, increased support for new investigators, developed the institute's first formal strategic plan and its first strategic plan for training, launched the institute's first phase III clinical trials, led the Protein Structure Initiative into a new phase, oversaw assessments of large-scale and other programs and created an online conversation with the scientific community through an outlet he named the NIGMS Feedback Loop.

Now popular with scientists, the Feedback Loop launched in 2005 as an e-newsletter to alert grantees and applicants about funding opportunities, meetings and resources. It morphed into a blog 2 years ago, becoming a near-real-time, interactive exchange with the community and covering issues such as peer review, workforce diversity and funding trends.

Scientists responded with what Berg calls "a resounding thank you" when the Feedback Loop published its first funding curve. Readership skyrocketed when he started posting his own data analyses. He earned the nickname "blogger-in-chief," and scientific journals started covering his posts.

Scientific societies also recognized his work. In 2009, he won the Distinguished Service Award from the Biophysical Society. In 2010, he was elected to the Institute of Medicine. In 2011, he won public service awards from both the American Chemical Society and the American Society for Biochemistry and Molecular Biology (ASBMB). Most recently, he was elected to be the next president of ASBMB.

Natural Leader and Team Player

Berg is not a micro-manager. He describes his approach as "finding good people and letting them do their jobs."

His leadership style was a perfect fit for NIGMS, says Dr. Judith Greenberg, who will serve as acting director of the institute until a new director is hired.

"Jeremy's straightforward style and approachability encouraged people to rise to new challenges and fostered the collegial spirit that NIGMS has long been known for," she said.

Berg himself embodied that spirit. He had an open-door policy and made a point of visiting staff in their offices to share information. Each year, he ran in the NIH interinstitute relay race, brought at least one of his children to Take Your Child to Work Day and enthusiastically participated in other quality of work life events.

Change Agent

A frequent catalyst for change, Berg pointed out in 2004 that adjustments were needed in the new NIH Director's Pioneer Award program: The first group of recipients included many of "the usual suspects"—and no women. He was promptly given responsibility for the program.

The following year, six of the 13 awardees were women. Also, in contrast to the inaugural crop, more than half were relatively junior (at the associate professor level or below). In subsequent years, these trends continued and the awardee pool also became more racially and ethnically diverse.

In 2007, Berg was asked to create and manage a similar program targeted to early stage investigators, the NIH Director's New Innovator Award.

He also championed an NIGMS-led effort to tackle the challenge of how to encourage and fund truly out-of-the-box thinking—the sort of

paradigm-shifting ideas that the research community clamors for, but that may not do well in traditional peer review.

Berg also played a leading role in a number of trans-NIH efforts, including the peer review overhaul, efforts to enhance minority training programs and encourage women in scientific careers and working groups in bioinformatics, computational biology and structural biology.

A New Chapter

As Berg moves to Pitt, he will join his wife, Dr. Wendie Berg, an expert in breast imaging who became a professor in Pitt's radiology department in March 2011.

"The time I have spent at NIH has been a highlight of my career," said Berg. "I had no intention of leaving NIGMS at this point, but am doing so in support of the career of my wife."

After Mrs. Berg was recruited by many institutions around the country, the couple considered a range of scenarios before making their final decision. In the end, said Jeremy, "the University of Pittsburgh offered tremendous opportunities for each of us."

Despite his skill as an administrator, Berg is a scientist at heart (he calls himself a "data guy" and clearly relished doing data analyses for the Feedback Loop). While serving as NIGMS director, he maintained a lab in the NIDDK intramural program. At Pitt, he will continue his research—and return to teaching, which he looks forward to—as a faculty member in the department of computational and systems biology at the university's medical school.

As he leaves, NIGMS is facing a number of transitions. In addition to anticipating a new director, it is planning to absorb some NCRR staff and programs. It's also engaged in implementing the training strategic plan and preparing to mark its 50th anniversary in 2012. To Berg, this environment resembles the one that initially drew him to NIH.

"The budget-doubling period had just ended and no one knew what would happen next," he recalled. "It was clear the institute needed strong leadership to guide it into a new phase. I was up for the challenge and felt it was a good opportunity to give back."

Berg hopes to continue to contribute to NIH in his new position, working from the outside to convey the needs of the scientific community and help address them.

Spittel Joins OBSSR

Dr. Michael L. Spittel recently joined the Office of Behavioral and Social Sciences Research as a health scientist administrator.

Previously a program officer in the NICHD Demographic and Behavior Sciences Branch, he brings a wealth of experience in population health to OBSSR. His focus is population studies on mortality and morbidity; infant and child health; novel biomarkers and genetics in social studies; statistical methods and computational advances in demography; and health disparities.

As a program officer, Spittel managed and led a scientific portfolio of research grants, program projects, institutional training grants, international training, fellowships, contracts and various career awards.

In addition he served as the program officer/scientist for the National Longitudinal Study of Adolescent Health, Data Sharing for Demographic Research, Community Child Health Network and co-managed the DBSB training program that supports pre- and postdoctoral researchers in demography.

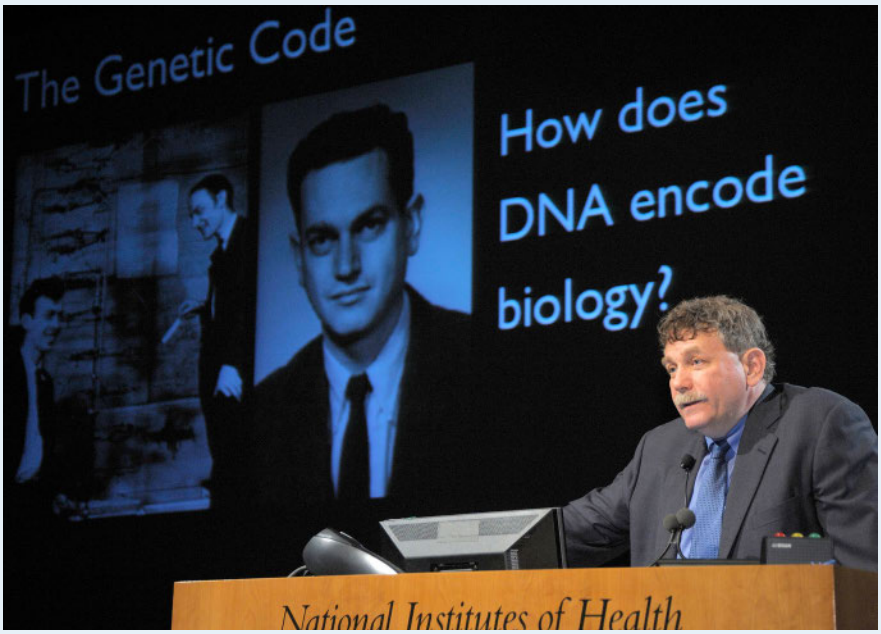
Spittel received his master's degree and Ph.D. in sociology from the University of Wisconsin. His scientific interests and publications include the early antecedents to health disparities, networks and neighborhood effects, infant mortality/low birth weight, immigration and innovative statistical/computational methodologies.

Before joining NIH, Spittel was a postdoctoral fellow in the mortality statistics branch of the division of vital statistics at the National Center for Health Statistics. He is interested in integrating cutting-edge social science methods and approaches in an effort to advance population and behavioral health.

"The explosive growth in genetics/biological information and novel computational/statistical methodologies provides a wealth of opportunity for new avenues in the behavioral and social sciences," he said.

Hazen Joins CIT as Executive Officer

Stephen Hazen was recently appointed executive officer of the Center for Information Technology. He served in NCI extramural management since 1991, most recently as director of the Office of Extramural Finance and Information Analysis. "CIT is completely different from anything I've ever done before," he said. "There are no grants and no appropriations. The biggest thing that strikes me is that CIT acts as the centerpiece, linking everyone at NIH together. If you are online, you are using CIT." Hazen enjoyed a preview of working with CIT while transitioning the CFC campaign, which he led for NCI in 2008, to CIT leadership the following year. Earlier in his NIH career, he held positions as budget analyst, program analyst and administrative officer at NCI and NLM.



With Nirenberg's legacy as a backdrop, Lander says, "We're going to have to take the same kinds of approaches that led from Marshall Nirenberg through the Human Genome Project to this exciting decade of work in many labs from students all over the world. We're going to need to bring that same attitude toward therapeutic science."

PHOTOS: BILL BRANSON

LANDER

CONTINUED FROM PAGE 1

genetic code, how DNA fundamentally works. The revelation is one of biology's transformational breakthroughs. Following a lifetime of unparalleled scientific achievement, Nirenberg, the first NIH intramural scientist to win the Nobel Prize, died in January 2010.

"We have better and better answers," to the DNA question today, Lander explained. "Marshall Nirenberg gave us the first answer…He told us what the codons were and what they did. The Human Genome Project was another answer. All these other things—gene maps, variation maps, epigenomic maps, the [evolutionary] conservation maps—they were answers…[But] we're not done…There's a whole full-court press that has to be applied" to identify all of the genes involved in cancer, for example, or all of the genes important in inherited disorders.

"It's time to start thinking a level up," Lander continued. "What are all the circuits? It's time for a project to find all the circuits in cells. I know. It sounds scary, but it's a finite number."

In Search of the Next Nirenberg

Lander, president and director of the Broad Institute of Harvard and MIT, co-chairs (with White House Office of Science and Technology Policy director Dr. John Holdren) President Obama's Council of Advisors on Science and Technology.

Trained as a mathematician, the molecular biologist and geneticist is also a close friend and advisor to NIH director Dr. Francis Collins, who introduced Lander at the lecture as a "leading intellect of the human genome enterprise" as well as a "formidable negotiator."

Lander said he was honored to be chosen as the first NIH Nirenberg guest lecturer. He wove several science history lessons into his talk, urging next-generation scientists to adopt the "same attitude as Nirenberg."

Earlier, Lander had retold reminiscences from several of Nirenberg's colleagues—most notably former NIH'er and former Merck president Ed Scolnick. They often refer fondly to that 1960s era when they felt a "tremendous joy of doing science."

Don't we feel that same sentiment now? Lander asked.

"Lots [of innovations are] possible because of the explosion of technology," he said. "The mind is the rate-limiting thing. It's an amazing time… like Nirenberg's time."

A Great Deal Left to Discover

Lander recalled that Nobelist Renato Dulbecco called in the 1980s for a "Human Genome Project premised on the idea that we'd need it for cancer. It was one of multiple influential calls."

When the HGP started in 1990, scientists knew of 12 genes that played important roles in solid tumors. By 2000, the number had grown to 80. At last year's count, the number was already up to 240.

"It is simply not the case that we know most of the genes that are important in cancer," Lander said. However, he noted, NCI and NHGRI undertook the Cancer Genome Atlas Project in 2006 to find out.

"I believe it's beginning to be time for this next generation to start saying how they're going to build a complete catalog of circuitry that emerges from DNA," he suggested.

Catch an Attitude

In throwing down the gauntlet to future Nirenberg-like visionaries, Lander also put public sector science institutions on alert. Their leadership on seemingly impossible—and undoubtedly expensive—scientific dreams is crucial.

Producing potential cures and treatments—in effect, providing more answers to the question of how biology reads the codes of disease—will require the same creativity, courage and fortitude shown by Nirenberg and colleagues of his era.

"We're only going to get this done with translational science," Lander said. "We're going to have to take the same kinds of approaches that led from Marshall Nirenberg through the Human Genome Project to this exciting decade

of work in many labs from students all over the world. We're going to need to bring that same attitude toward therapeutic science."

The Purpose of a Public Sector

In conclusion, Lander seemed to speak directly to those who would foist off such big, expensive projects to another research community.

"We can't ask it of the pharmaceutical folks," he concluded. "We can't say to the pharmaceutical industry, 'In addition to having to produce drugs, serve your shareholders at a very difficult time, why don't you also invent lots of new ways to do this? Why don't you also invent totally new kinds of chemistry, new kinds of assays, new kinds of ways to do medicinal chemistry to improve things and totally take on undruggable targets?'

"No. That is why we have a public sector. That is why we have academia...to take on hard fundamental problems and bring novel solutions. We're going to need the same approach that has been so successful in the last quarter century brought to therapeutic sciences."

Rider Honored by PHS Medical Officers

NIEHS clinical researcher Capt. Lisa Rider was named 2011 Physician Researcher of the Year by the physicians professional advisory committee of the Public Health Service; the committee represents the nearly 900 medical officers in the more than 6,000-member Corps. Rider, who is deputy chief of the NIEHS environmental autoimmunity group, was honored for her groundbreaking research in the area of a mysterious and debilitating autoimmune disease among children, a condition thought to be triggered by environmental exposures and genetic polymorphisms. "[This award is] presented in recognition of her noteworthy basic and clinical research into juvenile dermatomyositis," read the citation on her plaque.

NEI director Dr. Paul Sieving (second from l) meets with organizers of the NEI/FDA Use of Functional Vision Endpoints in Visual Prostheses Development symposium. They are (from l) Dr. Frederick Ferris, NEI clinical director; Dr. Malvina Eydelman, Center for Devices and Radiological Health, FDA; Dr. Neil Bressler, Wilmer Eye Institute/Johns Hopkins School of Medicine; and Rhonda Williams of the Association for Research in Vision and Ophthalmology.

NEI, FDA Work Together on Clinical Trials

The National Eye Institute and the Food and Drug Administration sponsored a recent symposium to examine functional vision outcomes and how they are used in retinal prosthesis clinical trials. NEI supports several projects to develop a retinal prosthesis capable of restoring functional vision to those who are blind from various retinal diseases. A growing body of evidence suggests that functional vision data may provide a better understanding of the practical utility of visual prostheses, beyond the data obtained from standard tests of visual acuity.

Government, academic and industry researchers discussed techniques for measuring performance on real-world tasks such as orientation and mobility and activities of daily living and the challenges of ensuring the reliability and validity of the measurements. The information will be used to refine FDA's draft guidance document for visual prosthesis clinical trials.

The meeting was organized by the Association for Research in Vision and Ophthalmology. It was the fourth in a series of NEI/FDA symposia that explore the issues and challenges of determining clinical trial endpoints and how they are used for the investigation and labeling of medical devices and drugs.

ACD

CONTINUED FROM PAGE 1

***Above, from l**:*
NIH director Dr. Francis Collins

Dr. Shirley Tilghman, president of Princeton University, cochairs a working group on the biomedical workforce. Next to her is Dr. Thomas Kelly, director of the Sloan-Kettering Institute, who was attending his final ACD meeting. "Tom has been an incredibly important visionary and advisor to NIH," said Collins. "Thanks for your tireless commitment to the NIH."

Dr. Reed Tuckson, executive vice president and chief of medical affairs, United Health Group, said ACD members could be helpful to NIH by spreading a common message about NIH's benefits not only to health, but also to the economy.

***Right**:*
Pat White, director of NIH's Office of Legislative Policy and Analysis, talked about NIH's relations with Capitol Hill.

PHOTOS: BILL BRANSON

"This is a very uncertain time," Collins added. "The FY 12 budget is tied up with what's going on with the debt ceiling." While the President's request for NIH is expected to be a 3.5 percent increase for NIH, which would keep pace with inflation, Collins said it will be tough to get congressional approval. Current House budget tables call for a 12 percent reduction in the Labor, HHS, education appropriation, which would roll the agency's budget back to the level of 2004.

The director of NIH's Office of Legislative Policy and Analysis, Pat White, told the group that one-fifth of the House members are freshmen, some of whom are not at all familiar with NIH. White said NIH has begun an education effort to bring legislators up to speed about NIH's benefits to the nation's health, economy and global competitiveness. "It's not possible to do too much" in this area, said Collins.

Normally a one-day meeting, the ACD was extended to a second half day due to a heavy agenda that included:

- An update on the proposed National Center for Advancing Translational Sciences (NCATS) by Dr. Kathy Hudson, NIH deputy director for science, outreach and policy. She said NCATS would be an enabler, not a doer, of drug development and that the center will improve the processes of therapeutics development and implementation. The NCATS budget of $722 million went to the Hill on June 6; NIH's goal is to inaugurate the center on Oct. 1. A search is now under way for a director, whose attributes were said to include "walking on water" and a passion to change the world.

- Princeton University president Dr. Shirley Tilghman reported on the mission of the ACD biomedical workforce working group, which is examining the nation's post-college training needs. "Even without the current budget crisis, we would have needed this study," she said. "Growth in the biomedical research enterprise is not likely to happen." She cautioned, "This is not a study to look at the pipeline for well-baby doctors. The emphasis is research." The group will rely heavily on economic modeling and forecasting, she said.

- NIH principal deputy director Dr. Lawrence Tabak reported on the SUAA (substance use, abuse and addiction) task force, which is crafting the proposed merger of the National Institute on Alcohol Abuse and Alcoholism with the National Institute on Drug Abuse. The group has achieved a "placeholder" name—National Institute of Substance Abuse and Addiction Disorders—and is in the process of completing portfolio analysis and a scientific strategic plan. The name "SUAA," Tabak said, "elicited universal negative response."

digest

NIH Researchers Slow Immune Attack on Ovaries in Mice

In a study of mice, researchers have slowed an immune system attack on the ovaries. The mice developed a disorder resembling primary ovarian insufficiency (POI), a menopause-like condition that affects women under the age of 40, sometimes years or even decades before normal menopause. The study was conducted by scientists at NIH and the University of California, San Francisco.

Some cases of POI appear to result from an autoimmune response—an immune system attack on the body's own tissues. In their mouse study, the researchers nearly halted the immune assault. They believe they were able to do this by teaching the animals' immune systems to recognize that the ovarian protein is a part of the body's own tissues.

The study results may one day lead to a way to identify women with a high probability for developing autoimmune POI early, perhaps in time to explore fertility-sparing options such as frozen embryo storage or freezing unfertilized eggs. POI affects about 1 percent of women under the age of 40 in the United States, according to the authors.

The findings appeared online in *Endocrinology*.

Difficulty Estimating Quantity Linked to Math Learning Disability

Researchers funded by NIH have discovered that the innate ability to estimate quantities is impaired in children who have a math learning disability. The study was published in *Child Development*.

The link between difficulty estimating quantities and math difficulties was seen only in children who had a math learning disability and not in those who did poorly in math but were not considered to be learning disabled.

"The findings suggest that students may struggle with math for very different reasons," said Dr. Kathy Mann Koepke, director of the Mathematics and Science Cognition and Learning program at NICHD, which funded the study. "Research to identify these reasons may lead to new ways of identifying those at risk and developing the means to help them."

Math learning disability is also referred to as dyscalculia.

Researchers funded by NIH have discovered that the innate ability to estimate quantities is impaired in children who have a math learning disability.

NIH Researchers Identify New Marker to Predict Progressive Kidney Failure, Death

A high level of a hormone that regulates phosphate is associated with an increased risk of kidney failure and death among chronic kidney disease (CKD) patients, according to a recent study led by researchers at the University of Miami and funded by the National Institute of Diabetes and Digestive and Kidney Diseases. Results appeared in the June 15 issue of the *Journal of the American Medical Association*.

In a previous study of patients beginning hemodialysis for treatment of kidney failure, individuals with elevated blood levels of the hormone fibroblast growth factor 23 (FGF23) were found to be at nearly 6 times greater risk of death compared to those with lower levels. However, the hormone had not been tested in the much larger population of patients with less advanced CKD. Researchers now report that patients with earlier stage kidney disease and high FGF23 are at nearly 2 times higher risk of kidney failure if their baseline estimated glomerular filtration rate (eGFR) is 45 milliliters or higher, while all CKD patients are at 3 times higher risk of death compared to patients with lower levels of the hormone. The eGFR is a measure of kidney function.

Senior study author Dr. Myles Wolf at the University of Miami believes this discovery could lead to earlier diagnosis and treatment of phosphate problems. Treatment typically consists of dietary phosphate restriction and phosphate binders—medications that work like a sponge to soak up phosphate in the gut.

Key Step Identified in Legionnaire's Disease Infection Process

NIH researchers have uncovered a key step in the biochemical sequence the bacterium that causes Legionnaire's disease uses to reproduce inside the cells it infects.

The bacterium is known to activate a cell protein to help it hide from the cell's defenses while it reproduces. In the current study, the researchers have discovered how the bacterium switches off the protein so that its offspring can leave the cell and begin the infection process anew. The finding may one day lead to new ways to treat Legionnaire's disease and diseases caused by related bacteria. The study was published online in *Science Express*.

'Marriage of Basic Science…Application'

NINDS Hosts Nonprofits at Forum to Advance Partnerships in Therapeutics

By Shannon E. Garnett

Representatives from 60 nonprofit organizations across the country recently joined NINDS at its fifth nonprofit forum, "Partnering to Advance Therapeutics for Neurological Disorders." The meeting gave patient advocacy groups an opportunity to learn from each other and about NIH and NINDS, provided them with an environment to share interests and allowed them to interact directly with program staff.

NINDS director Dr. Story Landis opened with "NIH 101: What It Is and Isn't and How Council Works," an overview that covered NIH's mission and makeup, NINDS funding basics and a brief description of the NIH Blueprint for Neuroscience Research.

"Basic scientists think NIH is about enabling them to discover exciting new facts about how the brain works and how the heart works, and people interested in diseases think NIH is about learning about how to treat diseases," she explained. "But it's the marriage of that basic science and the application of that basic science that makes NIH unique."

'Take Off Your Disease Hat'

Dr. Vicky Whittemore, former vice president and chief scientific officer of the Tuberous Sclerosis Alliance, spoke on the importance of serving on the institute's advisory council. "As a council member, you learn quickly to take off your disease hat. You are not there to push your disease or interest," said Whittemore, who just ended a council term. "Your voice is heard just as much as the clinician or clinician-scientist sitting at the table with you."

Participants discussed the proposed National Center for Advancing Translational Sciences (NCATS)—the new NIH component scheduled to open later this year. Amy Rick, chief executive officer of the Parkinson's Action Network, provided a nonprofit group's perspective. "We support NCATS because it is a smart way to address some of the significant issues that affect translational research."

Four parallel breakout sessions dealt with peer review and priority setting, translational and preclinical science, resources for patient registries and recruitment and clinical research. Session spokespersons reported back to the larger group and gave brief accounts of key lessons— how to set up a patient registry, what three things NINDS looks for in a grant, the importance of establishing partnerships and how to use a natural history study to build a clinical trial.

During lunch, small networking groups were divided among six topics: Rare Disease Network, Multisystem Diseases, the Benefits of Building Nonprofit Alliances, Nuts and Bolts of Establishing a Nonprofit Agency/Selecting a Scientific Advisory Board, Public-Private Partnerships and Working with FDA. Representatives could talk directly with staff who oversee NINDS research portfolios as well as with patient advocacy colleagues, and other NIH and FDA staff.

At left, NINDS director Dr. Story Landis (l) and Dr. Vicky Whittemore of the Tuberous Sclerosis Alliance discuss "NIH 101." At right, Dr. Nancy Wexler (standing) of the Hereditary Disease Foundation participates in the nonprofit forum. Below, lunchtime networking sessions give group representatives a chance to talk with NINDS program staff.

PHOTOS: ERNIE BRANSON

Collaboration Equals Success

The afternoon looked at case histories, highlighting three groups' accomplishments, experiences and knowledge and showing how collaboration with NIH, other HHS agencies, industry and Congress could lead to successful outcomes.

Dr. Anne Rutkowski, chair of Cure CMD, discussed her group's achievements in growing from a small group of only three volunteers to developing natural history studies, outcome measures and a patient registry—all on a "shoestring" budget.

Friedreich's Ataxia Research Alliance (FARA) President Ronald Bartek and Executive Director Jennifer Farmer spoke on the necessity of partnering with the information technology and pharmaceutical industries. Using limited resources, FARA coordinated and collected data from a natural history and outcome measures study and developed a patient registry with volunteer help from a major IT company and five college students.

Dr. Kenneth Fischbeck, chief of NINDS's Neurogenetics Branch, pinch hit for the Spinal Muscular Atrophy Foundation in its absence by relaying the group's success in creating tools such as *in vitro* assays for screening and optimizing drug candidates, animal models that mimic different disease types and developing a platform for *in vivo* screening of compounds.

"The NINDS Nonprofit Forum is a recognition and acceptance of the evolving role of patient advocacy groups as research partners in the quest for better diagnostics and interventions for rare diseases," concluded Dr. Stephen Groft, director of the NIH Office of Rare Diseases Research. He helped lead a networking session. "It was an outstanding conference. The interchange that occurs between staff and patient group leaders really is remarkable," he said.