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"Thinking about brain wellness and understanding what it is and how it happens at a basic science level helps to expand the notion of translational research."

—SfN President Carol Barnes

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SOCIETY FOR NEUROSCIENCE

Message from the President

Moving Toward a Redefinition of Translational Research

In recent years, biomedical researchers have placed increased emphasis on the importance of "translational" research to help to rapidly convert recent discoveries in the laboratory into better treatments for patients. For neuroscientists, the explosion of new findings in basic neuroscience research has driven the development of better treatments for some of the most prevalent neurological and psychiatric disorders that affect millions. Nonetheless, much more basic work must be done if the goal of alleviating the suffering of those with these brain disorders is to be achieved.

As scientists, we understand that progress in basic research using vertebrate and invertebrate animals results in the development of better treatments. Discussing clinical advances that come from this fundamental research is important in the process of convincing political leaders and the public about the value of neuroscience research and to ensure continued adequate funding.

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President's Budget Proposal Would Restrict Research Grants

President Bush's $2.5 trillion budget proposal for fiscal year (FY) 2006 allocates $132.3 billion for federal research and development (R&D), a 1 percent increase over 2005. The government's investment in R&D has seen a 45 percent increase since 2001, although, as with the proposed budget for FY 2006, the bulk of this increase has been awarded to defense and homeland security research. As a result, other programs have been eliminated or reduced in the administration's proposal. Programs across the Labor, Health and Human Services, and Education departments together are cut by $2.4 billion in the proposed appropriations, shrinking their allocation to $141.5 billion.

Funding for neuroscience research comes from three main sources: the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Department of Veterans Affairs (VA). The NIH appropriation is set to rise less than 1 percent, NSF would just recover its FY 2004 level of funding, and funding for neuroscience research through the VA declines.

Funding at all of these three major research granting agencies will not keep pace with "biomedical research inflation," an NIH figure that estimates the rising costs of maintaining the current level of research. The Commerce Department's Bureau of Economic Analysis estimates that the FY 2005 rate of biomedical research inflation, which includes equipment, supplies, and personnel costs, will be 3.3 percent, shrinking slightly to 3.2 percent in FY 2006.

"We as members of the neuroscience research community must be vigilant and continue to be vocal in our support of increases in research funding, especially as Congress moves from the budget proposal to the appropriation phase," said SfN President Carol Barnes.

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Message from the President

Carol Barnes, SfN President

But another important dimension to "translational" research is its inextricable bond to basic science.

Understanding the underlying mechanisms of how the brain and nervous system function helps us in the treatment of disease *and* in our efforts to understand and promote "healthy" brain functioning. Thinking about brain wellness and understanding what it is and how it happens at a basic science level helps to expand the notion of translational research and to make the case for a much wider societal stake in continuing the extraordinary progress of neuroscience research. As scientists, we must continue to emphasize the importance of basic research so that we can follow through on promising research pathways to both treating disease and promoting wellness in patients with healthy brains.

Clearly, the place to hear the latest research in all areas of neuroscience is our annual meeting, which this year will feature several high-profile sessions outlining how neuroscience research advances the understanding of normal brain function.

This year's Public Lecture, which will be delivered by cognitive neuroscientist Marilyn Albert of Johns Hopkins University, will focus on healthy human brain aging. She will describe population studies, including her own, that have identified a set of independent factors related to differences in lifestyle that predict who is going to maintain mental ability as they get older. The factors include mental activity, physical activity, and social engagement. She will also review the neurobiological hypotheses derived from animal models that have been proposed as potential explanations for factors associated with maintenance of cognitive function with advancing age.

Examples of how research in basic systems neuroscience has helped us to understand brain functioning will be found in the Presidential Symposium. This session will feature Paula Tallal of Rutgers University on new treatments for learning disorders; Andrew Schwartz of the University of Pittsburgh on the development of neural prostheses for trauma and stroke victims; and Mahlon DeLong of Emory University speaking on deep brain stimulation for dystonia.

In the inaugural series titled "Dialogues between Neuroscience and Society," the Dalai Lama will discuss the study of destructive emotions and compassion, and how meditation affects brain activity (See story, page 14). Neuroscience research is just beginning to produce concrete evidence for something that Buddhist practitioners of meditation have maintained for centuries: Mental discipline and meditative practice can alter brain states to allow people to achieve different levels of awareness, and to channel negative thought processes into constructive ones. Over the past few years, neuroscientists working with Tibetan monks have been able to translate those mental experiences into the scientific language of high-frequency gamma waves and brain synchrony, or coordination. They have pinpointed the left prefrontal cortex, an area just behind the left forehead, as the place where brain activity associated with meditation is especially intense.

These scientists are finding that long-time practitioners of meditation showed brain activation on a scale never before observed. Their mental practice apparently has an effect on the brain in the same way golf or piano practice enhances performance, and demonstrates that the brain is capable of being trained and physically modified to promote excellence in behavior across many domains.

Moving forward, much needs to be accomplished to understand how the normal brain works. The urgency is real. Several recent reports highlight how important this knowledge is for brain development during the critical early years of life. A recent National Institutes of Health (NIH) study suggests that a region that is part of the circuitry that inhibits risky behavior (the orbitofrontal cortex) is not fully formed until age 25, a finding with implications for many public health policies including driving laws. Society needs to know the brain mechanisms that underlie behavior that leads to good driving habits and those that lead to bad driving. In addition, the U.S. Supreme Court recently agreed with attorneys who cited studies of brain development, deciding that juvenile offenders should not be eligible for the death penalty.

Another pressing issue is the importance of understanding the brain mechanisms involved in the brain's response to medications, such as antidepressants. Significant progress has been made in treating depression, and insights into interactions between this brain disorder and other diseases have been striking. For example, Guy McKhann and his colleagues at Johns Hopkins University have found that, following bypass surgery, patients were four to five times more likely to have a return of angina if they were depressed and unmedicated than if they were not depressed. Recent reports of teen suicides among those taking antidepressants, however, raise an acute concern, especially since these medications have not been tested in adolescent populations. Deleterious effects of antidepressants also have been found in some adults, raising questions about potential interaction between alleviating these symptoms and bringing to the surface other underlying pathological states.

Another technical advance with great potential is high throughput drug screening (HTS). Recent discoveries in the study of neurodegenerative disease have provided molecular and cellular models for studying the underlying

disease mechanisms that may also serve as targets for drug discovery. HTS, the robotic application of thousands of different small molecules to miniaturized versions of disease models, is one effective strategy used in academic research and the pharmaceutical industry to identify new drugs. HTS has the potential to yield both mechanistic insights and new drug leads with unparalleled efficiency.

My own research interest focuses on simultaneous recordings of ensembles of neurons and gene markers of behaviorally driven cell activity — which help us understand how the brain orchestrates perceptions, thoughts, and actions. The biggest advantage of the population recording studies is in being able to decode the emergent functional properties of these neural networks. In addition, cellular imaging methods provide anatomical localization of circuits involved in representing specific experiences. Both techniques involve the acquisition of large amounts of data.

As data from these kinds of complex systems level studies become more voluminous, it can quickly become difficult to manage. Funding will be needed to help us catalog and develop its use. One of the keys to understanding how these dynamic systems work will be to greatly improve and expand neuroinformatics efforts. The SfN has participated in initiating such an effort through the Neuroscience Database Gateway (NDG) project. These types of databases will help organize, store, and process the huge amounts of new data now coming out of neuroscience laboratories.

The NDG is a searchable, online database of neuroscience resources on the Internet. The overarching goal of this project is to provide neuroscientists access to reliable neuroscience databases and software tools. The NDG currently lists 90 databases, software tools, and other scientific resources of interest to neuroscientists. Under the stewardship of SfN's Neuroinformatics Committee, the NDG is expanding to include new neuroscience-specific resources and valuable bioinformatics resources. All new databases on the NDG are evaluated based on their content, reliability, and free access. As this effort develops, the hope is that it will become a key example of how interdisciplinary efforts outlined by the NIH Roadmap and the Neuroscience Blueprint can become self-sustaining.

The human brain has evolved in ways that make human life unique. Facilitating the development of healthy brains and forestalling the development of brain disease are the twin objectives that underlie all neuroscience research. But achieving those objectives requires assembling building blocks of bits and bytes of information accumulated through the work of neuroscientists from across all disciplines within the field, and using knowledge and approaches from related fields.

This parallel emphasis on understanding the healthy brain and promoting wellness as a goal of translational neuroscience research creates an opportunity to coalesce a very broad community of stakeholders in support of increased funding for neuroscience research. The inclusion of $26 million in additional funding for the Blueprint for Neuroscience in the otherwise bleak administration funding request for NIH is a signal that the challenges and opportunities of our field are being discussed at the highest levels of our government.

Neuroscience research holds great potential for human progress and health. Continued advances in unraveling the puzzles of how we learn and remember, how to break the cycle of addiction, and how to improve our mental well-being can have enormous impact on our education and health-care systems and on public safety and the economy. If neuroscientists come together and communicate to their nations all that we are learning and could learn about how our brain works, we have the potential to greatly enhance support for science research throughout the world. ■

NIH Policy on Open Access to Research Goes into Effect

The National Institutes of Health (NIH) recently released its new policy on public access to NIH-sponsored research. Effective May 2, 2005, NIH requests that authors submit an electronic version of their manuscript to the National Library of Medicine's PubMed Central digital archive upon acceptance for publication. The full text of the NIH policy may be found at http://grants1.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html.

The new policy is intended to provide a central repository through which the general public may access publicly funded research. It strongly encourages authors of papers based on NIH-funded research to deposit their manuscripts in PubMed Central, for release 12 months after journal publication or sooner. The policy applies only to articles accepted on or after May 2, 2005.

Many journals—including *The Journal of Neuroscience* (*JN*)—already submit abstracts of their articles for indexing in PubMed. The Society for Neuroscience also offers unrestricted online access to all articles published in *JN* 12 months after publication (www.jneurosci.org).

Effective May 1, 2005, the Society for Neuroscience revised its copyright policy to permit *JN* authors to comply with the new NIH policy. The new copyright agreement states: "The author shall have the right to deposit the final, revised version of the reviewed and accepted manuscript in any repository of a relevant government funding agency, provided access to the manuscript is granted no earlier than 12 months after the manuscript has been published in *The Journal of Neuroscience*."

For more information, please contact *JN*'s managing editor, Elizabeth Horowitz, at ehorowitz@sfn.org.

Tenth Annual Brain Awareness Week a Success

Students, teachers, and many others from around the world got a glimpse into the exciting world of neuroscience during the tenth annual Brain Awareness Week (BAW), held March 14 – 20, 2005. Sponsored by the Society for Neuroscience (SfN) and the Dana Alliance for Brain Initiatives, BAW was once again a great success, sharing neuroscience advances with the community through laboratory tours, classroom visits, and exhibits.

SfN President Carol Barnes participated in BAW activities at Francis Junior High School in Washington, DC, along with many scientists from the Society's Potomac chapter. SfN minority fellows Wilsaan Joiner and Karen Kate David of Johns Hopkins Medical School and SfN neuroscience scholar Jose Matta from Georgetown University discussed their careers with Francis students.

Barnes started her presentation by asking, "How many of you have grandparents who can't find their keys?" She told the students, "My research focuses on how the brain learns and remembers … and how to make memory better." She explained how the hippocampus is used in retaining memories and closed her presentation by showing three short videos demonstrating her laboratory work to the 75 assembled students.

Neuroscientists Donna Messersmith of Labs Now LLC and Michael Hirsch of the National Institutes of Health (NIH) led Francis students through an interactive Web tutorial, highlighting the wealth of neuroscience resources available on the Internet. In the school's computer laboratory, students visited the Society's Web site, the Neuroscience for Kids Web site (http://faculty.washington.edu/chudler/neurok.html), and the National Institute on Drug Abuse's children-focused Web site (http://backtoschool.drugabuse.gov). Comparing neural connections to Web site linking, Hirsch encouraged students to spend time looking up neuroscience at home. "You can learn anything about the brain!" Hirsch said. "You can be anything you want."

A relay game demonstrated to students how neurotransmitters work and the importance of myelin. Shouts of "Reload your neurotransmitters!" rang throughout the second floor gymnasium as students tossed tennis balls, ran relays, and shot baskets. "Myelin is important," observed one of the students.

John Liu receives the International Brain Bee award from 2004 winner Bhaktapriya Nagalla.

SfN President Carol Barnes discusses neuroscience with a Francis Junior High School student.

Students examine a brain puzzle during BAW activities at Francis Junior High School.

Students discuss functions of the frontal cortex.

The game was organized and run by postdoctoral research fellow Ahmed Mohyeldin and graduate students Thomas McFate, Alisa Shaefer, and Sean Manion, all of the Uniformed Services University of the Health Sciences (USUHS), and postdoctoral candidate Tammy Crowder of NIH.

SfN fellows Joiner, David, and Matta talked about how they became involved in neuroscience and encouraged students to consider science careers. Joiner performed an experiment with a basketball to demonstrate his work with prediction. Students asked questions about stress, feelings, and learning.

Students also saw how the different parts of the brain are important in a series of activities called "Piece of Mind." They learned about the various parts of the brain by investigating plastinated rat, cat, monkey, and human brains, examining MRI images and X-rays, and putting together brain puzzles. Ajay Verma, president of SfN's Potomac Chapter; Peter Okagaki, Adetoun Adeniji-Adele, and Michael Schell, of USUHS; and Josh Duckworth and Kevin Joseph, residents at Walter Reed Army Medical Center, organized this activity.

"The brainstem controls the heartbeat!" one student proclaimed, as another announced, "Rats are really good at smelling!"

The seventh annual International Brain Bee was held Saturday, March 19, at the University of Maryland in Baltimore. Students gathered to participate in the two-day event, following victories in their local competitions. The winner, John Liu, will receive funding to attend Neuroscience 2005 with his faculty mentor. Rebecca Johns, Liu's mentor, is an AP biology teacher at Troy High School, in Troy, Michigan, where Liu is a junior. She was also the recipient of an SfN Teacher Travel Award in 2004, traveling to Neuroscience 2004 in San Diego. Liu will also receive a $3,000 scholarship provided by the Thadikonda Foundation and will complete a summer internship with a neuroscientist, arranged by SfN.

Brain Bee questions were culled from *Brain Facts*, the Society's 52-page primer on the brain and nervous system, and *The Brain/Immune Connection: 2004*, a progress report on brain research published by Dana Press. Brain Bee competitors answered questions like "What is the most addictive drug to which people are commonly exposed?" and "What is the type of dementia caused by alcoholism?"

The weekend event, organized by Norbert Myslinski of the University of Maryland School of Dentisty, also included a trip to the National Library of Medicine in Bethesda, Maryland, and a neuroanatomy practicum. ■

SfN Minority Fellow Karen Kate David talks to students about her neuroscience research.

Students examine plastinated brains with medical resident Kevin Joseph.

Students toss tennis ball "neurotransmitters" during a neuroscience relay game.

Postdoctoral fellow Ahmed Mohyeldin helps get the neuron reloaded for its next transmission.

Kentucky Bluegrass Chapter BAW Town Hall Meeting a Success

To celebrate the 10th anniversary of Brain Awareness Week (BAW), the Bluegrass Chapter of the Society for Neuroscience held a "Town Hall Meeting: Meet the Experts" session to jumpstart a dialogue with the community about the importance of neuroscience research. Held March 16 in downtown Lexington at the Kentucky Theater, the question-and-answer session gave local Kentuckians the opportunity to hear about neuroscience research and to ask questions about various neurological diseases.

"This event was a great opportunity for us to show our community what neuroscience is all about," said Bluegrass Chapter President Greg Gerhardt of the University of Kentucky. "Talking to the general public about neuroscience gives our work an added level of importance."

About 60 people attended the town hall meeting, which was moderated by Gerhardt. Speakers included a mix of clinicians and researchers, bringing a broad spectrum of translational research to the event.

Speakers included Joseph Berger, who discussed chronic depression and AIDS; Paul Glaser, who discussed attention deficit hyperactivity disorder (ADHD) in children and adults and childhood depression; Don Gash, who covered Parkinson's disease and age-related motor dysfunction; and Lon Hays, who talked about chronic depression and other psychiatric disorders. All participants in the panel discussion were from the University of Kentucky.

Audience members asked questions ranging from, "Is ADHD a true disorder?" to how best to address the high incidence of oxycontin abuse among pregnant women in eastern Kentucky.

In taped messages, Sen. Mitch McConnell (R-KY) and Rep. Ben Chandler (D-KY) welcomed participants to the event and briefly discussed neuroscience and statistics on the prevalence of various psychological disorders.

The Bluegrass Chapter of SfN also held a Neuroscience Day as part of BAW. Approximately 130 people attended the neuroscience fair, which featured 81 posters viewed in three sessions, a keynote lecture, and a brief taped speech from Sen. McConnell and Rep. Chandler. ■

Aging Brain Discussed at New Hampshire Assisted Living Facility During BAW

The aging brain was the topic of a talk on March 10 at Riverwoods at Exeter, an assisted living facility in Exeter, New Hampshire, in conjuction with Brain Awareness Week.

Joseph Carey, senior director of communications and public affairs at the Society for Neuroscience, spoke to 150 people—aged from their 60s to late 80s—about the healthy brain, what goes wrong in neurological disorders, and what people can do to help avoid dementia and other illnesses. He noted that some people in their 70s and 80s function as well as those in their 30s and 40s, and that the wisdom and experience of older people often make up for deficits in performance.

Brain and nervous system diseases cost more than $500 billion annually, yet National Institutes of Health (NIH) support for neuroscience research is only $4 billion annually, Carey said. He urged attendees to write Sen. Judd Gregg (R-NH), chair of the Senate Budget Committee, to thank him for his past support for NIH funding and to encourage him to help ensure future funding. ■

SfN Senior Director of Communications and Public Affairs Joseph Carey discusses brain aging.

NQ welcomes reader responses to articles that appear in the newsletter. To provide a forum for comment, *NQ* is introducing a new Letters to the Editor feature. If you would like to respond to an article or idea appearing in *NQ*, please send an e-mail to nqletters@sfn.org. The editors of *NQ* reserve the right to select letters for publication and will edit them for style, length, and content.

— The Editors

Mental Health Parity Highlighted at Capitol Hill Briefing Sponsored by SfN, Rep. Patrick Kennedy

SfN leaders made the scientific case for mental health parity at a briefing on Capitol Hill in February 2005. Sponsored by SfN in conjunction with Rep. Patrick Kennedy's (D-RI) office, the briefing sought to show lawmakers that mental health disorders have a biological basis and often coexist and interact with other illnesses and conditions.

Rep. Patrick Kennedy (D-RI) talks with (from left to right) Mahlon DeLong, Guy McKhann, Carol Barnes, and Huda Akil.

The impetus for the event, titled "Building the Case for Mental Health Parity," came from a 2004 meeting with Rep. Kennedy's office, at which the congressman expressed the need for policymakers to understand the scientific basis for mental health disorders in order to convince them to legislate that insurance companies give mental health disorders and other illnesses and conditions the same weight in coverage.

Huda Akil of the University of Michigan, a past president of SfN, spoke first on the differences in brain structure and chemical composition of depressed and nondepressed people. Next, Government and Public Affairs Committee chair Mahlon DeLong of Emory University discussed the co-incidence of depression with Parkinson's disease, citing that patients often become depressed as the disease progresses. Guy McKhann of Johns Hopkins University presented important data on how patients who have had heart attacks or heart surgery and who also experience depression have a significantly higher rate of mortality than heart patients who do not have depression. SfN President Carol Barnes moderated the event.

Large posters strategically placed around the briefing room showed brain scans of healthy individuals compared with those of patients with bipolar disorder, attention deficit hyperactivity disorder, and obsessive compulsive disorder. Another poster showed the incidence of post-traumatic stress disorder in New York City residents immediately following the terrorist attacks of September 11, 2001.

Rep. Kennedy facilitated the discussion by asking questions about suicide, brain changes in adolescents, psychotherapeutic drug development, and more. Also in attendance were high-level congressional staff from the offices of Reps. Ralph Regula (R-OH), Dave Weldon (R-FL), and Lucille Roybal-Allard (D-CA). Each of these members of Congress sits on the Appropriations Subcommittee on Labor, Health and Human Services, and Education, which funds the National Institutes of Health (NIH). Rep. Donna Christenson (D-VI) told SfN that she is interested in helping out with the cause of mental illness.

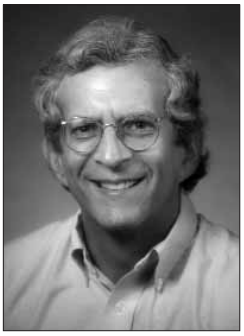
Following the briefing, Barnes, SfN President-Elect Stephen Heinemann, and DeLong met with staff members in the offices of their home state congressmen, including Rep. Jim Kolbe (R-AZ), Rep. Duke Cunningham (R-CA), Rep. John Lewis (D-GA), and Rep. Sanford Bishop (R-GA). The three SfN leaders spoke of SfN's disappointment in the President's small budget increase of 0.7 percent for NIH. They noted that this percentage increase was well below the 3.5 percent estimated increase in the rate of inflation for the conduct of biomedical research. Heinemann asked staff members to consider that the rate of inflation for neuroscience could actually be higher, given that the type of equipment needed to perform high-level neuroscience research is quite expensive. All three leaders noted that the overall decrease in spending for biomedical research will thwart scientific progress as science laboratories are broken up due to lack of funding.

"We fear for younger scientists who will have difficulty obtaining grant funding in a limited funding environment," Barnes said. Heinemann citied recent statistics showing that the age of the average first-time NIH grant recipient is 42.

SfN leaders also advocated on behalf of public health and minorities during Hill visits after the briefing. DeLong conveyed to congressional staff members that funding neuroscience is "an economic issue, considering that Alzheimer's disease may soon swamp the health-care system with 50 percent of the baby boomer population being afflicted." Barnes and Heinemann said that minorities, who tend to have higher rates of stroke and drug addiction, rely heavily on scientific advances in neuroscience.

Copies of *Brain Research Success Stories* were left with briefing attendees and congressional offices, along with an explanation of their purpose in showing existing public health benefits from neuroscience research and potential benefits from future research funding. ■

National Institute on Aging Director Discusses Advances in Aging Research, Future Directions



Richard J. Hodes

Richard J. Hodes is director of the National Institute on Aging (NIA).

***NQ:* How would you define healthy aging?**

Hodes: The goal of aging research is not necessarily to increase life expectancy, but to improve "health expectancy," the amount of time that people live in relatively good health with age. And slowly but steadily, national surveys show an increasing proportion of men and women are aging successfully without disability. Along with data from other studies, analyses of data from the National Long-Term Care Survey (NLTCS), first presented in the early 1990s, have revealed an accelerating reduction in the rate of disability among older people in the United States. This is important evidence that disability among the older population can be reduced or ameliorated, even for those age 85 and older, the most vulnerable among us. The reduction in disability may even have helped to keep people out of nursing homes. From 1992 through 1999, the NLTCS study showed a 22 percent drop — some 200,000 people — in the number of people in nursing homes, a finding that has broad implications for how society might address a possible increase in the need of long-term or nursing home care as the baby boom generation ages.

"The goal of aging research is not necessarily to increase life expectancy, but to improve the amount of time that people live in relatively good health with age."

– Richard J. Hodes

***NQ:* What do you believe are the major challenges brought on by an aging population?**

Hodes: The challenge now is to find ways to maintain or even improve the trend toward decreased disability amid a steep rise in the number and proportion of older people. Aging is still difficult for millions of Americans and their families. Most people age 70 and older, according to one national survey, have at least one of seven potentially disabling conditions, such as arthritis, heart disease, or diabetes. And about one in five people 65 and older — an estimated 7 million older people nationwide — report some level of disability. Further, the population age 85 and older — those at the greatest risk for disease and disability — is the fastest growing in the United States and is projected to reach nearly 21 million by 2050. Nearly half of people 85 and older suffer from Alzheimer's disease (AD).

The rapid aging of the population means that the actual numbers of people with these conditions will grow considerably unless there is significant progress in further reducing rates of disability and disease with age. The leading edge of the baby boom population turns 65 in 2011, marking a shift that may have important implications for social insurance programs like Social Security, Medicare, and Medicaid, as well as for individuals and families.

***NQ:* What will be the major challenges in aging research during the next decade?**

Hodes: We approach research on aging in three related but different ways — studying the process of normal aging, understanding the specific diseases and disabilities associated with growing older, and examining factors that allow for an independent, active later life. We have learned a great deal in recent years. For example, basic research is helping us discover the genetic and biological basis for health and disease. We have isolated genes involved in longevity in certain species and have found similar genes in the human genome. Biological research permits us to see some of what goes awry in cells threatened by inflammation or other stressors and what maintains the integrity of cells and organ systems. Specifically, study of the genetics and etiology of AD is yielding new information to help guide the development of drugs and diagnostics. Clinically focused research demonstrates the profound effects of exercise on mobility and reduced risk of disease, part of an overall strategy to find specific, practical ways to reduce disability and to promote independence by evaluating the causes, prevention, and treatment of health problems that occur with age. Social and behavioral studies examine the economic, societal, and psychological influences on our health and well-being, suggesting that education, or lack of education, is one barometer of health status; the higher the education, the better a variety of health measures.

The challenge today is to build upon this research as resources tighten and the aging population grows. The NIA is looking at several innovative ways to conduct studies more efficiently and expeditiously, including the development of new research technologies and partnerships. Of note is the October 2004 launch of the Alzheimer's Disease Neuroimaging Initiative, a public-private partnership instigated by the NIA to find neuroimaging techniques and biomarkers that can characterize AD and speed up testing of potential new therapies, and to make the results and biological specimens rapidly available to qualified investigators.

***NQ:* What are the most promising avenues of research in Alzheimer's disease over the next several years?**

Hodes: For some time, scientists have understood that AD develops as a result of a complex cascade of events taking place over a period of time inside the brain and influenced by both

genetic and nongenetic factors. Researchers are delving further into these events in hopes of determining their sequence and to pinpoint the various genetic and lifestyle risk factors that may play a role.

Investigators are continuing intensive studies of AD genetics. It has been more than 10 years since APOE-e4 was identified as a risk factor gene for late-onset AD. Today, scientists are narrowing the search for other risk factor genes involved in late-onset AD, and believe they have found regions on four chromosomes where other risk factor genes might be, including one that may influence the age of onset of both AD and Parkinson's disease.

To intensify the quest for the genes involved in late-onset AD, the NIA in 2002 began the Alzheimer's Disease Genetics Initiative to significantly expand the collection of blood samples from individuals with AD and their family members. Crucial to this effort is the involvement of researchers at the NIA-funded Alzheimer's Disease Centers for identifying and evaluating family members. These blood samples will allow the NIA-supported National Cell Repository for Research on Alzheimer's Disease to create and maintain immortalized cell lines crucial for the exhaustive DNA analysis studies needed to identify risk factor genes and to make the DNA and data freely available to qualified researchers.

Enormous progress is being made, too, in efforts to find neuroimaging and other biomarkers useful in characterizing early changes in the brain and in the body during the development of AD. The multi-year Alzheimer's Disease Neuroimaging Initiative uses serial MRI and PET scans to examine how brains change as mild cognitive impairment and early AD progress. The project will follow approximately 200 cognitively normal individuals for three years, 400 people with mild cognitive impairment for three years and 200 people with early AD for two years.

Using MRI and PET scans at regularly scheduled intervals, investigators hope to learn when and where in the brain degeneration occurs as memory problems develop, and they will correlate this imaging information with clinical, neuropsychological, and biological markers from blood, cerebrospinal fluid, and urine samples. Potential markers include levels of beta-amyloid and *tau*, indicators of inflammation, and measures of oxidative stress. The NIA hopes this initiative will help create rigorous imaging and biomarker standards that will aid in early diagnosis and provide the yardstick by which the success of future drug treatments can be measured. This could substantially increase the pace and decrease the cost of developing medication.

***NQ:* Do you foresee an effective Alzheimer's disease therapy down the road? What will it take to get us there?**

Hodes: AD is the outcome of a long process that appears to reflect complex underlying molecular mechanisms. It is therefore difficult to predict precisely when success will come in identifying highly effective therapies. However, the progress already made will speed the pace of discovery, unravel the mysteries of AD pathology, and develop safe, effective preventions and treatments to the benefit of older Americans.

For perspective, consider the strides made in just the past two decades. Some 15 years ago, we did not know any of the genes that could cause AD, and we had limited understanding of the biological pathways involved in the development of AD brain pathology. Twelve years ago, we could not model the disease in animals. A little more than 5 years ago, we weren't funding any prevention trials and had no way of identifying people at high risk for AD.

Today, we have made impressive strides in each of these areas of research through a far-ranging and innovative program of scientific endeavor. We know a number of the genes involved in AD development and have initiated an intensive effort to discover the remaining risk factor genes for late-onset AD. We have also unraveled many of the pathways responsible for the generation and deposition of amyloid and *tau*, as well as the death and dysfunction of neurons. Numerous targets for potential drug therapies are being pursued. For example, we now know that even the early stages of AD are characterized by loss of synapses and neurons in the hippocampus and other parts of the brain that play an important role in memory. We're investigating a number of potential interventions to prevent this from occurring, including placing growth factors in the affected areas of the brain.

***NQ:* Is a vaccine for Alzheimer's disease still possible?**

Hodes: Interest in an immunological approach for AD grew from studies in transgenic mice, in which rodents with gradually developing beta-amyloid plaques were injected with a vaccine composed of very small amounts of the beta-amyloid peptide, or protein fragment. Scientists found that the injections resulted in much less beta-amyloid being deposited in the brains of the mice and better performance on memory tests. Preliminary private sector-sponsored trials of the vaccine in humans were suspended in early 2002 because inflammation developed in the brains of some participants. Although disappointing, the research produced a wealth of important clinical and pathology data, helping scientists to refashion the approach to developing a vaccine in humans.

Despite the setback, the immunological approach to preventing AD continues to be of substantial interest. It is too early to tell whether a vaccine will eventually be proven effective, but this line of research has been invaluable in helping to understand more fully the steps involved in the metabolism of amyloid precursor protein and beta-amyloid, and how beta-amyloid is distributed among body compartments — including blood, cerebrospinal fluid, and brain. This improved understanding may prove central to more effective AD diagnosis and treatment in the future, vaccine or not.

***NQ:* What other possible approaches to preventing and treating Alzheimer's disease is the NIA investigating?**

Hodes: Beyond research on the etiology and genetics of AD, the institute is moving forward with a number of important clinical trials. The NIA currently supports 19 clinical trials investigating treatments for people who already have AD. One study of simvastatin (Zocor), a commonly prescribed cholesterol-lowering drug, seeks to find out if the drug can safely and effectively slow

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. . . Hodes Q & A, continued from page 9

the rate of disease progression in people with mild to moderate AD. Data from epidemiologic and animal studies indicate that high cholesterol levels are associated with increased risk of AD, and some population studies suggest that statin drugs, specifically, may help to reduce the risk of the disease. Another study targeted at a cardiovascular risk factor is examining whether reducing homocysteine levels in the blood with use of B vitamins and folate might help to reduce the rate of disease progression.

We are also evaluating huperzine A, a natural cholinesterase inhibitor derived from the Chinese herb, *Huperzia serrata*, to see if it can slow the progression of cognitive decline in people with mild to moderate AD. A number of small trials in China have suggested that people with AD who were treated with huperzine performed better on memory tests than patients on placebo. Investigators are also interested in huperzine because it has antioxidant and neuroprotective properties that suggest it may be useful in treating AD.

As we search for ways to slow the progression of AD, it is important to continue research on managing the behavioral and psychological symptoms associated with the disease. Two clinical trials of divalproex sodium (Valproate) are examining its effect on agitation and psychosis. The first trial, conducted among 150 nursing home residents, was designed to see whether this medication could ease agitation among individuals with severe AD. This study has ended, and the results are being analyzed. The second trial began recently to examine whether divalproex sodium can delay or prevent agitation in individuals with mild to moderate AD. Researchers are also interested in seeing whether its possible neuroprotective properties have any effect on slowing the rate of cognitive decline.

The success of prevention trials for AD in recent years has been mixed. The first NIA-sponsored prevention trial, the Memory Impairment Study, was designed to compare the effectiveness of vitamin E, donepezil (Aricept), and placebo in delaying the onset of AD in people with mild cognitive impairment. Preliminary data from this just-completed trial showed that participants who took donepezil had a reduced risk of progressing to AD initially, but that the benefit disappeared after 18 months. Vitamin E did not appear to slow the progression to AD. The investigators are conducting additional analyses to determine why donepezil's effect dropped off over time and to assess the practical and clinical implications of this complex study.

More recently, estrogen and estrogen plus progestin in older women were found not to prevent AD, and in some cases were associated with an increased risk of dementia. In another study involving nonsteroidal anti-inflammatory drugs (NSAIDs), administration of study drugs was suspended in a trial testing whether celecoxib and naproxen could prevent AD in generally healthy older people at higher risk because of a family history. The suspension came as the result of concerns raised by studies that suggested an increased risk of cardiovascular events associated with long-term use of NSAIDs. Despite problems encountered in these studies, the research dramatically highlights the importance of conducting rigorous clinical trials in people to test findings from population and animal studies.

NQ: **Do you think what works for Alzheimer's disease may also be found to be useful for other neurodegenerative diseases? What are some of the research advances that might help scientists better understand other types of age-related neurodegenerative disorders such as Parkinson's disease?**

Hodes: AD and a number of other neurodegenerative diseases, including dementia with Lewy bodies, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis (ALS), and prion diseases such Creutzfeldt-Jakob disease (CJD), are characterized by excessive amounts of toxic abnormally folded proteins being deposited in the brain. Each of these diseases has unique clinical symptoms and pathological characteristics, and the ways they progress and develop over time are different. However, they also share some characteristics with one another. Some people with AD, for example, have slowed movements and tremors, resembling the symptoms of Parkinson's disease. People who have dementia with Lewy bodies (abnormal structures in the brain that contain a protein called synuclein) experience cognitive, behavioral, and psychotic symptoms similar to AD as well as slowed movements and tremors that are characteristic of Parkinson's.

One hypothesis about AD, Parkinson's disease, and other neurodegenerative diseases is that the "misfolded" proteins that accumulate in brain tissue cause the disease. As a protein is made, it folds into a distinctive three-dimensional shape. Each type of protein has a unique shape, which allows it to carry out its particular function. If a protein is not folded properly, it can't function normally. The abnormally folded proteins that accumulate in these neurodegenerative diseases may themselves be toxic. Although the abnormally folded proteins in each disease are different, they have recently been found to have common structural features.

By learning more about protein misfolding, researchers hope to understand the pathological mechanisms that underlie the transformation of normal proteins into abnormal ones, thereby shedding light on the disease process in Parkinson's disease and other disorders. Scientists believe that therapies developed to prevent the buildup of abnormal proteins or to accelerate their removal in one of these diseases might also be effective in the others.

Specific to Parkinson's disease, NIA scientists and colleagues are learning quite a bit about the genetics of the disease. For many years, the possibility of genetic causes of Parkinson's disease was discounted. But more recently a number of causal and risk factor genes have been identified, the latest, a study suggesting that a mutation in one recently discovered gene is the most common genetic cause of Parkinson's disease identified to date. This new evidence of a genetic connection in some cases of Parkinson's is prompting scientists to consider the possibility of a genetic test to detect the mutation in individuals who may be at risk.

***NQ:* How can the NIA and private organizations like the Society for Neuroscience work together in the advocacy of aging and neuroscience research and of science more generally?**

Hodes: Cooperative efforts by public and private organizations will be important for the advancement of science, particularly neuroscience, in the 21st century. A good example of this is the Alzheimer's Disease Neuroimaging Initiative, which I mentioned earlier. Within the federal government, the NIA is joined in the partnership by another NIH institute — the National Institute of Biomedical Imaging and Bioengineering — and the Food and Drug Administration, both of which are part of the U.S. Department of Health and Human Services. Private organizations are participating through the Foundation for NIH, which is managing contributions totaling more than $20 million from the following companies and organizations: Pfizer Inc, Wyeth Research, Eli Lilly and Company, Merck & Co, Inc., GlaxoSmithKline, AstraZeneca AB, Novartis Pharmaceuticals Corp., Eisai Global Clinical Development, Elan Corporation, plc, the Institute for the Study of Aging (ISOA), and the Alzheimer's Association. About two-thirds of the funding is expected to come from the federal government, while private partners' contributions make up the other third. Ancillary studies will be funded by additional NIH grants.

The initiative is built on basic scientific discoveries that have advanced our understanding of AD pathophysiology and genetics. With this new knowledge have come opportunities for the development of several new compounds designed to interfere directly with mechanisms of the disease in order to slow it down or stop its progression entirely. Pharmaceutical companies involved in the study believe that development of imaging measures and other biological markers may help to rapidly identify appropriate doses, assess safety, and allow for comparisons among drugs, as well as to evaluate the effects of drugs on disease progression.

Other efforts to coordinate neuroscience research efforts at NIH promise to provide new ways for us to interact with the advocates for such research. The Neuroscience Blueprint just getting underway is an effort by 15 NIH institutes and centers that support neuroscience research to foster cross-cutting research in the neurosciences, breaking down some of the disciplinary "silos" that may have existed as projects were funded institute by institute. As the Blueprint moves forward, there will be new opportunities for the NIH neuroscience community to work with outside organizations on programs and priorities.

Beyond specific research programs, organizations such as SfN can play a major role in promoting and communicating news and information about research to a wide variety of "publics," including the scientific and medical communities as well as policymakers and patients and their families. Translating the sometimes difficult concepts and language of neuroscience into information more understandable and accessible to the nonscientific community helps the public learn more about scientific exploration, benefiting all of our efforts. Within the scientific community, organizations like SfN are critical in communicating the latest developments in the field as well as fostering an interest in science by young investigators. We look forward to working with you as we progress in aging research — and in neuroscience research specifically — toward a new understanding of the brain and improvements in health for all of us. ■

... President's Budget Proposal, continued from page 1

NIH FUNDING DROPS OFF

For NIH, the president proposes a budget of $28.85 billion, $196 million — or 0.7 percent — more than current funding. Although NIH funding was not reduced in absolute dollars, as some had feared, this proposed appropriation extends a recent downward trend in the rate of annual funding increases. The past two years have seen a sharp drop-off in the growth rate of NIH funding, following a five-year period during which the agency's budget doubled.

With regard to neuroscience, the budget funds the Blueprint Initiative for Neuroscience Research, an ongoing project designed to improve the efficiency of cross-institute research in this field. Congress allocated funds in FY 2005 for participating blueprint institutes and centers to develop an inventory of neuroscience tools funded by NIH and other government agencies, to enhance training in the neurobiology of disease for basic neuroscientists, and to expand ongoing gene expression database efforts, such as the Gene Expression Nervous System Atlas (GENSAT).

The proposed FY 2005 budget allocated NIH $16 million for three core Blueprint initiatives: the Neuromouse Project, cross-institute neuroscience training programs, and neuro-

Agency	FY 2004 Appropriation	FY 2005 Appropriation	FY 2006 Proposal	Dollar change	Percent change
National Institutes of Health	$28.1 billion	$28.65 billion	$28.85 billion	$196 million	0.7%
National Science Foundation	$5.61 billion	$5.47 billion	$5.61 billion	$140 million	2.6%
Veterans Administration (Medical and Prosthetic Research Accounts)	$408 million	$402.3 million	$393 million	-$9 million	-2.2%

Continued on page 15 ...

NEW COMMITTEE PROMOTES WOMEN IN NEUROSCIENCE

The careers of women in neuroscience got a boost in early 2005 with the creation of the Committee on Women in Neuroscience (C-WIN), which joins SfN's former Committee on the Development of Women's Careers in Neuroscience with the independent organization Women in Neuroscience (WIN).

C-WIN, officially established by SfN January 1, 2005, will benefit from the combined budgets and unified goals of the two groups and aims to sponsor a wide array of professional development activities.

"The formation of C-WIN demonstrates SfN's continuing commitment to women's professional development," said SfN President Carol Barnes. "By offering activities on leadership training and professional development, particularly to young investigators, we expect C-WIN will have a great impact on the development of women's careers in neuroscience."

Founded in 1980, WIN's chief purpose was to foster the development and career advancement of women scientists, particularly in the field of neuroscience. The international organization was extremely active, providing a variety of travel and achievement awards, holding mentoring and professional development programs at SfN's annual meeting, and creating quarterly newsletters and merchandise.

SfN's Committee on the Development of Women's Careers in Neuroscience was also significantly involved in formulating mentoring partnerships, supporting women's professional development workshop proposals at SfN's annual meetings, and enhancing opportunities for women scientists everywhere. These shared interests made the new partnership a logical step in furthering the groups' effectiveness.

"The joining of WIN and the SfN Committee on the Development of Women's Careers in Neuroscience will capitalize on the momentum WIN has built over the past 20 years," said Laure Haak, former WIN president. "As a result of partnership, the society has increased the representation of graduate students, postdoctoral scholars, and early-career scientists on its committees."

C-WIN, which pairs SfN's 36,000 members with WIN's 25 years of experience, will be able to take advantage of the strengths of each organization. In 2005, the committee plans to spearhead several initiatives, including the development of a proposal to provide grants for women neuroscientists at critical career transitions, the continuation of the mentoring program and awards, and the encouragement of gender diversity in all aspects of neuroscience. C-WIN plans to encourage both men and women to participate in its mentoring and professional development activities. ■

FIRST CLASS COMPLETES MILEDI TRAINING COURSE

Marcelo Aguilar, Miledi participant

The Society for Neuroscience recently successfully graduated the inaugural class of its Ricardo Miledi Program for Neuroscience Training, a four-week course, funded by the Grass Foundation, that the Society founded to train annually 15 of the most promising neuroscience students in Latin America.

The 2004 course, "Neurotransmission: From Molecules to Behavior," approached the main theme from two complementary perspectives: analytical and integrative. Following an overall progression from molecular to systems level studies, the sessions focused first on receptors, ion channels, signal transduction, second messengers, and synaptic biology, subsequently moving on to motor function, sexual behavior, learning, and memory. Instructors also gave an over-view of various neurochemical disorders. Neurotransmission was chosen because it is a key event in communication between neurons and plays a central role in brain activity, and hence in our identity as human beings.

The course used a variety of teaching methods. Students heard topical lectures and presentations the first half of each day and spent the second half in laboratories, conducting hands-on experiments relevant to the week's lectures. Frequently, they were exposed to laboratory techniques that they had not experienced previously. Fridays were dedicated primarily to professional development activities, with lectures and discussion on topics such as choosing a postdoctoral position, bioethics, and how to obtain international funding.

The trainees were selected from a pool of 44 applicants and were required to be in either a master's program or the first two years of a PhD program, studying a field relevant to the course topic. They represented Mexico, Argentina, Chile, Colombia, Cuba, Brazil, Uruguay, and Venezuela.

In addition to attending the course, the students all received a Hugo Arechiga Fellowship, which covered travel and lodging expenses for Neuroscience 2004 in San Diego. SfN staff briefed the trainees on the available professional development opportunities at the annual meeting and matched them with mentors, with whom they were encouraged to meet at the mentoring reception. All enjoyed the opportunity to network and expand their knowledge.

Equipment for the Ricardo Miledi Program for Neuroscience Training was donated by Roboz Surgical Instruments and the National Institutes of Health. ■

SfN PUBLICATIONS, CD WIN AWARDS

The Society for Neuroscience garnered top honors for several of its publications and media products in the 2004 All-Media Contest, organized by *Associations TRENDS*, a national newspaper for association executives and suppliers. SfN's 2004 annual progress report *From Vision to Action* outclassed the competition, winning gold in the annual contest's annual report category.

In addition, the Society's conference publications competed well: the Neuroscience 2004 Abstract Viewer and Itinerary Planner CD-ROM and *Exhibit Prospectus* both won bronze awards. The program for Neuroscience 2004 received a Special Notation for organization.

Judges scored print materials in six main categories: appearance, layout, style, content, appropriateness, and effectiveness, adding bonus points for unique or particularly interesting elements as deserved. ■

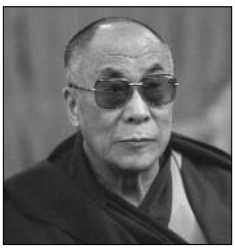
Society for Neuroscience staff accept media awards.

Neuroscience and Society Lecture Series Announced

A new feature of the annual meeting, starting in 2005, will be a lecture series titled "Dialogues between Neuroscience and Society." The first speakers will be the Dalai Lama, the spiritual leader of the Tibetan people, at the 2005 meeting, and Frank Gehry, the architect, in 2006. The series was announced at the Society's February Program Committee meeting by SfN President Carol Barnes.

The series will feature leaders from fields outside of neuroscience whose work relates to subjects of interest to neuroscientists. The format will be for the speaker to talk for 30 minutes and then entertain questions from the audience for another 30 minutes. In the question-and-answer period, questions from the audience will be written on cards and passed to selected SfN leaders posted in each aisle. Lecturers will be selected each year by the Society president, and discussed with Council and the Program Committee.

"The idea for the series is to introduce thought-provoking speakers from fields that are at the boundaries of neuroscience," said Barnes. "The speakers can share insights about areas where our work as scientists interacts with, influences, and is influenced by other fields. In turn, we will have the opportunity to share our perspectives with intellectual leaders from other fields of human endeavor."



The Dalai Lama will speak at Neuroscience 2005.

The Dalai Lama, the 2005 speaker, has had a long interest in science and has maintained an ongoing dialogue with leading neuroscientists for more than 15 years. His talk is expected to focus on the study of empathy and compassion and how meditation affects brain activity. "As the cover of the March *National Geographic* indicates, he has already had an influence on the design of experiments of great interest to neuroscientists, and to the public at large," Barnes said. Frank Gehry will discuss architecture and perception at the 2006 annual meeting, at the invitation of President-elect Stephen Heinemann.

The Dalai Lama is the winner of the 1989 Nobel Prize for Peace and is the spiritual leader of Tibetan Buddhism. He has long had a keen personal interest in the sciences, and has said that if he were not a monk, he would have liked to have been an engineer.

The Dalai Lama has enjoyed relationships with many scientists, including long friendships with the late renowned philosopher of science Sir Karl Popper, and with physicists Carl von Weizsäcker and the late David Bohm. He has participated in many conferences on science and spirituality. At the Alpbach Symposia on Consciousness in 1983, the Dalai Lama met Francisco Varela who, in partnership with Adam Engle, later created the unique form of in-depth dialogue between Buddhism and science that has grown into the Mind and Life Institute, of which he is honorary chairman (www.mindandlife.org). Since the first Mind and Life meeting in 1987, the Dalai Lama has regularly dedicated a full week of his busy schedule to these biennial meetings. To date, there have been 12 Mind and Life dialogues on subjects ranging from emotions and neuroplasticity to quantum mechanics. Mind and Life XIII will take place just prior to this year's SfN annual meeting in Washington, DC, and is on the topic of "Science and Clinical Applications of Meditation."

The Mind and Life Institute states that it is "dedicated to fostering dialogue and research at the highest possible level between modern science and the great living contemplative traditions, especially Buddhism. It builds on a deep commitment to the power and value of both of these ways of advancing knowledge and their potential to alleviate suffering." It realizes its mission through a range of interrelated activities, including semi-private meetings between prominent scientists and leading figures from the contemplative traditions; public conferences to stimulate interest in the potential of these scientific dialogues within the larger scholarly community; intellectually rigorous yet accessible publications, based on Mind and Life meetings; collaborative research projects and their related publications; and its annual Mind and Life Summer Research Institute.

The Dalai Lama has said that science and Buddhism share a common objective: to serve humanity and create a better understanding of the world. He has stated that science offers powerful tools for understanding the interconnectedness of all life, and that such understanding provides an essential rationale for ethical behavior and the protection of the environment.

Born in Canada in 1929, Gehry is a naturalized U.S. citizen. In 1954, he graduated from the University of Southern California and began work full time with Victor Gruen Associates, where he had been apprenticing part time while still in school. Among his most renowned works are the Guggenheim Museum in Bilbao, Spain, the Walt Disney Concert Hall in Los Angeles, and the new Stata Center for Computer, Information, and Intelligence Sciences at the Massachusetts Institute of Technology. The jury for the Pritzker Architecture Prize, which Gehry won in 1989, describes his work as "a highly refined, sophisticated, and adventurous aesthetic that emphasizes the art of architecture. His sometimes controversial, but always arresting body of work, has been variously described as iconoclastic, rambunctious, and impermanent, but the jury, in making this award, commends this restless spirit that has made his buildings a unique expression of contemporary society and its ambivalent values."

In recent years, the neuroscience and architecture communities have teamed up to explore how knowledge of neuroscience can assist architects in their design of environments that allow people to function at their fullest. The Academy of Neuroscience for Architecture, formed in May 2003 in San Diego, is the product of a 20-year working relationship between a group of neuroscientists and architects who believe that scientific data on how the brain responds to cues from different environments will eventually provide better informed tools for the design process.

"Frank Gehry's innovative designs of public spaces around the world have led to renewed interest in architecture and catalyzed a lively debate about the role of architecture in our society," said Heinemann. "I look forward to hearing his perspective on human perception and how it relates to his architectural vision." ■

... President's Budget Proposal, continued from page 11

science core grants. The Neuromouse Project garners $2 million for developing genetically engineered mouse strains specifically for nervous system disease research. Training in critical areas that cut across multiple institutes, such as neuroimaging and computational biology, will be supported with $2.5 million for the cross-institute neuroscience training programs. And the core grants — with $7.5 million budgeted — will fund specialized, interdisciplinary centers focusing on neuroscience applications in areas such as animal models, DNA sequencing, gene vectors, molecular biology, and proteomics.

The 15 institutes and centers collaborating in the blueprint initiative will contribute an additional $14 million, for a total of $26 million for this initiative in FY 2006.

In addition, the proposed NIH budget figure includes $1.8 billion for biodefense research, $2.9 billion for HIV/AIDS-related research, and $333 million to support the NIH "Roadmap" initiative. The proposed NIH budget would support 38,746 projects, 400 fewer grants than in FY 2005. NIH estimates the budget will fund 9,463 new and competing grants, a gain of 247 over FY 2005, at an average adjusted cost of $347,000 per grant.

NSF AND VA FUNDING

While NSF funding stands to grow by almost 2.6 percent over FY 2005 levels to $5.61 billion, this increase would just bring the agency in line with its FY 2004 budget. Furthermore, legislation in 2002 authorized a doubling of the NSF budget, like the one carried out at NIH. The agency is now $8 billion behind schedule.

Within NSF's overall budget, one of the main sources of neuroscience research funding is the directorate for biological sciences. As proposed for FY 2006, these monies would rise to $581.8 million, an increase of 0.9 percent.

The president's FY 2006 budget proposal requests $393 million for the direct costs of the VA Medical and Prosthetics Research Program — another source of neuroscience research funding. However, this represents a cut of $9 million (2.2 percent) from the FY 2005 figure, the continuation of a recent trend. The proposed budget can be expected to fund a total of 2,655 grants, 62 fewer than in FY 2005, and would require the elimination of 270 full-time equivalent research positions.

SCIENCE FUNDING IN CONTEXT

As tight as the budget restrictions proposed in the president's budget are, they may be overshadowed by an even stricter fiscal reality. Despite the president's pledge to cut the budget deficit in half by 2009, the government's fiscal health is worsening. The nonpartisan Congressional Budget Office (CBO) recently released its deficit forecast for the coming decade, which projects that the government will amass an additional $855 billion in debt between 2006 and 2015.

This estimate almost certainly understates the problem, however, because it assumes that no additional money will be spent on war or antiterrorism efforts, and it excludes costs associated with restructuring Social Security. CBO reports that tax cuts and spending bills enacted by Congress last year alone contributed $504 billion to the 10-year forecast. CBO's projected deficit for FY 2005 grew to $427 billion, an increase of $15 billion over the previous year, even though tax receipts rose 11 percent in the first quarter of the fiscal year.

The short-term outlook for passage of these proposed FY 2006 appropriations is still unclear. In addition to developing a congressional budget resolution (overall spending plan), Congress will be debating an $80 billion supplemental appropriation for war efforts, revising the tax structure, and passing all of the appropriations bills required to keep the government running. With its heavy workload, Congress could be debating the budget well into 2006. ■

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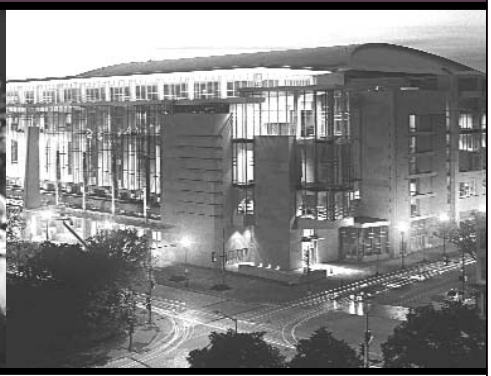

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