MARCH 20, 2009
VOL. LXI, NO. 6
The Second Best Thing About Payday

nih record

ABOVE • *Swimming lessons for the very young are a good thing. See story on p. 9.*

features

departments

ARRA Results in Unprecedented Boost for NIH Budget

The American Recovery and Reinvestment Act (ARRA) signed by President Obama on Feb. 17 gives NIH a one-time 34 percent budget increase of $10.4 billion, a sum meant to stimulate both fine science and good jobs. The allotment, part of a $787 billion stimulus bill, must be disbursed within 2 years, sending NIH's grant-making apparatus into high gear.

NIH had been invited to testify at a hearing last fall about a potential role for NIH in an economic stimulus package. NIH acting director Dr. Raynard Kington told Congress last November that investments in NIH science also create jobs. Two studies, one by the Rand Corp. and another by Families USA, had shown that an investment of $100,000 in biomedical research typically yielded $200,000 in benefits, including jobs. This so-called "multiplier effect" armed NIH with evidence that science investments create jobs, promote economic recovery and advance public health, simultaneously.

NIH intends to spend as much of the stimulus money as possible in FY 2009. The bulk of the funds will go to the more than 3,000 grantee institutions across the country, assuring that benefits are widely, and fairly, distributed to towns, cities and states.

"NIH is extremely grateful to President Obama and the Congress for recognizing both the economic and health impacts of biomedical and behavioral research," Kington said. "The science funded by this bill will stimulate the national economy and have a

SEE **STIMULUS,** PAGE 4

Creative Model Offers Bird's-Eye View

New Biennial Report Hits the Streets

By Carla Garnett

Dividends from the NIH Reform Act of 2006 keep coming. The latest is a 565-page *Biennial Report of the Director,* released in print earlier this year. Unlike prior documents that offered an institute-specific view of the agency's work, the new report shows how the 27 institutes and centers, along with various other NIH components, work together across IC lines on the nation's largest medical research enterprise.

"This is a new model for trans-NIH reporting," says Anne Scanley, a program analyst in the Office of Science Policy and primary lead for producing the report.

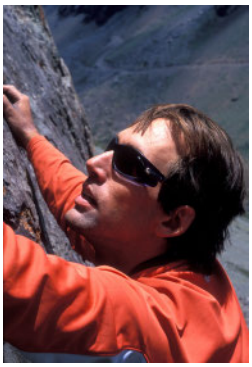
More than 18 months in the making, the document was mandated in January 2007 by Congress as part of Public Law 109-482 (NIH's first omnibus reauthorization since 1993). The new law spelled out specific requirements about what the report should contain, and one thing was clear: the old way of assembling

SEE **BIENNIAL REPORT,** PAGE 8

NEI 40th Anniversary

A Tongue for an Eye: Device Challenges Conventional Vision

By Allyson T. Collins



Erik Weihenmayer climbs El Morado south face in Chile.
PHOTO: MIKE O'DONNELL

Erik Weihenmayer has climbed mountains around the world—the highest peaks, in fact, on every continent. One afternoon a few years ago, however, a climbing wall in a local gym served as the setting of a most memorable journey.

On a typical climb, Weihenmayer is confined to arms-length maneuvers, feeling for holds with his hands. That day in the gym, he scanned the wall with a video camera and his tongue, via a device known as BrainPort. For the first time, he lunged for a hold that was 4 feet away.

Weihenmayer is blind.

SEE **NEI ANNIVERSARY,** PAGE 6

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briefs

STEP Forum on Body Image

The staff training in extramural programs (STEP) committee will present a Science for All forum on the topic "Your Body or Your Life: Healthy and Unhealthy Body Image" on Thursday, Apr. 2, from 8:30 a.m. to 12:30 p.m. in the Neurosciences Center, Rms. C and D.

Have you ever asked, "Does this make me look fat?" We constantly evaluate our physical selves, and how we think others see us, though perhaps with different ideals in mind. Body image—positive or negative—affects us all, regardless of gender, age or ethnicity. Unhealthy body image can lead to behaviors that have serious consequences. This STEP forum will explore individual, societal, cultural and especially gender differences that influence body image. Come and learn what current research tells us about developing a healthy body image.

FARE 2010 Invites Applicants

The 16th annual Fellows Award for Research Excellence (FARE) 2010 competition provides recognition for outstanding scientific research performed by intramural NIH postdoctoral fellows. FARE winners receive a $1,000 travel award to present their work at a scientific meeting. Twenty-five percent of the fellows who apply will win an award. Applications, including abstracts, will be accepted through Mar. 25 at http://felcom.od.nih.gov/subcommittee/fare.aspx. Winners will be announced by Aug. 15 and the travel award must be used between Oct. 1, 2009, and Sept. 30, 2010. More information is available at the web site above. Contact a Felcom representative from your institute if you have more questions (http://felcom.od.nih.gov/members.aspx).

NIH Marks 'NanoWeek' Apr. 7-10

Nanotechnology shows promise in fields ranging from disease prevention and diagnosis to novel methods of therapy. In addition, nanotechnology provides tools for improved understanding of molecular and cellular behaviors. Several institutes, including NCI, NHLBI, NIBIB and NIEHS have also established research programs in nanotechnology. To learn what's going on in the field, attend NanoWeek Apr. 7-10. NanoWeek will consist of several events including review presentations from program directors and extramural investigators on Apr. 7 in Natcher Auditorium, starting at 8:30 a.m.; research presentations and laboratory demonstrations from intramural investigators; and a 2-day joint NIH/IEEE workshop on nanomedicine. For more information contact Dr. Karen Peterson, (301) 451-0707.

NIH Training Center Holds 'Preview Day'

The NIH Training Center will hold Preview Day on Tuesday, Mar. 24 from 9 a.m. to 3 p.m. in Natcher Bldg., balcony C. The free event will feature 30-minute previews of popular Training Center courses—stay for one or sample them all. Topics include Scientific and Technical Writing, Media and Message Training and Microsoft Office 2007. For more information visit www.trainingcenter.nih.gov or email Liz Rowe, rowel@mail.nih.gov.

Wednesday Afternoon Lectures

The Wednesday Afternoon Lecture Series—held on its namesake day at 3 p.m. in Masur Auditorium, Bldg. 10—features Dr. Alfred Wittinghofer, Max Planck Institute of Molecular Physiology in Dortmund, Germany, on Mar. 25, speaking on "The Universe of GTP-binding proteins: *un tema con variationi*."

On Apr. 1, Dr. A. James Hudspeth will address, "Making an Effort to Listen: Mechanical Amplification by Myosin Molecules and Ion Channels in Hair Cells of the Inner Ear." He is a Howard Hughes Medical Institute investigator at Rockefeller University's Laboratory of Sensory Neuroscience.

For more information or for reasonable accommodation, call Sarah Freeman, (301) 594-6747.

Art on Display at Visitors Center

"The Day I Will Never Forget...," an international art exchange exhibit, sponsored by Tracy's Kids Art Therapy Program, is on display in the Nobel Laureate Exhibit Hall at the NIH Visitors Center in Bldg. 45 through the end of April. The exhibit contains 203 works of art created by pediatric hematology-oncology patients and family members at hospitals and clinics in the U.S., Jordan, Israel, Egypt and Turkey. The collaboration of the Middle East Cancer Consortium, HHS, NIH and NCI inspired this exhibit. Tracy's Kids, a non-profit organization affiliated with Georgetown University Medical Center's Lombardi Comprehensive Cancer Center, is a program of the Prevent Cancer Foundation. The Visitors Center is open Monday through Friday from 8:30 a.m. to 4:30 p.m. and is located in the lobby of Bldg. 45.

Katie Chapman, 9, a patient at Georgetown University Hospital, writes,"This was the day I got my favorite bear of all time. I was 3 years old when I got her. She goes through everything I go through: radiation, procedures, transplant and surgeries."

Dr. Robert Sapolsky, guest lecturer for the NIMH Director's Innovation Series

Sapolsky Explores Stress from Uncommon Angle

What do suicidal rats, beached whales, car crashes and schizophrenia have in common? The answer may help researchers solve the mysteries behind humankind's habit of "spending 70 or 80 years of our lives having our bodies slowly go to hell on us," according to Dr. Robert Sapolsky, who was featured Feb. 26 as a guest lecturer for the NIMH Director's Innovation Series.

Sapolsky began by reviewing decades of research on how stress affects the body and brain. Though such processes were initially adaptive to a mammal's survival in the wild, domesticated humans have evolved the ability to experience stress reactions in response to purely psychological situations, such as speaking in public or taking a test. Unlike a gazelle running for its life, in which case the life-saving stress response dissipates once the threat is gone, humans experiencing recurrent psychological stress expose themselves to chronically off-kilter body chemistry. This, in turn, can increase their vulnerability to anxiety, depression and other mental illnesses.

The Sapolsky lab's research involves designing viral vectors that can deliver gene therapies into the brain to treat stress-related illnesses that arise from an excess of glucocorticoids. Glucocorticoids are hormones that are essential for converting food into energy and also play a key role in the body's response to stress, among other functions. While the Sapolsky lab's work is cutting-edge in the realm of human scientific understanding, it turns out that a primitive, single-celled parasite is at least one step ahead of the humans.

Enter *Toxoplasma gondii*.

The peculiar lifecycle of this protozoan involves a sophisticated hijacking of fear centers in a rat's brain. Cats are the primary hosts for *Toxoplasma*, but during its life cycle, the organism infects a secondary host, usually rats. It must return to its primary host to reproduce, but nature dictates that rats avoid cats. What's a parasite to do?

Toxoplasma effectively reprograms a rat's brain, disconnecting key circuits in the amygdala, an area involved in fear and emotional learning. These rats lose their aversion to cat pheromones, but retain other natural fears, such as of bright lights and open spaces. *Toxoplasma*-infected rats do not experience proper stress reactions that would help ensure their survival when faced with a cat. Rather, in perhaps the most amazing behavioral feat of *Toxoplasma*, the re-programmed rats find cat pheromones to be attractive, even sexy. Cats then follow their natural instincts, consuming their prey and allowing the *Toxoplasma* to reach its primary host, where it continues the life cycle.

What does this have to do with beached whales, car crashes and schizophrenia? Sapolsky and other researchers have found that the *Toxoplasma* genome includes a gene that can induce a host's brain to create dopamine, the neurotransmitter most closely linked with feelings of pleasure or reward. The combined effects of reduced fear and stress and increased hedonism may account for a variety of behavioral abnormalities in rats as well as other mammals.

For example, Sapolsky confirmed that *Toxoplasma* has been found in beached whales, dolphins and other marine life gone astray. Exposure to the parasite may also explain the case of sea otters in California that showed an increased risk of death by shark attacks. It's possible that the infected otters were unable to escape effectively, or they may have behaved erratically and attracted extra attention from predators. Similarly, though the phenomenon bears further research, two independently conducted studies reported that *Toxoplasma*-infected humans were more likely to be in a traffic accident than non-infected people are. Since the basic structure of the brain is very similar among mammals, perhaps the same mechanism that attracts rats to cats may account for whales developing an urge to sunbathe, sea otters approaching sharks more closely than they should or humans being less cautious behind the wheel.

The connection between the parasite and schizophrenia may be even more subtle. Elevated levels of dopamine are a hallmark characteristic of schizophrenia, and some studies show that people with schizophrenia had a higher-than-chance rate of exposure to *Toxoplasma* as a fetus or in early childhood. Similarly, medications currently used to treat schizophrenia, which generally work by reducing dopamine activity, are as effective at reducing *Toxoplasma*-related behavior changes in rats as normal antibiotic treatments for the infection.

Understanding the nearly surgical precision of *Toxoplasma* infection and its control over different brain regions could radically change how we treat stress-related illnesses and many mental disorders. Sapolsky demonstrated that moving past our own scientific hubris and acknowledging that perhaps we do have something to learn about neurobiology from parasites may be the most innovative thinking of all.

The next NIMH Director's Innovation Series lecture will be held on Mar. 26 from 3 to 4 p.m. in Conf. Rms. C & D at the Neuroscience Center, 6001 Executive Blvd. Dr. Gene Robinson of the Institute for Genomic Biology, University of Illinois at Urbana-Champaign, will speak on recent research that uses honeybees to explore the relationship between genes and social behavior.

profound effect on improving people's health for many years to come."

The $10.4 billion will be allocated as follows:

- $8.2 billion to support scientific research. $7.4 billion is to be transferred to the ICs and Common Fund (CF), using a percentage-based formula, and $800 million goes to the Office of the Director (not including CF). Some of this would support Challenge Grants, a program designed to focus on health and science problems where progress can be expected within 2 years.

- $1 billion to support extramural construction, repairs and alterations. This money is allocated to the National Center for Research Resources in support of all NIH-funded research institutions. $300 million is designated for shared instrumentation and other capital equipment.

- $500 million for NIH buildings and facilities. This money is intended to fund high-priority repair, construction and improvement projects. NIH's Office of Research Facilities will determine which projects are supported.

- $400 million for comparative effectiveness research, which NIH's request for applications defines as "a rigorous evaluation of the impact of different options that are available for treating a given medical condition for a particular set of patients. Such a study may compare similar treatments, such as competing drugs, or it may analyze very different approaches, such as surgery and drug therapy."

Although NIH will employ different kinds of funding mechanisms, it will focus scientific activities in several areas:

- NIH will choose among recently peer-reviewed, highly meritorious R01 and similar mechanisms capable of making significant advances with a 2-year grant. NIH will also fund new R01 applications that have a reasonable chance of making progress within 2 years.

- NIH will accelerate the pace of ongoing science through targeted supplements to current grants. For example, NIH may competitively expand the scope of current research awards or supplement an existing award with support for infrastructure (e.g., equipment) that will be used in the 2-year availability of these funds.

- NIH anticipates supporting a number of awards to jump-start the new NIH Challenge Grant program. The number of awards and amount of funds will depend on scientific merit and quality of applications.

NIH is working with the HHS Recovery Act implementation team to ensure transparency and accountability for Recovery Act funds. As NIH "spend plans" are approved through this process, NIH will post information about projects and their impact on the economy on the web site www.HHS/RECOVERY.gov.

The impact is expected to extend beyond the scientists who will receive funds, to allied health workers, technicians, students, trade workers and others who will receive the leveraged benefits.

Opportunities Expo, Apr. 2

The NIH visiting fellows committee invites all NIH fellows and graduate students to participate in the 6th International Opportunities Expo on Thursday, Apr. 2 at the Natcher Conference Center from 12:30 to 4 p.m. The expo provides an opportunity for fellows to obtain information on research, grants and job opportunities available overseas and in their respective home countries. Fellows will be able to network with science and technology representatives and establish valuable contacts for the next step in their scientific career. A list of speakers and exhibitors will be posted on http://felcom.od.nih.gov/subCommittee/vfc/index.aspx and disseminated via email at a later date. This event is sponsored by Fogarty International Center and the Office of Intramural Training and Education.

NIAID Outreach Program Inspires Students

"INRO opened new doors for networking and showed me the type of research going on at NIH," said Arnaldo Carreira, an undergraduate at the University of Puerto Rico, Mayaguez campus.

He and 22 other students representing the next generation of researchers were invited to NIAID as part of an outreach program for populations underrepresented in the sciences. The program, Intramural NIAID Research Opportunities (INRO), links promising students with training experiences. During the event held Feb. 2-5, students heard researchers speak about today's global public health threats, toured some of the institute's facilities and networked with current research trainees and potential mentors.

NIH deputy director for intramural research Dr. Michael Gottesman urged the students to obtain a broad education that includes courses in art, music and literature in addition to science and math classes. People who bring diverse perspectives to biomedical research, he said, offer greater innovation and are better able to solve health problems.

He assured, "There are and will be plenty of jobs in biomedical research." Close to one-third of the NIH staff is nearing retirement age, he said, indicating more opportunity.

Dr. Anthony Fauci, NIAID director, spoke about the challenges of global health and the research under way to prevent and treat emerging and re-emerging diseases. Dr. Thomas Quinn, associate director for international research, elaborated on the public health threat of HIV and current NIAID projects investigating the role of viral load and strategies to prevent the transmission of the virus.

The program ended with a presentation by Dr. Mark Dybul, former U.S. global AIDS coordinator and current staff member of NIAID's Office of the Director, who spoke about the President's Emergency Plan for AIDS Relief. He advised, "Follow what pulls your heart—you'll never be unhappy."

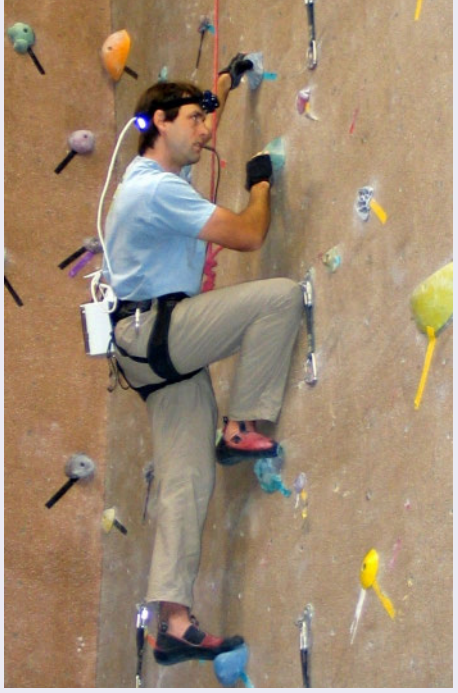
Mark Sena, a senior at the University of Washington, said, "I am excited about the future possibility of an experience in a government lab. INRO opened a door to be able to accomplish that."

The INRO program marked its seventh anniversary in February. Of the 148 students who have participated, more than half have returned to the institute for a traineeship and another quarter plan to return after finishing their educational pursuits.

"INRO is not just a 4-day program," said Dr. Wendy Fibison, associate director of NIAID's Office of Training and Diversity. "It is an opportunity to facilitate the progress of these students toward a career in biomedical research... and ultimately support NIAID's strategic goal of a more diverse workforce."

***Top**:*
Dr. Anthony Fauci (front row, c) poses with the INRO class of 2009.

***Above**:*
Visiting INRO students (from l) Gregory Hild, Hunter Oliver-Allen, Danielle Miranda and Jeffery Cumplida listen to a presentation while visiting NIAID in February as part of the Intramural NIAID Research Opportunities Program.



NEI ANNIVERSARY

CONTINUED FROM PAGE 1

***Above, l**:*
Weihenmayer tests the BrainPort device during a game of tic-tac-toe with his daughter, Emma, at home in Golden, Colo.

PHOTO: SERAC FILMS

***Above, r**:*
Weihenmayer climbs a gym rock wall, with the help of BrainPort.

PHOTO: SCOTT LEDERER

"I started learning how to climb like a sighted person," he says.

A genetic eye condition known as retinoschisis caused him to be visually impaired at birth and completely blind by age 13. In retinoschisis, tiny cysts form within the eye's delicate retinal tissue, eventually causing its layers to split apart. Neither medication nor surgery can restore sight.

Not a problem for Weihenmayer. In 2001, he became the only blind person ever to reach the summit of Mount Everest. He also skydives, runs marathons and skis, but until his experience with BrainPort, he did all of this while visually guided by others.

On Friday, Apr. 3, Weihenmayer will describe his experiences with BrainPort at the NEI 40th anniversary kickoff. The event will feature a screening of *Blindsight*, an award-winning documentary chronicling Weihenmayer's mountain-climbing journey up the north face of Mount Everest with six blind Tibetan teenagers. Researchers will also debut the third-generation BrainPort device, produced with NEI support.

NEI Anniversary Kickoff Features Film

NEI will kick off its 40th anniversary celebration on Friday, Apr. 3 from 1 to 4 p.m. in Lipsett Amphitheater, Bldg. 10 with a screening of the documentary film *Blindsight*. The event also includes remarks and book-signing by Erik Weihenmayer, a blind mountain climber and author of *Touch the Top of the World*, and a demonstration of the BrainPort device. The first 250 attendees will receive a copy of the book.

Swapping Senses

The scientific concept behind BrainPort originated in the late 1960s. Dr. Paul Bach-y-Rita, a physician and engineer, introduced the idea of sensory substitution—stimulating one sense, such as touch, to take the place of another, such as sight.

"A blind person walking down the street with a cane is using sensory substitution," says Dr. Michael Oberdorfer of the NEI extramural program. "This person gets spatial and auditory feedback when the cane strikes an object."

Bach-y-Rita stressed the idea that vision does not come from the eyes alone. The eye receives visual information, converts it to electrical impulses and sends them to the brain for interpretation. With BrainPort, such electrical impulses are sent to the brain by way of nerves in the tongue instead of the optic nerve in the eye.

In the device, a head-mounted camera serves as "eyes" to gather white, gray and black pixels of visual information. A computer translates this information to gentle electrical impulses, which it then sends to an array of electrodes that sits on the tongue of the user. Strong vibrations on the tongue represent white pixels, medium-strength vibrations represent gray pixels and no vibrations represent black pixels.

Learning to use BrainPort is similar to learning a new language, explains Dr. Aimee Arnoldussen, a neuroscientist and BrainPort researcher who worked with Bach-y-Rita until he passed away in 2006. Initially, users must consciously translate the pattern of impulses on the tongue to the idea of an object in space. But as a person becomes fluent in this process, the translation becomes automatic.

Weihenmayer tests the BrainPort device at his local gym in Golden. PHOTO: SCOTT LEDERER

"You learn to ignore what's happening on the tongue because that's not the most important piece of information," she says, adding that the most critical step in the process is for the brain to perceive these impulses as a representation of the surrounding environment.

Starting to "See"

While BrainPort does not replace the sense of sight, it adds to other sensory experiences to give users information about the size, shape and location of objects. Arnoldussen says that within an hour, most users can point to different shapes. After a few more hours, they can identify familiar objects and avoid obstacles.

Weihenmayer remembers testing the device for the first time 5 years ago. In just a few minutes, he was able to reach out and grab a rolling tennis ball.

"I thought it was cool how quickly my brain caught on to what I was feeling with my tongue," he says. "I felt the ball start rolling from the back of my tongue. It started smaller and got bigger."

The current iteration of the device has a postage stamp-sized tongue array and a camera with a zoom lens. Users can operate it independently with a hand-held controller.

Though testing has remained primarily in the lab, Arnoldussen hopes the device can soon be used by blind people in their daily lives to perform basic tasks such as reading signs and identifying landmarks.

Weihenmayer takes the idea a step further, hoping that all blind children will eventually have access to technologies like BrainPort to help them integrate into society. This, he says, will give them "a better chance of being in the thick of things instead of listening to life go by."

Stigma: Lessons, New Directions from Research

People with mental illnesses, and those who care for and about them, have long struggled with the prejudice and discrimination attached to these disorders. The phenomenon—stigma—stems from labeling someone in ways that devalue them or from stereotyping them in ways that diminish their status in the community and enables discrimination in all its forms (employment, housing, insurance, etc.). Stigma leads individuals with mental illness to feel shame, avoid discussing their condition and even refuse therapy.

In the early 1960s, Erving Goffman pioneered stigma research, recognizing that stigma, whether associated with skin color or health status, tends to diminish people, marking them as somehow less than human. He noted that stigma is only operational during social interaction, can take many forms and is dynamic. Thus, reducing stigma is a sociological as well as behavioral challenge. The scientific foundations necessary to craft interventions only started taking shape in the mid-1990s, when there was a resurgence in both research and policy efforts devoted to mental illness stigma.

Dr. Bernice A. Pescosolido, professor of sociology at Indiana University and director of the Indiana Consortium for Mental Health Services Research, focuses on how social networks connect individuals to their communities and to institutional structures, providing the "wires" through which people's attitudes and actions are influenced, particularly with regard to health care services, stigma and suicide. She shared her results at a recent OBSSR lecture.

The concept of "public stigma" has been the focus of much of Pescosolido's research, and that of other teams trying to understand how public attitudes about mental illness have been shaped and changed over the past 40 years. Public attitudes are a "hard measure" of the presence of stigma. The results of these studies provide mixed assessments of the current state of stigmatizing views. On the one hand, a national study of stigma revealed that the public has become more mental health literate in the past 40 years—meaning it has a broader understanding of mental health and is more likely to admit to personally suffering from depression. However, 46 percent of the public still harbors an unwillingness to interact with people with mental illness. And, some conditions—for example, schizophrenia—are more highly stigmatized than others, such as depression.

A study that compared attitudes across 15 countries found that Americans, more than any other group, erroneously associate mental illness with violence. In addition, a study of public stigma toward children with mental health problems found that people are more concerned about depression in children than they are about ADHD, even going so far as to state that ADHD is not a mental illness. These studies reveal consistent yet surprising findings about the public's view of the underlying causes of mental illness, the social rejection associated with it and its treatment, widespread concern about violence and views about the acceptability of coercion with regard to treatment.

Studies of television programming, including commercials and public service announcements, reveal a high proportion of mental health content, with the most positive presentations involving fuller and lengthier portrayals of characters with mental illness. The less information a viewer has about mental illness, the more powerful the media message. One lesson learned from a recent anti-stigma PSA effort is that stigma can be reduced when people with mental illness are portrayed as "a person like any other" rather than as having "a disease like any other." Together, these studies suggest a set of principles regarding reducing public stigma and offer direction on future efforts to improve the lives of people with mental illness.

By the Numbers

In the Belly of the Biennial

Collecting a huge volume of information on all of NIH's research activities and recasting it for public consumption is not a job for wimps. Just ask Anne Scanley, a program analyst in the NIH Office of Science Policy and veteran of large-report development who led the team that revamped the massive publication NIH must give to Congress every 2 years—the *Biennial Report of the Director, National Institutes of Health*.

"I sometimes call it the 'B-monster,'" she jokingly admits.

Below is a look at the report by the numbers:

- More than 140 people crafted the report, not including those who contributed data or other information;
- 15 teams (representing the 27 institutes and centers, the Office of the Director and such OD components as the Office of Research on Women's Health and the Office of AIDS Research) wrote the topic sections;
- 7 broad disease and 8 other categories contain summaries of NIH research activities;
- 40+ sets of internal NIH clearance comments were received following the first draft;
- 2 fiscal years—2006 through 2007—are covered in the report;
- 6 appendices add documents or excerpts of documents that further support the report.

the data would not work. IC reporting had to undergo a complete overhaul. That also meant writers had to start from scratch, on a tight deadline.

"The planning and evaluation community really rolled up their sleeves and tackled this," explains Scanley. "I have never been prouder to be part of a committee. They did a lot of creative thinking and met the deadlines. It was really remarkable."

Once upon a time, reports on NIH research activities were sent to Congress regularly by individual ICs, Scanley recalls. The Health Research Extension Act of 1985 called for a consolidated biennial report to be submitted by the NIH director and "written, edited and organized in a manner that will assist the Congress in oversight responsibilities." The NIH director prepared the document, with ICs continuing to chip in their individual parts. Still, the reports failed to capture the true interinstitute, cross-boundaries nature of 21st century NIH.

With its endorsement of then-NIH director Dr. Elias Zerhouni's vision of a more integrative, collaborative research enterprise, Congress asked for a report that reflects the new trans-NIH spirit.

More than 140 people working in about 15 teams outlined the framework of the report and drafted its contents. Then came clearance and edits—from each IC and component and from the Department of Health and Human Services. A preliminary version was printed and burned onto CDs and sent to Capitol Hill last June. The final, including a detailed index and attractive layout, hit the streets in January 2009.

In softcover book format, the 2-color report has a few photos and graphs, but is mostly dense with data divided into five broad chapters. It also contains an introduction and overview of NIH—with an assessment of the state of medical and behavioral research by Zerhouni—in-depth sections on six congressionally mandated centers of excellence, and appendices. Information is described in terms of disease category, research approach or resource—not IC.

Scanley says one of her favorite features is the comprehensive index that is based on the same medical subject headings that the National Library of Medicine uses for its searchable online literature databases. The biennial report, too, can be found on the web at http://report.nih.gov/biennialreport/. Owing to the nature of online documents, the report's web version is enhanced with several clickable sections and links that further organize the huge amount of data in digestible chunks. In addition to the printed version, the report is also available on flash (thumb) drive.

The revamped Biennial Report of the Director, National Institutes of Health *is available in print, via flash drive and online at http://report.nih.gov/biennialreport/. An earlier CD version was distributed to Congress last year.*

So, now that the report is finished, can it serve as the biennial template ever after? In a word, no. The same reauthorization law that called for the new report also asked NIH to develop a different way to provide funding information about the research the agency supports. Scanley explains that the birth of RCDC—Research, Condition, and Disease Categorization, the new sorting mechanism that also debuted earlier this year—means the biennial report will have to be reconfigured yet again. With the structure of RCDC now in place, Scanley says, report writers are hoping that the data collection phase of the report, at least, goes much easier and faster.

digest

New Gene Discoveries Hint at Brain Cancer Treatments

Scientists have long known that cancer results from an accumulation of genetic damage. But despite decades of research, the list of known cancer-related genes is surprisingly short. Equipped with powerful new technology, scientists recently began casting a wide net for genes involved in brain cancer. In an NIH-funded study published in *Science*, a team based at Johns Hopkins University found dozens of genes associated with an aggressive form of brain cancer called glioblastoma multiforme (GBM). "This study is a goldmine for potential new therapies," says study coauthor Dr. Gregory Riggins of Johns Hopkins. The study was funded in part by NINDS and NCI.

Riggins and colleagues acquired DNA from the tumors of 22 GBM patients and scanned nearly the entire set of human genes for mutations (misspellings within the DNA code) and for copy number variations or CNVs (duplications or deletions of an entire gene). They scanned a smaller set of genes from an additional 83 GBM samples.

They found that 42 genes harbored mutations or CNVs that were significantly associated with GBM. Many of these genes were known offenders with roles in cellular growth, division and DNA repair, all of which are pathways one would expect to go awry in a cell that is proliferating unchecked. Somewhat unexpected was the finding that single tumors tended to have multiple gene defects affecting all three pathways.

The Cancer Genome Atlas, a project sponsored by NCI and the National Human Genome Research Institute, found similar results, as reported in *Nature*. Those findings are helping reshape ideas about treatments for GBM. Ongoing clinical studies have focused on single drug therapies aimed at single pathways, but researchers may need to start testing drug cocktails meant to target several different pathways at once, Riggins says.

Swimming Lessons Do Not Increase Drowning Risk in Young Children

Providing very young children with swimming lessons appears to have a protective effect against drowning and does not increase children's risk of drowning, according to an NICHD study published in the March *Archives of Pediatrics and Adolescent Medicine*. Researchers said the findings should ease concerns among health professionals that giving swimming lessons to children from ages 1 to 4 years might indirectly increase drowning risk by making parents and caregivers less vigilant when children are near bodies of water.

Providing very young children with swimming lessons appears to have a protective effect against drowning and does not increase children's risk of drowning, according to an NICHD study.

To conduct the study, researchers analyzed medical examiner and coroner records and interviewed families of children who drowned. The children ranged from ages 1 to 19. The researchers compared characteristics of each child who drowned to another child of the same sex and age who did not drown and who lived in the same geographic area. Of the 61 1-4 year olds who drowned, 2 (3 percent) had received swimming lessons. In contrast, 35 of the 134 children who did not drown (26 percent) had taken swimming lessons. Study lead author Dr. Ruth Brenner said that the statistical methods she and her coauthors used to interpret the data suggest that swimming lessons provided some protection against drowning. It was not possible to calculate the exact extent of that protective effect.

Molecule Provides Clues About How HPV Infection May Lead to Cancer

New research shows for the first time that certain types of human papillomavirus (HPV), which cause cervical and some other types of cancer, can inhibit the production of a tiny single-stranded RNA called microRNA 34a, or miR-34a. Because previous research had shown that microRNAs regulate important functions of the cell, the new finding provides insight into the mechanisms by which HPV contributes to the development of cancer. These clues may point to treatments to counter HPV infection. Currently, such treatments do not exist. The study, online Mar. 3 and in the April print edition of the journal *RNA*, was led by NCI researchers. HPV inhibits natural tumor suppression by inactivating a cellular tumor suppressor protein called p53. P53 regulates expression of other genes that control the cell cycle, activates repair of damaged DNA in cells and—in cases of severe damage—initiates cell death. This protein also stimulates the expression of a group of microRNAs, including miR-34a.—**compiled by Carla Garnett**

milestones

NEI investigators Dr. Emily Chew and Dr. Frederick Ferris

NEI Scientists Win Ophthalmology Research Award

NEI investigators Dr. Emily Chew and Dr. Frederick Ferris were recently honored by the Alcon Research Institute, which bestowed on them $100,000 in unrestricted grant money to continue their research.

"We are honored to have been recognized by this illustrious group of ophthalmic researchers," said Chew. Added Ferris, "I think I speak for both of us when I say [that] to be included as a member of the Alcon Research Institute is a highlight of our career. With this award we hope to continue making progress in the study of sight and the prevention of vision loss."

The scientists focus on human population studies concerned with the cause, prevention and treatment of eye disease and vision disorders, with emphasis on the major causes of blindness. This includes studies of incidence and prevalence in defined populations, prospective and retrospective studies of risk factors, natural history studies, clinical trials, genetic studies and studies to evaluate diagnostic procedures. They were jointly instrumental in designing, developing and executing the Age-Related Eye Disease Study, with results that could prevent the development of age-related macular degeneration in more than 300,000 people in the next 5 years.

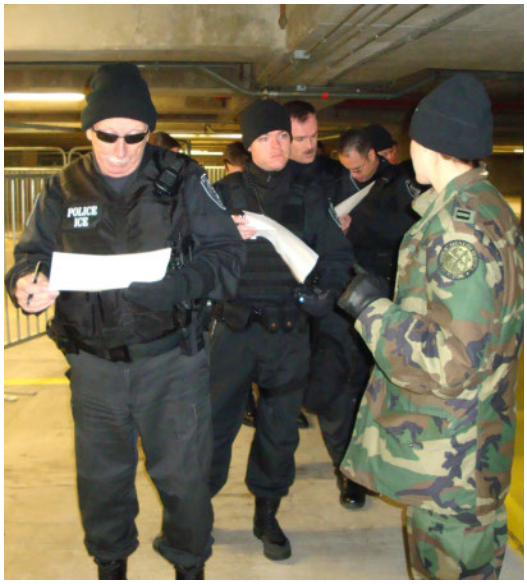
Chew is a graduate of the University of Toronto and serves as deputy director, Division of Epidemiology and Clinical Applications, NEI. Ferris is a graduate of Johns Hopkins Medical School and is NEI's clinical director and director of the institute's epidemiology and clinical research.

The Alcon Research Institute supports global advancements in eye health by honoring those who make outstanding research contributions to the vision sciences.

NIH Commissioned Corps Officers Stood Ready at Inauguration

The news media documented how more than 1 million people flocked to the National Mall the day that Barack Obama was sworn in as the 44th President of the United States.

Few realize, however, that the Commissioned Corps of the U.S. Public Health Service was on hand both to provide routine medical support and to be prepared to respond to a "mass event"—a bio-weapons exposure or other terrorist attack that might otherwise mar America's celebration of its new President. The Commissioned Corps officers, comprised in part of NIH staff members, had set up headquarters for the event in a federal building.



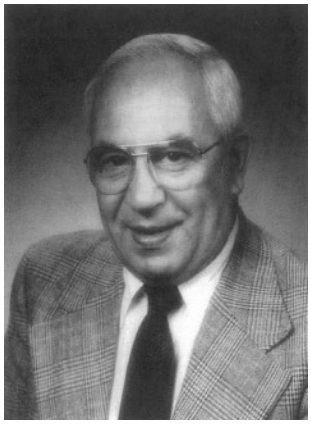
PHS officers collaborate with HHS security personnel.

The PHS officers were divided into two units. The first was stationed outdoors around the Capitol, and provided on-the-spot treatment for such routine medical events as hypothermia, injury and breathing problems. The operations chief for this team was Capt. Victoria Anderson of NIAID. Among the care providers was Lcdr. Emmanuel Samedi of the Clinical Center.

A second unit was responsible for managing the response to a "mass exposure." The team first devised a plan for rapidly dispensing emergency medical treatment and tested the plan on Jan. 19, the day before the inauguration. Among the NIH'ers taking part in this effort were Capt. Joann Mican of NIAID and Capt. Steven Libutti of NCI, who served as operation chiefs, and Lcdr. Merel Kozlosky of the CC, who served as logistics chief, and Capt. Steven Hirschfeld, NICHD, who served as overall team commander. Other participants included Capt. Tom Thomas, OD; Cdr. Michelle Braun, NIDDK; Cdr. Daniel Singer, NICHD; Lcdr. Jeene Bailey, CC; Lcdr. Paul Sato, NHLBI; and Lt. Rachael Drabot, CC.

The teams spent the night of Jan. 19 and the day of Jan. 20 providing service outdoors and remaining on alert in the federal facility, ready for an event that fortunately never materialized.

NICHD Mourns Passing of Bialy



Dr. Gabriel Bialy, deputy director of NICHD's Center for Population Research, died Feb. 17. During his long career with the institute, he stewarded a number of projects, from research collaborations on contraception and maternal and child health with the Indian government to research efforts to develop safer forms of oral contraception.

Having joined NICHD in 1971, Bialy was one of the institute's longest-serving staff members. A reproductive physiologist, he began his career at Worcester Foundation for Experimental Biology in Shrewsbury, Mass. There, he was a member of the research team that developed the first oral contraceptive. After joining NICHD, he served as chief of the Contraceptive Development Branch for nearly two decades.

"Gabe Bialy was a skilled administrator who put science first and always found a way to further promising research," said NICHD director Dr. Duane Alexander. "His friends and colleagues knew that he often spoke his mind. They also knew that he was a profoundly kind-hearted, caring individual. We will miss him."

Under Bialy's direction, the branch supported research on a broad range of potential contraceptives, ranging from implants to safer oral formulations. During his tenure, the branch also supported much of the early research on drugs that block the effects of gonadotropin-releasing hormone (GnRH). Produced by the hypothalamus, GnRH is the "master" reproductive hormone that sets in motion a cascade of biochemical events leading to ovulation in women and sperm production in men. GnRH analogs eventually provided the basis of infertility treatments for women and prostate cancer treatment for men. The discoverers of GnRH, supported by the Contraceptive Development Branch, won the Nobel Prize for their research.

He also worked on behalf of NICHD to forge research collaborations between U.S. and Indian researchers. In the 1980s, he worked with Indian scientists to develop new contraceptive methods for the Indian public. In the late 1990s, through the beginning of the current decade, he again worked on behalf of NICHD to further studies of reproductive health and maternal and child health in India.

Born in Lomza, Poland, in 1931, Bialy came to the United States after World War II. He received his undergraduate degree in 1953 from Ohio State University and his doctorate from the University of Wisconsin. In 1959, he joined the laboratory of Gregory Pincus at the Worcester Foundation. In 1968, he headed the endocrine section of the pharmacology department at Bristol Laboratories in Syracuse, N.Y.

In 1971, he joined NICHD as a health scientist administrator in the Contraceptive Development Branch. He was named branch chief in 1975, a position he held until becoming deputy director of the Center for Population Research in the early 1990s. During his career, he authored or co-authored numerous papers on reproductive biology, reproductive pharmacology and contraceptive development.

His many awards and honors include the PHS Superior Services Award, the NIH Director's Award and the Endocrine Society's Sidney Ingbar Distinguished Service Award.

volunteers

The phone numbers for more information about the studies below are 1-866-444-2214 (TTY 1-866-411-1010) unless otherwise noted.

Pelvic Pain

Healthy women are needed for a study investigating the role of hormones and genes in pelvic pain and exploring better approaches to treatment. If you are age 30-50, consider participating in this study. All study-related tests are provided at no cost. Compensation is provided. Refer to study 04-CH-0056.

Healthy Volunteers Needed

Healthy volunteers are needed for a study designed for the collection of stem cells from blood of adult humans for use in research studies. Researchers are studying adult stem cells to gain insight into blood diseases. If you are 18 years of age or older, consider participating in this study. All study-related tests are provided at no cost. Compensation is provided. Refer to study 06-DK-0142 or visit www.clinicaltrials.gov. Se habla español.

Sign of the Times?

Rash of 'Opportunity' Thefts Solved

Toner cartridges, credit cards, even office chairs have been disappearing from Bldgs. 10, 40, 13 and other locations on campus. Tough economic times and easy access have spurred thieves to increase their activities.

How do they do it? Many of the suspects are not federal employees, but have a legitimate reason for being here. Their familiarity with NIH facilities has led to knowledge about offices that remain unlocked and unoccupied.

In one case, suspects entered an unlocked office and left with 12 chairs. The perpetrators were contractors in uniform, so employees presumably did not suspect any wrongdoing.

In another case, someone entered a laboratory in Bldg. 40, stole credit cards and promptly used the cards at local retail outlets. Fortunately, someone reported seeing a person who was not supposed to be in the area at the time. Subsequent investigation by NIH Police confirmed the suspect on video camera using a stolen card.

In a follow-up interview, the suspect confessed to stealing the credit cards and was charged with theft. Without the help of employees taking the time to report him in the vicinity, on the day of the crime, he might never have been caught.

In another case, the NIH Police received a call that a suspicious person was on the 10th floor of Bldg. 10. The suspect was observed checking doors to see if they were unlocked. He was then seen carrying 4 toner cartridges out of an office. When challenged by an employee, he provided a false name, dropped the cartridges and fled. A lookout was broadcast and the suspect was seen attempting to leave via the loading dock area. He went back into the building and was later apprehended in a vehicle on campus. The suspect was wearing a coat that matched the description of a person seen on camera using stolen credit cards in local stores.

The suspect was questioned and charged with theft of toner cartridges. He is also currently under investigation in four other cases involving thefts of employee wallets and credit cards. A review of regional pawn shops indicates that the suspect has also made numerous sales of new toner cartridges to pawn shops in Prince George's County. The suspect had been on campus some 15 times since September 2008. On 8 of those occasions, theft reports were filed by employees.

Employees called police when noticing a suspicious person or activity. Aided by the helpful, quick response of employees, the NIH Police have been able to close 10 theft cases; several more are close to being solved.

Tips to Thwart Crimes of Opportunity

- Report suspicious activity. It doesn't have to be an emergency. Call the police non-emergency number, (301) 496-5685.
- Lock exterior hallway doors, office doors and desks. Even lock unoccupied desks and doors when the rest of an office is occupied, whenever possible.
- Do not leave purses, iPods and other valuables in unattended or unlocked compartments while away from work areas, even when you are absent for only a short period of time.
- Mark toner cartridge boxes with your organization, your building number and your room number, such as "NIH, Bldg. 31, Rm. B3B17."
- Challenge people you don't recognize when they are in areas of question.