

NEUROSCIENCE

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Q U A R T E R L Y

*“Neuroinformatics
is an emerging field
that tackles the
unique challenges posed
by neuroscience data.”*

– SfN President David Van Essen

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Message from the President

Neuroinformatics – What’s in It for You?

Electronic communication of information is increasingly pervasive in scientific research. Neuroscientists routinely read online journals and access information via broad-based search engines such as PubMed and Google Scholar. Many also analyze gene and protein sequences using powerful bioinformatics tools (e.g., BLAST) and large databases (GenBank, OMIM, etc.) Given the tremendous utility of these online search and data mining tools, it is striking that most neuroscientists do not make extensive use of neuroscience-specific databases and neuroinformatics tools. In considering why this is currently the case and why it is likely to change dramatically, I will discuss several aspects of neuroinformatics, including (1) what’s so special about neuroscience data; (2) examples of how neuroscience databases might be used in the future; (3) a brief history of SfN’s role in neuroinformatics; (4) what’s needed now; and (5) synergies between databases and online publications.

Databases and bioinformatics tools dealing with sequence data benefit tremendously from the stereotyped, one-dimensional nature of nucleotide and protein sequences. From an informatics perspective, the nervous system poses a starkly different set of challenges owing to its amazing complexity and diversity at many spatial scales and organizational levels. Understanding the brain entails knowing about thousands of brain structures, billions of constituent neurons, exquisitely complex patterns of connectivity, and sophisticated computations mediated by synaptic inputs and spike trains that in turn rely on intricate molecular signaling cascades. Whether one considers individual synapses, neurons, brain nuclei, or neural circuits, each has some features that are highly stereotyped, whereas other features differ in ways that may be critical for understanding development, plasticity, individual variability, and disease state or progression.

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Increased NSF Funding Benefits Interdisciplinary Neuroscience

When President Bush signed a \$463 billion continuing resolution on February 15 to fund most federal agencies in FY07, the legislation included \$5.92 billion for the National Science Foundation (NSF), an increase of 6.8 percent over the previous year. The increase reflects the next installment on a 10-year budget doubling effort for NSF as part of the American Competitiveness Initiative (ACI) that President Bush announced in 2006. The increase will allow NSF to support more basic research, including many funding opportunities for neuroscience.

While on the surface the ACI appears to focus exclusively on the physical and mathematical sciences, NSF officials emphasize that there are many new funding opportunities for neuroscience, but grant applicants may have to look in unfamiliar places.

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David Van Essen,
SfN President

Neuroinformatics is an emerging field that tackles the unique challenges posed by neuroscience data. The overarching objective is to provide neuroscientists with powerful tools for searching, visualizing, and analyzing information about the nervous system and for integrating knowledge from different levels of analysis. Before discussing the current state of neuroinformatics, it is instructive to

dream for a moment about a vision that may become reality a decade or more hence.

A PEEK INTO THE FUTURE

Imagine that your computer could accept a wide range of questions about the brain posed in natural language, spoken or typed. You would immediately receive detailed, accurate answers presented in an informative combination of graphical and textual displays. For example, in response to “where are dopamine D2 receptors in the mouse brain?” you would see a 3-D atlas of the mouse brain containing a detailed map of D2 receptor distribution. This atlas would be easy to navigate at scales ranging from the whole brain to the microscopic; it would provide links to specific publications and databases from which the information was extracted; it could be queried for ancillary information (e.g., differences among mouse strains and mutants) and for comparisons with other molecular constituents. Queries about the cellular structure, molecular signature, anatomical connectivity, and/or patterns of neural activity of specific cell types that harbor the D2 receptor would yield informative 3D displays and tabulations.

A different sequence of questions might start with “what parts of the brain are abnormal in individuals with autism?,” followed by “what is the function of these regions in normal individuals?,” “what genes underlie high risk for autism?,” and “what functions of these genes have been revealed using mouse mutants?” Each query would yield information in an appropriate format that sets the stage for sensible follow-up questions. Such tools would improve efficiency and reliability of searches and would facilitate critical analysis and thinking — by making it easier to compare results, identify discrepancies, find commonalities, etc. The wish list of desired capabilities to serve students, researchers, and clinicians could go on and on. Those who doubt that such capabilities will come to pass in our

lifetimes should consider recent historical examples. In the 1980s, requests to molecular biologists to submit gene sequence data to a database elicited widespread skepticism about the utility and reliability of the endeavor. Now, two decades later, it is easy and fast to compare gene sequences across more than 500 species whose entire genomes are accessible in online databases. Such capabilities have transformed the field of genomics and launched the field of bioinformatics. From this perspective, it is just a matter of time before powerful neuroinformatics capabilities like those of the preceding paragraph become available. An optimist might predict within a decade, but even a skeptic would be hard pressed to rule such advances out in the coming half-century.

A BIT OF HISTORY

Neuroscience databases and neuroinformatics tools began to emerge in the 1990s, largely spurred by the Human Brain Project that was supported by NIH and other federal agencies. By 2003, many neuroinformatics tools and databases had been developed, but awareness of these resources in the general neuroscience community was low. In 2003, the SfN Council, led by President Huda Akil, appointed the Brain Information Group (BIG) task force to consider the information infrastructure needs of neuroscience research. The BIG, chaired by Floyd Bloom, surveyed available neuroinformatics resources and identified more than 70 databases and software tools that were specifically relevant to neuroscientists. The Neuroscience Database Gateway (NDG), with seed funding from NIDA, NINDS, and NIMH, was developed as a common portal to aid neuroscientists in identifying useful resources. Currently, the NDG (<http://ndg.sfn.org/>) lists 175 separate resources and has received almost 700,000 hits since its inception. Notably useful resources include the Allen Brain Atlas (with expression patterns for ~24,000 genes), the Biomedical Informatics Research Network (BIRN, emphasizing neuroimaging imaging data), and SenseLab (emphasizing ion channels, receptors, olfaction, and computational models).

The BIG task force was succeeded by a standing SfN Neuroinformatics committee, currently chaired by Rob Williams. This committee surveys informatics needs of the neuroscience community and oversees scientific content of the NDG. It serves as an honest broker to facilitate awareness of neuroinformatics resources, promote data sharing, and encourage development of common neuroscience terminologies. Another important initiative is the International Neuroinformatics Coordinating Facility, a 12-nation consortium directed by Jan Bjaalie that will develop guide-

lines for the generation, use, reuse, and stability of openly accessible neuroscience data and resources.

WHAT'S NEEDED NOW

Many steps must occur before neuroinformatics becomes as useful for neuroscience as bioinformatics is for genomics. Several key needs warrant emphasis.

- *Databases – more, more robust, and more populated.* Available databases do not adequately serve the diverse needs of the neuroscience community. In establishing and populating new databases, it makes sense to focus on data types that are relatively tractable (e.g., neuroimaging and microarray data), but also to consider all data types of broad use to the community. Investigators having useful reference datasets (expression data; brain atlases; time-series spike data, etc.) should consider submitting these to appropriate databases.
- *Community buy-in.* Obstacles to putting one's own data into a database come in many forms: a proprietary perspective, inertia, lack of suitable databases, and difficulty of annotation and data submission. The first two obstacles can be overcome by demonstrating concrete advantages in terms of greater visibility and citation of one's research by virtue of inclusion in a database: data sharing serves the investigator as well as the community at large. The last two obstacles require major software development and refinement, which in turn requires both skilled personnel and available resources.
- *Federated databases.* Neuroscience data are far too complex and diverse to be packaged into a single, comprehensive mega-database. Instead, much effort is going into methods for coordinated mining of data that reside in a 'federation' of databases. An important example is the Neuroscience Information Framework (NIF), a multi-institutional effort led by Dan Gardner at Cornell and funded by the NIH Blueprint (a cooperative effort among neuroscience-related institutes and centers). The NIF is an evolutionary next step that builds upon the Neuroscience Database Gateway and benefits from contributions by many neuroscientists.
- *Terminology – confronting neurobabble.* The technical terms and abbreviations used by neuroscientists continue to expand and evolve rapidly. For example, OR111-7, NGFI-A, NAc, DAMGO, and MAGUK (taken from a recent *Journal of Neuroscience* issue) are not exactly household names for most neuroscientists. Use of jargon, while needed for technical precision, frequently leads

to uncertainty and bewilderment. This problem is compounded when computers are asked to extract information from journal articles and databases using terminology that is imprecisely or ambiguously defined. To address this growing problem, the neuroscience community needs to engage with neuroinformatics experts to clarify what terms are in current use, what they mean, and how they relate to older or alternative terminology. These issues are being addressed by the aforementioned NIF, BIRN, and INCF groups and by broader bioinformatics groups.

SYNERGIES BETWEEN DATABASES AND ONLINE PUBLICATIONS

Databases and online publications are inherently synergistic rather than competitive. Each publication distills an enormous amount of experimental data into a small number of figures and tables accompanied by explanatory text. Much of the underlying data would be suitable for data mining if it were suitably annotated and organized. On the other hand, inadequately annotated data can be useless or even dangerous. An attractive strategy is to include part of the requisite annotation (metadata) in the database itself and to rely on relevant journal articles (methods; figure and table legends) for invaluable explanatory information.

To enhance synergies between online journals and databases, a leadership conference titled "PubMed Plus" will be held at Washington University in St. Louis in June, 2007. This meeting was proposed by the SfN Neuroinformatics Committee and is the main Presidential Initiative during my term. It will bring together 60 invited neuroscientists, informaticians; journal editors and publishers; and representatives of foundations, societies, government institutes, and the library community. The agenda will focus on four major issues:

- *Capturing data in ways that facilitate data mining.* How can information be acquired efficiently at the time of manuscript acceptance to facilitate searching journal articles for content and exporting data to databases?
- *Linking databases and journal publications.* How can synergies between databases and online journals be enhanced using bi-directional links between specific journal articles and specific datasets within databases?
- *Databases and journal supplementary materials – standardization and sustainability.* How can access to journal supplementary material be improved? What are best practices for ensuring database stability, sustainability, and ease of citing in journal articles?

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“Clearly, people are looking at neuroscience challenges from all different perspectives, be they physical, biological, computational, theoretical, behavioral, or mathematical,” says neuroscientist Rae Silver, senior adviser in NSF’s Office of Integrative Activities. “You’ll find support for neuroscience in each of the different NSF directorates.”

NSF’s directorate for biological sciences (BIO) supports neuroscience through its molecular and cellular biosciences, emerging frontiers, biological infrastructure and integrative organismal systems (IOS) divisions. The directorate for social, behavioral, and economic sciences supports neuroscience through its social and economic sciences division and through the cognitive neuroscience program of its behavioral and cognitive sciences division.

Support for neuroscience can also come through the computer and information sciences and engineering, engineering, education and human resources, and mathematical and physical sciences directorates. Details about all directorates, divisions, and programs can be found on the NSF Web site (see sidebar).

Neuroscience research is also supported through certain identified “crosscutting” or NSF-wide funding opportunities. These are interdisciplinary initiatives sponsored by more than one NSF organization or directorate. A full list of these opportunities is available at www.nsf.gov.

Further, all NSF directorates and divisions accept proposals that cut across organizational boundaries. Silver suggests that those seeking support for interdisciplinary work not formally identified as a crosscutting initiative contact the program officer representing the area closest to the proposed research. “He or she may be able to point you to less obvious opportunities and also give you a sense of what the most important issues are for a given division,” says Silver. “You may even want to contact more than one person in different divisions.”

As noted by Jim Collins, assistant director of BIO, crosscutting proposals don’t have to span directorates; they can span divisions within the same directorate. This recognition prompted NSF’s reorganization and February 2007 renaming of the division of integrative organismal biology. This division, part of the BIO directorate, became the division of integrative organismal systems (IOS).

IOS is divided into four clusters: behavioral systems; developmental systems; neural systems; and physiological and structural systems. This organization is meant to

Navigating the NSF Web site

Learn more about funding opportunities through NSF by visiting its Web site at www.nsf.gov. A search field in the upper right-hand corner of the homepage lets you locate areas of interest by keyword. You can also search the site by using the dropdown menus in the “Looking for Funding?” box on the left-hand side of the homepage.

To visit the Integrative Organismal Systems page, select “Biology” from the “Program Areas” dropdown menu. This will take you to the BIO main page. Click on “Integrative Organismal Systems (IOS)” from the box in the upper left corner.

To see a full list of NSF’s identified crosscutting and agency-wide funding opportunities, visit http://www.nsf.gov/funding/pgm_list.jsp?type=xcut.

To read the July 2006 Workshop Panel Report, go to http://www.nsf.gov/sbe/grand_chall.pdf.

To read the August 2006 Workshop Panel Report, go to <http://www.nsf.gov/pubs/2007/nsf07201/nsf07201.pdf>.

encourage cooperation with other divisions within the BIO directorate. It’s also meant to stimulate a systems study of organisms.

In systems biology, for instance, biologists, computer scientists, theorists and other scientists collaborate to make sense of biological complexity. IOS will support research using integrative approaches that aims to understand emergent systems properties of organisms.

Of particular relevance to SfN members are the behavioral systems and neural systems clusters of IOS. The behavioral systems cluster supports projects that aim to understand how combinations of neural, hormonal, physiological, and developmental mechanisms act as a system from which behavior emerges. The neural systems cluster focuses on how complex functions emerge from the interplay of cellular elements of the nervous system and how the nervous system interacts with other physiological systems.

NSF’s interdisciplinary focus was reinforced by a series of workshops in 2006-07 in which prominent members of the neuroscience community gathered to identify particularly promising research topics. Silver explains that the work-

shops were “intended to stimulate discussion about the frontier” of neuroscience. “This way of taking the pulse of the community may be unique to NSF, and is one of our most effective means to ensure that we support fundamental research with the potential to transform a field or even overturn a paradigm,” says Silver.

The first workshop took place in July, and resulted in a panel report on “Great Challenges of Mind and Brain.” This report, available at www.nsf.gov/sbe/grand_chall.pdf, identifies several broad areas of research that “can be expected to yield major progress in the next few years” and stresses the necessity of using a wide variety of experimental approaches and tools to realize that progress. As David Lightfoot, assistant director of SBE indicates, it encourages NSF to promote a multidisciplinary approach to neuroscience research, “since the questions of mind and brain span many levels of analysis,” including “behavioral, computa-

tional, systems, neurophysiological, and molecular.” The second workshop took place in August and focused on opportunities for mutual benefit between neuroscience and the physical and mathematical sciences, computer science, and engineering. The workshop resulted in a panel report that identifies four broad areas of such opportunity: instrumentation and measurement; data analysis, statistical modeling, and informatics; conceptual and theoretical approaches; and building brain-like devices and systems.

The report also notes recent fundamental shifts in the nature of neuroscience research, including the scope and scale of experimental investigation, the character of theoretical understanding, and the ways in which knowledge can be used. The third workshop, which explored “Neurotech Opportunities,” took place in early March. Check nsf.gov or www.sfn.org and future issues of *Neuroscience Quarterly* for updates. ■

Message from the President, *continued from page 3*

- *A common manuscript and peer review system? Would standardization among related journals benefit the manuscript submission process?*

THE WAY FORWARD

If neuroinformatics resources and tools fulfill their potential in the coming decade, they will greatly improve the efficiency and accuracy of research and allow a variety of new questions to be addressed. Navigating the SfN annual meeting might benefit from sophisticated neuroinformatics-based itinerary planners. Widespread engagement of the neuroscience community as users will encourage innovation and the development of progressively more powerful neuroinformatics tools.

In preparation for this transition, the Neuroscience Database Gateway (and its successor, the Neuroscience Information Framework) can familiarize you with resources currently available. Another strategy is to improve how you store, organize, annotate, and access data from your own laboratory. The classical lab notebook is no longer adequate when essential data (both primary data and processed data) are stored across many files, folders, and computers. More systematic handling of data will reduce uncertainty about what was done, by whom, to what, and when. This can facilitate manuscript preparation and subsequently depositing data into databases.

We particularly need to engage the next generation of neuroscientists in this undertaking, both as creators and as avid users of neuroinformatics tools. An integrated neuroscience gateway should be the first place that our students turn to in order to learn about a new field or dig into their own in greater depth. This will entail incorporating courses in informatics in neuroscience graduate curricula, and providing other venues for exposure, including at SfN meetings and workshops.

Neuroscientists and neuroinformaticians must work in collaboration to bring neuroinformatics into the mainstream. Federal agencies and private foundations need to recognize the importance of funding to develop and sustain neuroinformatics tools and resources. The Society for Neuroscience, in partnership with NIH and NSF, can continue to serve as honest brokers in efforts to formulate sensible guidelines for data sharing and best practices for communicating information. Altogether, neuroinformatics offers excellent opportunities for neuroscientists to make better use of their data and better use of their time to ponder the fabulous mysteries of the brain and the insights to be gleaned from the staggering amounts of information emerging from neuroscience laboratories around the world. ■

President Signs FY07 Spending Bill Increasing NIH Budget by 2.3 Percent; NSF to Receive Six Percent

Although the spending bill passed by Congress and signed by President Bush in mid-February funds the majority of federal programs and agencies at FY06 levels, the National Institutes of Health (NIH) will receive an additional \$620 million, an increase of 2.3 percent.

The additional funds are intended to slow a projected decline in new NIH grants. The congressional intent is to support an additional 500 research project grants along with 1,500 first time investigators and expand funding for high-risk and high-impact research. The National Science Foundation (NSF) will receive \$5.92 billion for FY07, an increase of approximately six percent from FY06, but about \$100 million below the President's FY07 request. The Research and Related Activities budget, which contains all NSF grant funding, will increase 7.7 percent to \$4.67 billion.

On Jan. 31, the House of Representatives approved the spending bill, also known as a continuing resolution (CR), by a vote of 286-140; the Senate passed the same legislation on Feb. 14 by a vote of 81-15. The bill appropriates \$463.5 billion for FY07 for more than 12 Cabinet departments and scores of smaller agencies through the rest of the fiscal year.

The resolution appropriates \$483 million specifically for the NIH Common Fund which was authorized in the NIH Reform Act of 2006. In previous years, institutes and centers contributed a percentage of their appropriations to the fund. In other words, Congress did not specify the fund amount. From now on, we expect that Congress will appropriate a specific amount for the fund. In general, most institutes and centers will show up as level-funded. However, because they no longer have to contribute to the common fund, they effectively receive an increase.

Of the \$483 million for the common fund, \$40 million is for a new Junior Pioneer Awards Program. Like regular pioneer awards, this program will fund high-risk research with potentially high-impact returns. The junior version will be for smaller amounts of money and for shorter amounts of time, but funded all up front.

For 2007, the NIH Blueprint for Neuroscience Research is providing administrative supplements to neuroscience-directed assay development for high throughput molecular screening. This is a component of the NIH Molecular Libraries and Imaging Roadmap Initiative, a major NIH effort to broaden access to rapid assay technologies. The

overall goal of the initiative is to help create a public database of biological information about small molecule chemical structures that then fuels the development of small molecule pharmacological tools for biological research.

Congress turned its attention in February to President Bush's budget request of \$2.9 trillion for FY08. The President stated that this request will be the first step in returning the budget to surplus over the next five years through a combination of robust tax revenues, cuts in domestic spending, and restrained growth in health care entitlements. The budget will combine all this with a substantial defense spending increase.

President Bush's budget proposal includes cuts to domestic programs so as to enable funding for a military buildup and tax cuts. As part of a plan to balance the federal budget by 2012, Bush proposed cuts to Medicare, Medicaid, and other domestic programs. Rep. Pete Stark (D-CA), chair of the House Ways and Means Subcommittee on Health, has expressed concern that the proposed budget cuts billions of dollars from Medicare and Medicaid.

ABOUT THE NIH AND NSF BUDGETS

National Institutes of Health – The FY08 budget request for NIH totals \$28.6 billion for research institutes and centers programs. But under the budget proposal, \$300 million of that will be transferred to the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria, leaving \$28.3 billion for NIH-supported research. When compared to the amount provided for NIH research activities in the FY07 Continuing Resolution, \$28.8 billion, the proposed budget for FY 2008 actually represents a \$511 million decrease.

Of the amount requested in FY08, \$486 million is allocated to support trans-NIH Roadmap/Common Fund initiatives designed to focus on the discovery of new disease treatments, prevention strategies, and diagnostics that transcend individual research institute missions.

National Science Foundation – The FY08 Budget Request for the NSF Directorate for Biological Sciences (BIO) is \$633 million, an increase of \$25.15 million, or 4.1 percent, over the FY07 request of \$607.85 million. Within that request is \$5.15 million for Molecular and Cellular Biosciences (MCB). Disciplinary and interdisciplinary research in the MCB core will increase to enhance support for research on living networks and complex molecular and cellular systems, microbial biology, and fundamental plant biology research. Some \$10.20 million is requested for

Biological Infrastructure. Research Resources will increase to support development of tools for theoretical and systems biology research, including instrumentation and cyberinfrastructure resources; and National Ecological Observatory Network (NEON) development and planning. Human Resources will enhance support for activities that broaden participation in the biological sciences.

NSF is increasing its investment in the interagency National Nanotechnology Initiative by nearly \$17 million in FY08 for a total of \$390 million. Increased funding is requested for fundamental nanoscale research, development of nanomaterials, and for research directed at environmental, health, and safety impacts of nanotechnology development. This includes \$25.8 million for a multidisciplinary focus on interactions among particles, nanoscale materials, and the living world.

Last year, the president's American Competitiveness Initiative (ACI) committed to doubling over the next 10 years investments in NSF programs and those of other federal agencies that fund physical sciences and engineering. The 2008 budget states that while the ACI specifically supports advances in mathematics, physical sciences and computing, the multidisciplinary nature of modern research, infrastructure support and human resources make it difficult to draw distinct lines between areas of investigation and support. Natural systems, for example, provide stunning examples of effective communication, complex computation, efficient signaling, adaptive self-organization, and multimodal sensing using small but complex chemical and physical networks. Studies of such biophysical systems will engage physical and computer scientists, engineers, biologists and social scientists. ■

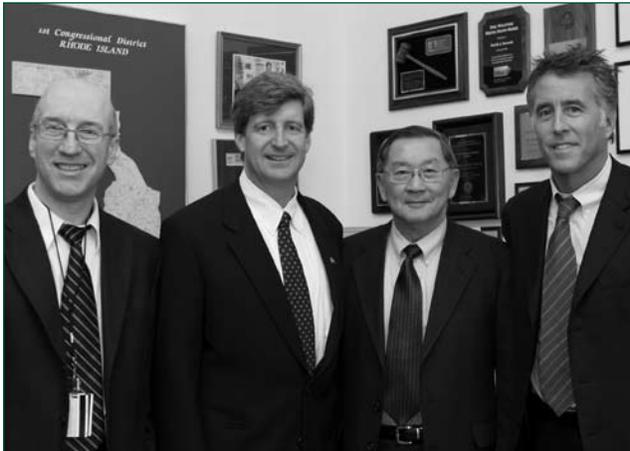
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Leaders in Alcoholism Research Present on Capitol Hill



(From left to right) David Goldman, Patrick Kennedy, Ting-Kai Li, and Christopher Lawford met on Feb. 15.

On Feb. 15, SfN member David Goldman, and Ting-Kai Li, Director of the National Institute on Alcohol Abuse and Alcoholism (NIAAA), gathered with Rep. Patrick Kennedy (D-RI) and his cousin, Chris Lawford, to discuss the genetics of alcoholism.

Kennedy is a long-time friend of the Society. In 2001, he received the SfN Public Service Award and later this year, the congressman will be featured in a SfN video series that highlights political figures whose lives have been affected by neurological or psychiatric disorders.

Lawford, an advocate for better treatment and recovery programs, battled drug and alcohol addiction for much of his young adult life. He recently wrote a memoir detailing his experience and victory over drugs and alcohol.

Both Kennedy and Lawford are interested in the science of addiction, particularly the role of biology and genetics. Goldman presented a wealth of evidence that addictions, as well as mood and anxiety disorders, are moderately to highly heritable. In addition, Li detailed the role of stress and environment in addictive disorders.

Kennedy hopes to use this information to make the case for parity in mental health insurance coverage. Currently, he and Rep. Jim Ramstad (R-MN) are leading the “Campaign to Insure Mental Health and Addiction Equity.” The campaign is a series of forums designed to promote the mental health parity legislation in various congressional districts across the country. Lawford hopes to use the information as he speaks across the country advocating for better treatments.

Copies of *Brain Research Success Stories* were distributed to both Kennedy and Lawford, along with an explanation of their purpose in showing the public health benefits from NIH-funded research and the potential benefits from future research funding. ■

Call to Increase Members in AAAS Section on Neuroscience

SfN members are urged to check the neuroscience section box when joining or renewing their American Association for the Advancement of Science (AAAS) membership to help raise the profile of neuroscience.

“By joining this section, we help promote neuroscience research,” says Michael Zigmond, Secretary of the AAAS neuroscience section. “Greater enrollment increases our influence within AAAS, particularly by increasing the likelihood of more neuroscience events appearing on the annual meeting program,” he adds. The number of members determines the section’s annual budget for symposia. It also determines the number of individuals we can nominate to become AAAS Fellows.

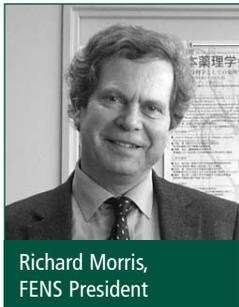
The current neuroscience section chair is Mary Beth Hatton of Rockefeller University; the chair elect is Jack Byrne of the University of Texas Medical School at Houston; and

the retiring chair is Tom Carew of the University of California at Irvine. Enrollment in neuroscience as a primary section is only 3,015 — about 8.26 percent of the total SfN membership.

The AAAS meeting hosts thousands of scientists and science policy experts, along with educators, students, journalists and others; and feature more than 200 symposia, plenary lectures, topical lectures, seminars, and other sessions. Neuroscience topics were discussed and submitted to the program committee following the most recent AAAS meeting Feb. 15 – 18 in San Francisco.

More information about the AAAS and joining the neuroscience section can be found at www.aaas.org. Scientists, full-time students, postdocs, and residents who are not AAAS members can become members and enroll in the neuroscience section through this Web site. ■

FENS' President Discusses Goals and Programs



Richard Morris,
FENS President

Richard Morris's two-year term as president of the Federation of European Neuroscience Societies (FENS) began in July 2006. He is professor of neuroscience in the College of Medicine and Veterinary Medicine at the University of Edinburgh and a former chair of the Brain Research Association (UK).

NQ: What is FENS? And what are its most significant accomplishments?

Morris: FENS is the voice of European neuroscience. Unlike SfN, it is not a single society, but a federation consisting of 27 national societies and six scientific societies (<http://fens.mdc-berlin.de/>). For example, the German Neuroscience Society is part of FENS, as is the European Brain and Behaviour Society. FENS represents the interests of around 16,000 individual neuroscientists across Europe, most of them involved in laboratory neuroscience, but including a significant number of clinical scientists and others engaged in theoretical and computational work.

Like SfN, FENS is involved in a wide range of activities. Arguably, the most prominent is the biennial FENS Forum held in July at a different European venue, most recently in Vienna and next year in Geneva. Our other major activities include copublishing the *European Journal of Neuroscience* (with Blackwell) and organizing a range of short training schools analogous to those held at Woods Hole and Cold Spring Harbor.

You ask about accomplishments. It is perhaps difficult to single out one, but I think my choice has to be the FENS Forum itself because it acts as the backbone of all our other activities. The governance framework that was created 10 years ago requires member societies to have their major meetings only every two years, alternating with the biennial FENS Forum. This ensures that the country-specific interests of the individual national societies are addressed regularly, while also ensuring that the forum is well attended from across Europe and has high-quality lectures and symposia.

NQ: What are the priority issues for FENS and your goals for the next few years?

Morris: The priority issues in Europe are, broadly speaking, very similar to those in North America — excellence and relevance.

The business of FENS is to promote excellent and imaginative science, to help our best researchers secure access to state-of-the-art equipment and other resources that they need, and to foster a constructive intellectual environment with suitable opportunities for mobility of postdocs and graduate students, as well as more experienced researchers. Clearly, as a federation, we do not have the financial wherewithal to do that on our own, but we are an increasingly influential voice with the major funding bodies of the participating countries and of the European Union. Many of our younger scientists benefit from the Marie-Curie Training and Mobility program (http://www.mariecurie.org/index.php?frame2=/fp7/MC_Actions_in_FP7.html) and their “Reintegration Grants” may be of interest to European postdocs working in North America.

Relevance is critical, just as it is on Capitol Hill. A series of recent published papers from a team led by Professor Jes Olesen, in association with the European Brain Council (of which FENS is a member), has revealed that as many as 35 percent of the days lost and a major part of the economic cost of health disorders are brain-related. These are the same neurological and psychiatric disorders that afflict all developed countries. In our fundraising efforts, we try not to forget the old adage that “no one dies of basic science,” but we also remind those in political or administrative power of the importance of fundamental research in solving major clinical issues. Translational neuroscience is a “buzz phrase” in Europe, just as in the United States, and we are having the same debates about its rightful place in discovery research and some argue that more focused approaches could be better. Beyond this, there is also a wider interest in the so-called “knowledge economy” in Europe in which, I believe, neuroscience has a key place. For example, policies for addressing such social issues as obesity, drug addiction, and healthy aging are all matters that require an input from neuroscience.

My major goals for my years as president are two-fold. First, to sustain my predecessor Tamas Freund's work to help integrate those in former Eastern European countries within the European neuroscience research community. There is much talent in such countries, and we must continue to create opportunities for their young scientists to have access to the best training and facilities. Second, I and my colleagues want to develop our training schools. FENS is trying to do that with two designated training centers (Modern Cell and Human Imaging Techniques in Lausanne, and Synaptic Mechanisms in Bordeaux), as well as a range of other winter and summer schools that collectively focus on other areas of neuroscience. We are privileged to

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do that in conjunction with the regional committees of IBRO, and we now have many joint FENS/IBRO schools.

NQ: What are your goals for the FENS Forum in Geneva in July 2008?

Morris: We are hoping that it will be a terrific meeting — large enough to ensure that each of the scientific subcultures in neuroscience have a critical mass of researchers presenting, but not so large as to be unmanageable.

Those familiar with the annual Society for Neuroscience meeting will be aware of how much planning is required to make for a good meeting. I recently had the privilege to serve on the SfN program committee and I was enormously impressed by its amazing attention to detail. This includes the “*memory in the system*” that the SfN office brings to the task, the committee’s desire to achieve a scientific balance, and the willingness to create a program that includes speakers from underrepresented groups. It also, impressively, includes the scheduling of topics that are scientifically very important but may not be attended by large numbers of people. The constitution of the FENS program committee has recently been revamped; and, drawing on my experience with SfN, we hope this will bear fruit at our next meeting.

One of the nice features of the FENS Forum is the chance to visit some of the great cities of Europe, most recently Lisbon and then Vienna. Our next stop is Geneva in 2008. Neuroscience in Switzerland is very strong, and it is a major base for the pharmaceutical industry in Europe. I therefore have great confidence that the local organizing committee, working with the elected program committee will lay on a topical meeting with excellent plenary speakers and symposia. The FENS Web site contains several pages devoted to the forum. When the time comes, registering and submitting a poster will be as easy from Peoria as it is from Paris, Parma, or Poland.

Switzerland has the reputation for being expensive, but in truth this is no longer deserved. Geneva is cheaper than London! It is also the “hub” of one of the major low-cost air carriers in Europe, and this should help to keep travel costs low.

NQ: What are your other most important activities for promoting European neuroscience?

Morris: I should mention two other important activities: First, the *European Journal of Neuroscience* (EJN) goes from strength to strength. It is edited by Barry Everitt (in

Cambridge UK) and Chris Henderson (in New York), and its editorial board, drawn from across the globe, reflects its international stature and ambitions. We recognize that it does not have the same average impact of *The Journal of Neuroscience*, but there is an ever-lengthening list of highly influential and well-cited papers. The future of the journal is important to us. We urge SfN members to think about publishing in EJN more often, particularly the work of a European postdoc they might have in their laboratory.

Second, FENS has recently set up a network of the course organizers responsible for Masters and PhD programs within our major universities (called the Network of European Neuroscience Schools - NENS). European education has a rich diversity but also very different requirements and expectations in different countries. Some countries expect students to have completed a masters or diplom degree before commencing PhD studies; others do not. Some expect students to complete their thesis within three years and place little attention on published work; while others expect graduate students to have one or more published papers in good journals, which inevitably takes longer. FENS recognizes this diversity and is attempting, through NENS, to learn about best practice in different countries. However, if we are to embrace diversity, we can surely avoid reinventing the wheel in different places by sharing a range of educational tools, such as e-learning systems, across our national borders. NENS is our new baby, and we are determined that it fulfills its potential. A recent well-attended meeting in Germany reflected the interest that course organizers have in learning from, rather than just competing with, each other — although a bit of competition is no bad thing for raising standards!

NQ: How do public outreach, education, and advocacy arrangements fit in with the FENS programs?

Morris: European neuroscientists have been very active in events such as Brain Awareness Week (BAW). An annual exhibition about the brain in Zurich attracts thousands, the UK Medical Research Council’s artist-in-residence does lots of relevant work in primary schools, and public lectures are held in a litany of languages. We are particularly grateful that the Dana Alliance for Brain Initiatives (DABI) makes available funds to the European Dana Alliance of the Brain (EDAB) to help support these activities, which FENS helps to administer. A booklet on neuroscience for schoolchildren, first produced in the UK, has now been translated into Spanish, Mandarin, and Slovenian; and other translations are under way. And anyone who has seen Paul Mathews’ “*Bard on the Brain*” show, which accompanies his DANA Press book on the topic, will

appreciate that there are so many ways to put across ideas about the brain and its vicissitudes.

NQ: What challenges by animal rights groups are FENS members and national neuroscience societies facing?

Morris: American neuroscientists will be aware that the regulations on the use of animals in experimental work are somewhat tighter in most (but not all) European countries than in the United States. This is a good thing, as growing public awareness of the strict legislation is helping to reduce the impact of animal rights protests, although of course these continue. Interestingly, a movement in the UK called PRO-TEST, <http://www.pro-test.org.uk/>, was begun by a 16-year-old schoolboy who caught the public headlines by starting a demonstration *in favor* of responsible use of animals in biomedical research. FENS has also played a role in commenting on a draft new European directive on the use of animals in laboratories,

and its advent may yet make it easier for neuroscientists to work in each other's countries without having to face local bureaucratic obstacles. Hurdles remain, but there is a growing sense that the tide has turned.

NQ: How can FENS and SfN work together to promote more international collaboration?

Morris: My sense is that SfN and FENS have an excellent working relationship with our main meetings providing precisely the right opportunity for neuroscientists from different countries to meet and get together. In addition, there are now European members of the SfN program committee and an appointed SfN member on the FENS program committee. The officers of the two organizations are in frequent contact and meet regularly. We in FENS are conscious that we are interacting with one of the most professional scientific societies in the world. We also hope that we are playing our part in furthering the needs of the present generation of European neuroscientists. ■

Share Your Story with the American Brain Coalition

The American Brain Coalition (ABC) is launching a new effort to collect stories from patients and their caregivers, chronicling the difficulties they face in accessing appropriate and timely health care. These stories will be used to achieve the same level of public awareness and support for diseases of the brain that has been realized by the American Heart Association for heart disease and the American Cancer Society for cancer.

The stories needed for the new project include the following areas related to access to care: (1) problems getting a doctor's appointment; (2) difficulties paying for critical services and treatments; (3) trouble finding insurance that will cover medical needs; (4) issues trying to see a specialist; or (5) any other problem related to accessing health care.

Personal stories from real people often strike a chord with policymakers. With a collection of stories, the ABC hopes to make a compelling case for changes to the U.S. health care system. Asking your patients, family members, or friends to share their experiences will help to illuminate the issue for those in Congress. All information will be kept anonymous and may be used in future advocacy activities.

If you are interested in sharing your story electronically, please submit it to stories@americanbraincoalition.org,

or mail it to 1121 14th Street, NW, Suite 1010, Washington DC, 20005. Attn: ABC.

Advocacy on behalf of patients and their families is critically important. If you would like to know more about the ABC and its activities, please contact Katie Sale, ABC director at: ksale@americanbraincoalition.org or visit the Coalition's Web site at: www.americanbraincoalition.org.

In 2004, the Society for Neuroscience joined the American Academy of Neurology (AAN) to establish ABC, an advocacy organization involving patient groups and scientific societies. Thus far, representatives from AAN, SfN, and nearly 50 other professional societies and patient advocacy organizations have joined forces to reduce the burden of brain disorders and advance understanding of the brain.

The ABC works closely with Congress to advocate for those with neurological and psychiatric disorders. The ABC's goals are (1) to secure adequate funding for research at the National Institutes of Health, (2) to advocate for mental health parity in insurance coverage, (3) to improve the health care system to better serve people with chronic illnesses, and (4) to expand federal funding for embryonic stem cell research. ■

SfN Panel Discusses Working with Media to Explain Neuroscience to the Public and the Importance of Research



Sanjay Gupta was among the speakers at the Public Advocacy Forum during Neuroscience 2006.

Neuroscientists need to work cooperatively with the media to inform the public about what we do and why it is important. At the Neuroscience 2006 public advocacy forum, CNN chief medical correspondent Sanjay Gupta emphasized again and

again the importance of putting a human face on science stories to make them attractive and interesting to a general audience. This is what he does in preparing many of his medical stories for CNN.

It also was one of several themes that ran through the panel discussion titled “Becoming Media Savvy: The Inside Scoop.” Speakers included Lisa Newbern of the Yerkes National Primate Research Center in Atlanta, past SfN president Bruce McEwen of Rockefeller University in New York, science writer Sharon Begley of *The Wall Street Journal*, and moderator Colin Blakemore, who heads Britain’s Medical Research Council.

The public advocacy forum was designed to teach neuroscientists how to communicate effectively with local media, a potentially powerful tool in support of neuroscience research if used effectively. The public consistently expresses a real interest in the brain and its disorders.

WORKING WITH THE MEDIA

The panelists highlighted the importance of working with the media to advocate for the research enterprise, for funding, and for the importance of the responsible use of animals. The panel discussion provided a brief overview of the rationale for public outreach, methods to contact the media, how to prepare for an interview, and the do’s and don’ts of speaking during an interview.

“I am committed to the idea that neuroscientists should communicate with the public about science, and the media are one important way to do this,” said McEwen. “The public wants to know about scientific topics and how one can live a better life by using the latest research.”

The role of the scientist is to represent the general field in talking to the press, rather than promote one specific body of work, McEwen said. “The scientist must remember that talking to the press is not a way to advance one’s career.”

Begley pointed out that a natural tension exists between journalists and their sources, often because stories are driven by controversy; and scientists often feel uncomfortable in this setting. McEwen noted that the press sometimes wants to report new and untested information and focuses on the personal side of science and scientists. “This can be good in humanizing science, but it also has drawbacks in that it sometimes emphasizes the positions of animal rights advocates or those supporting intelligent design or opposing the use of embryonic stem cells,” he said.

THE ROLE OF PUBLIC INFORMATION OFFICERS

Newbern explained the important role of public information officers (PIOs) in the process of helping scientists feel comfortable dealing with the media and increasing the chances of the press getting the story right. PIOs are trained in an institution’s research programs and mission and serve as a resource for scientists, she noted. Their goal is to enhance the identity and make known the goals, activities, and accomplishments of an institution and its science. Newbern emphasized the importance of building relationships among PIOs and scientists.

PROMOTING SCIENCE

The primary functions the PIO performs are to position the scientist’s work within the institutional context and to help them know their audience. They also can promote their work by:

- Determining what is newsworthy;
- Targeting information to appropriate media;
- Helping the scientist prepare for interviews; and
- Positioning him or her as an expert resource.

Newbern noted that a PIO also can promote a scientist’s work within the institution through various publications, such as newsletters and annual reports, and forums, such as “lunch and learn” programs. The PIO can also involve scientists in a speaker’s bureau, institutional tours, Web site material, and other activities that highlight an institution’s expertise to the public or press.

Scientists can aid the information flow by telling their PIO when they submit a paper for publication, when they accept a speaking engagement, and when they receive an

award. For a journal paper, Newbern suggested that the scientist could provide their PIO with three to five key points about why the paper is newsworthy, one or more copies of the paper, and a publication date when confirmed.

Once a news release is developed, the PIO works with the scientist to refine the news release, prepare other background material, and select visuals. Here's where the scientist and PIO can follow Gupta's advice, Newbern said, and look for real stories that put a human face on the new research. Scientists also need to understand that they will need to set aside some time for an interview.

During the interview, Newbern said, scientists should review the key points of the paper that would engage the public, answer questions straightforwardly, say they don't know if they really don't, and repeat key points for clarification. Scientists also should not speak off the record.

"In the best cases, with good journalists, their insights and independence can illuminate issues that scientists need to take back and address," McEwen said. "There should be more public discussions with those types of journalists because [scientists] are often isolated in silos of knowledge and out of touch with the rest of the world."

Beyond neuroscience, some in the science community worry about public skepticism directed at sensitive scien-

tific issues, including embryonic stem cell research, teaching of evolution in schools, evidence for global climate change, and controversy over genetically modified foods. A recent journal editorial underscored the heightened need for scientists to talk to the public to set the record straight and reduce the friction concerning controversial scientific issues.

ENGAGING MORE FULLY

". . .To lessen this tension, scientists must engage more fully with the public about scientific issues and the concerns society has about them," wrote Alan Leshner, chief executive officer of the American Association for the Advancement of Science, in a January editorial in *Science*.

Leshner proposed several initiatives: "First, the scientific reward system needs to support . . . efforts to interact with the general public concerning their work and its implications."

"Second, university science departments should design specific programs to train graduate students and postdoctoral fellows in science communication."

Leshner concluded: "If science is going to fully serve its societal mission in the future, we need to both encourage and equip the next generation of scientists to effectively engage with the broader society in which we work and live." ■



LET SfN KNOW WHEN YOUR SCIENTIFIC PAPER IS ACCEPTED FOR PUBLICATION

The Society's Public Information Department highlights members' work and regularly sends press releases to its list of 1,350 science writers to help increase the public's understanding of neuroscience. If your work has been accepted for publication in a high-profile journal like *Science*, *Nature*, *Cell*, *Nature Neuroscience*, *The Journal of Cognitive Neuroscience*, *The Proceedings of the National Academy of Sciences*, or *Neuron*, please let us know!

As soon as you know your paper has been accepted, please send a proof of your manuscript, the publication date, and contact information for a public information officer at your institution to publicinfo@sfn.org.

To see recent press releases, visit www.sfn.org/newsreleases.

Brain Awareness Week 2007

Brain Awareness Week (BAW), a joint initiative of SfN and the Dana Alliance for Brain Initiatives, took place March 12-18, 2007. Neuroscientists around the world participated in public education and outreach events to increase awareness about the progress and benefits of brain research.

BAW events included Oregon Health and Science University's lecture series and teacher workshops, and "Brain Blast," a series of hands-on activities at Nashville's Adventure Science Center sponsored by the Vanderbilt Brain Institute and SfN's Middle Tennessee Chapter.

In Melbourne, Australia, the Howard Florey Institute held "Shimmer," an exhibition of photography, drawing, and painting inspired by brain and stem cell research. Sanker's Hospital in Kollam, India, hosted a symposium for middle school students. The University of East London hosted public lectures.

For these and many other events, SfN provided resources through its BAW Web site (www.sfn.org/baw).

In Washington, D.C., where the SfN is headquartered, Mayor Adrian Fenty's office issued a proclamation declaring March 12-18 Brain Awareness Week. SfN joined a collaborative effort at the National Museum of Health and Medicine to assist with a week's worth of activities on the campus of the Walter Reed Army Medical Center for 600 students from the DC Metro area. SfN President David Van Essen led a March 15 session on the cerebral cortex for an audience of students and their teachers.

During BAW, the Society co-sponsored the New York City Brain Bee on Feb. 7, and the National Capital Area Brain Bee on Feb. 28. The New York City Brain Bee was held at the New York Academy of Sciences and welcomed 60 high school students from throughout the city's five boroughs to answer questions about neuroscience. SfN member Joseph LeDoux of New York University judged the competition. Each participating student received gift bags containing SfN educational publications such as *Brain Briefings* and *Brain Research Success Stories*. On March 16 and 17, SfN participated in the International Brain Bee Competition in Baltimore, presenting the champion with a travel award to Neuroscience 2007 and a summer internship opportunity with an SfN member.

Students from 19 schools in Maryland, Virginia, and the District participated in the National Capital Area Brain Bee in Washington, D.C. The competition was judged by Steve Foote, an emeritus member of SfN.



2007 International Brain Bee Winner, Melody Hu with Norbert Myslinski.

The winner of the 2007 International Brain Bee (IBB) is Melody Hu of Minneapolis, Minn., a junior at Wayzata High School. Her mother, Joy Hu, accompanied her to the IBB finals in Baltimore. The champion plans to work with his or her local IBB coordinator to reach interested high school students over the coming year.

SfN will sponsor a summer internship for Melody with a leading neuroscientist, and provide her with an all-expense-paid trip for her and her traveling mentor to Neuroscience 2007 in San Diego. There, she will speak at the annual Brain Awareness Campaign event.

As he does for the IBB winner each year, SfN member Norbert Myslinski, the event's organizer, provided Melody with two trophies — one for herself and another for her high school to display. She also received a \$3,000 scholarship check from the Thatdi Konda Foundation.

Second place and a \$2,000 scholarship went to Sanat Sethi representing the North-South Foundation; the third place winner Morgan Bell from Thomas Jefferson High School representing the Frederick, MD Brain Bee received a \$1,000 scholarship check.

The International Brain Bee took place at the University of Maryland Medical School in Baltimore, MD. Each year, SfN member Norbert Myslinski organizes this two-day competition, which involves a human neuroanatomy practical examination (with real human brain samples), delivering diagnoses, a written test, a group competition, and an oral question-and-answer session with questions derived from *Brain Facts*. ■

PROGRAMS



The International Brain Bee finals drew participants from around the world.



Archibald Fobbs, Curator of Neuroanatomical Collections at the National Museum of Health and Medicine, assists a student during the BAW event.



SfN President David Van Essen spoke to middle-school students about the cerebral cortex at the National Museum of Health and Medicine in Washington, DC.



Students participated in hands-on neuroscience activities. Here, students wear goggles which simulated the visual affects of alcohol on the brain.



Students from the DC Metro area were given the opportunity to handle a human brain specimen.



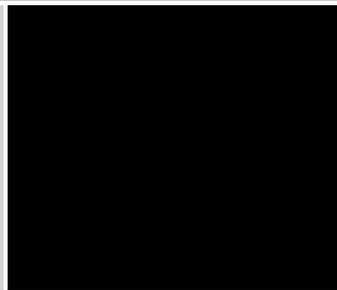
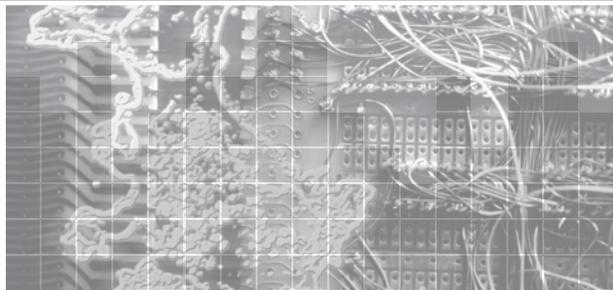
SfN President David Van Essen participated in activities facilitated by scientists from NINDS.



Society for Neuroscience

Abstract Submission

San Diego, California | November 3 – 7, 2007



Open April 24 – May 15

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To submit your abstract:

Visit www.sfn.org/cfa to view rules and guidelines for submission and to submit abstracts electronically between Tuesday, April 24, and Tuesday, May 15, 5 p.m. EDT. If you have any questions regarding abstract submission, please contact the Program Department by e-mail at program@sfn.org or by phone at (202) 962-4000.

Edits to submitted abstracts (formerly known as replacement abstracts) no longer require payment of a handling fee; however, all edits must be submitted by Thursday, May 17 at 5:00 p.m. EDT.

There is a new presentation preference option called "poster preferred". Selecting this option indicates that you prefer a poster session, but will accept a slide format if necessary. The Program Committee has added this extra preference option because often during sessioning there are not enough "slide preferred" abstracts to make a coherent session; likewise, there are times when "poster only" abstracts would be a much better fit in a slide session. Please note that to sponsor an abstract, you must be an SfN member in good standing for the 2007 calendar year. If you wish to renew your membership, please visit www.sfn.org/renewnow to submit payment online. To apply for new membership, please visit www.sfn.org/joinnow.



SfN Holds Third Successful Miledi Training Program in Mexico

The third successful year of the Society's Ricardo Miledi Program for Neuroscience Training was held recently at the Juriquilla campus of the National Autonomous University of Mexico (UNAM). Funded by The Grass Foundation, the program offers an annual four-week course that trains 15 of the most promising neuroscience students from Latin America and the Caribbean.

This year's course, titled "Neuronal Differentiation during Embryonic Development and from Stem Cells *in vitro* and *in vivo*," took place Nov. 6 – Dec. 2, 2006. Organizers selected the students — five from Mexico, three from Argentina, and one each from Puerto Rico, Cuba, Chile, Peru, and Uruguay — from an applicant pool of 117.

The four-week course was conducted by an international faculty of 10. Morning lectures were followed by intensive small-group lab work that sometimes extended into evening. Frequently, students were exposed to laboratory techniques that they had not experienced previously.

"Having a small number of students per group allowed us to provide personalized attention as they performed their experiments," explained faculty member Araceli Espinosa-

Jeffrey from UCLA. "This was one of the better organized courses I have had the opportunity to participate in."

Each week, teams of students presented the results of their lab work. By the conclusion of the course, each student had also presented his or her work research project in English. For some students this was a significant challenge. All of the students, however, saw the possibility to present in English as beneficial to their future careers.

Saturday professional development sessions provided students with advice on setting up a research lab and obtaining funds to support scientific research. One session focused on a new topic for many of the students, public education advocacy.

In addition to new skills and knowledge, students gained valuable contacts and fond memories. "For me it was an unforgettable experience," reads one of the anonymous evaluations that students handed in at the course's conclusion. "It gave me an opportunity to meet professors and students that will hopefully evolve into future collaborations." ■

Planning Ahead Makes Annual Meeting Travel More Affordable

Scientists from around the world will converge on the San Diego Convention Center for Neuroscience 2007, which will be held Nov. 3 – 7. Although travel can be expensive, particularly for students, the costs associated with attending the meeting, including airfare, lodging, food and entertainment, can be reduced by planning ahead and taking advantage of money-saving opportunities.

Registration Discounts: One easy way to save money is to renew your SfN membership for 2007. You can do this by visiting www.sfn.org/renewnow and logging in with your membership ID and password. Not only must your membership be current to sponsor or submit an abstract, but members also receive substantial meeting registration discounts. Regular members get a discount of \$185, student members a discount of \$50, and undergraduate student members get a discount of \$60 on the cost of registration. This year's advance member registration opens on July 10; advance nonmember registration opens on July 17. Advance registration for members and nonmembers will close at noon EDT on Monday, Sept. 24.

Lower airfare: If you're planning to fly to San Diego, one way to get lower airfares is by contacting the providers

recommended by the Society. Special fares have been negotiated for Neuroscience 2007 attendees. Please remember to reference the meeting ID number and special code, which will be announced in the *Preliminary Program* and at www.sfn.org/am2007.

Student lodging: If you are a student and are looking for discounts in lodging, look no further than the student block. A limited number of lower-priced hotel rooms have been set aside for students. Rooms will be assigned on a first-come, first-served basis until depleted or until September 24, when student-rate rooms will be released for general sale to all Neuroscience 2007 attendees. Students must provide proper student verification to be placed in the student block. Only students, their spouses, immediate family members of a student occupant, or registered guests of Neuroscience 2007 sponsored by the student occupant are permitted to occupy hotel rooms within the student block.

Awards, Prizes, and more: Neuroscience 2007 is an opportunity for learning and professional development not to be missed. In addition to educational lectures, symposia, and workshops, the meeting will offer a variety of free

2007 SfN Awards

Travel and Related Awards	Deadline	Web site
Neuroscientist-Teacher Partner Travel Awards	Tuesday, May 1, 2007	www.sfn.org/ntpawards
Chapters Graduate Student Travel Awards	Friday, June 8, 2007	www.sfn.org/gsta
Chapters Postdoctoral Travel Awards	Friday, June 8, 2007	www.sfn.org/ptta
Graduate Student Travel Awards	Friday, June 1, 2007	www.sfn.org/cwin
Postdoctoral Travel Awards	Friday, June 1, 2007	www.sfn.org/cwin
Child Care Reimbursement	Wednesday, August 1, 2007	www.sfn.org/cwin
Awards and Prizes		
Donald B. Lindsley Prize in Behavioral Neuroscience	Wednesday, April 18, 2007	www.sfn.org/lindsley
Ralph W. Gerard Prize in Neuroscience	Wednesday, May 2, 2007	http://www.sfn.org/index.cfm?pagename=FellowshipAndAwards_gerard
Science Educator Award	Wednesday, May 2, 2007	www.sfn.org/sea
Career Development Award	Friday, June 15, 2007	www.sfn.org/cwinccda
Julius Axelrod Prize	Friday, June 15, 2007	www.sfn.org/axelrod
Louise Hanson Marshall Award	Friday, June 15, 2007	www.sfn.org/cwinsra
Mika Salpeter Lifetime Achievement Award	Friday, June 15, 2007	www.sfn.org/cwinlaa
Next Generation Award	Friday, June 15, 2007	www.sfn.org/nga
Patricia Goldman-Rakic Hall of Honor	Friday, June 15, 2007	www.sfn.org/cwinhh
The Jacob P. Waletzky Memorial Award for Innovative Research in Drug Addiction and Alcoholism	Monday, June 25, 2007	www.sfn.org/waletzky
Peter Gruber International Research Award in Neuroscience	Monday, June 25, 2007	www.sfn.org/gruberinternational
Young Investigator Award	Monday, June 25, 2007	www.sfn.org/yia
Fellowships		
Neuroscience Scholars Program	Friday, June 1, 2007	www.sfn.org/nsp

For more information about the awards offered in 2007 by the Society, please e-mail awards@sfn.org.

Planning Ahead, continued from page 17

services for members, such as access to job listings and interview booths at the NeuroJobs career center, the Student Hospitality suite, and many others. Finally, do not miss the opportunity to apply for SfN awards and prizes. Several Society awards and fellowship programs offer travel assistance to the annual meeting. Please see page 18 or visit www.sfn.org/awards for details.

Check future issues of *Neuroscience Quarterly* and www.sfn.org for more money-saving and trip-planning strategies as the meeting approaches. ■

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18	trees
3,318	gallons of water
873	pounds of solid waste
1,288	pounds of hazardous effluent



The Society for Neuroscience is accepting applications for its Neuroscience Scholars Program

Deadline: Friday, June 1, 2007

This program is designed to enhance career development and professional networking opportunities for undergraduates, pre- and postdoctoral underrepresented minorities in neuroscience.

THE PROGRAM PROVIDES FELLOWS WITH THE FOLLOWING:

- Travel assistance to participate in SfN's annual meeting, including special program activities
- Supplemental funds to participate in enrichment activities outside the fellow's home institution
- Complimentary SfN membership with a subscription to *The Journal of Neuroscience* online
- Guidance at the Society's annual meeting and year-round from individual mentors

FELLOWS ARE SELECTED ACCORDING TO THE FOLLOWING CRITERIA:

- Academic excellence
- Professional goals
- Research interests
- Experience

DEADLINE: FRIDAY, JUNE 1, 2007

FOR MORE INFORMATION VISIT WWW.SFN.ORG/NSP

Applicants must be citizens or permanent residents of the United States. Past fellowship recipients are not eligible to apply. Applications are due by June 1, 2007, and candidates will be notified of the selection committee's decision in September. Please submit your application to: Jessica Pearce, Society for Neuroscience, Professional Development & Special Programs, 1121 14th St., NW, Suite 1010, Washington, DC 20005.

For more information, visit www.sfn.org or contact jessica@sfn.org.

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