

NEUROSCIENCE

SPRING 2011

Q U A R T E R L Y

“Neuroscientists are deeply committed to engaging with the public about the progress, promise, and value of exploring ‘the universe between our ears.’”

— Susan Amara,
SfN President

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SfN’s Online Presence: Building Value, Making Connections

Recognizing the global scale of the Society for Neuroscience and the work that its members do, SfN is harnessing the power of the Web to connect and engage neuroscientists in new and innovative ways. With the feedback and suggestions of members, the Society is introducing new online resources that allow members to network, discuss research, and advance their careers.

SfN’s newest member tools will serve to enhance the member experience: an Enhanced Member Directory, an interactive online mentoring community, and the NeuroJobs Career Center. As the neuroscience community continues to grow worldwide, these SfN resources will enable members to make strong connections, spark collaboration, and further the field at a global level.

CONNECTING ONLINE, YEAR-ROUND

The recently launched Enhanced Member Directory (EMD) gives members a great new resource for finding colleagues around the world. The SfN member directory is one of the most accessed pages on the SfN site and, with these new improvements, will become an even more valuable resource.

If the previous member directory was akin to looking up a colleague in the phonebook, the new EMD is like finding others on a members-only, professional online network, such as LinkedIn. Members create a profile with the option of including fields of study, biographical and contact information, and a personal photo. Privacy settings allow for control over what information is displayed and to whom.

Continued on page 8...

SfN Awarded \$1.53 Million to Create *BrainFacts.org*

SfN has been awarded \$1.53 million in funding over six years to create and maintain *BrainFacts.org*, a unique nonprofit online source for authoritative public information about the progress and promise of brain research. With support from founding partners The Kavli Foundation and The Gatsby Charitable Foundation, SfN will launch the Web site in late spring 2012 to communicate with the public, educators, and policy-makers about revolutionary advances in understanding the brain and mind.

“Neuroscientists are deeply committed to engaging with the public about the progress, promise, and value of exploring ‘the universe between our ears,’” said SfN President Susan Amara. “Brain research is a vital and exciting field filled with major achievements, profound unknowns, and tremendous importance for society. Given new ways to communicate ideas and information, and an explosion of discovery about brain function, *BrainFacts.org* creates an exciting opportunity for the field to engage more actively and effectively in dialogue with the public. We are grateful to The Kavli Foundation and The Gatsby Charitable Foundation for their support of this important initiative,” Amara said.

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Message from the President

The Power of Scientific Values in Difficult Times



Susan Amara,
SfN President

When I read an exciting research article, I get a sense of awe and pride at the extraordinary progress in neuroscience. A myriad of questions once impossible to consider are now within reach as a consequence of new technologies, an ever-expanding knowledge base, and a willingness to embrace many disciplines. What an amazing time to be a neuroscientist!

At the same time, I click open an article in the press and see reductions in support for science here in the United States, talk with colleagues around the globe concerned about research support, and watch young colleagues as they seek a path forward. What an incredibly challenging time to be a neuroscientist!

With such conflicting trends, I find great strength in remembering our field's core values, as I consider what I can do to help address the problems of research support and funding. As a field, I think it is important we all do the same.

SCIENCE THEN

Historically, there are eras when political, academic, and corporate leaders seem in sync, sharing values to invest in progress, inquiry, and innovation. Such enlightenment forms the scaffolding to progress — economies, science, and medicine blossom. During such a time 40 years ago, a small group of visionary scientists formed SfN. They shared a passion for brain science and a core belief that basic research is fundamental to advancing science and improving health.

Four decades later, those values have driven the field to incredible achievement. They also remind us that the brain, in all its complexity and mechanistic detail, is still a wonder and an extraordinarily challenging subject to explore. It never ceases to amaze me how a basic question — such as how or why a cell grows or dies, how a connection is formed, or how a brain adapts — can be an essential building block, a tile upon which the field is shaped and advanced. That passion and possibility has ignited a field that is young, dynamic, and changing, challenging us all to achieve new possibilities.

I hope even in challenging times this passion can and will sustain us, especially our younger members. Holding fast to those values, we cannot allow the tide of short-term budget fixes to scuttle discovery. But that is the risk we face if we don't act.

SCIENCE NOW

Policies affecting science research — whether actual appropriations or the priorities established in research institutions faced with limited funds — strike at the heart of the scientific enterprise and our core values. Ultimately, policy choices rest in the hands of others, and simply put, many are not equipped with the knowledge to intervene on our behalf. We cannot expect political leaders to magically understand what we do and the value of basic research. It is our job to inform policy-makers, the public, and leaders at global research institutions.

They need to understand that undermining any research enterprise — whether a single lab or a national infrastructure built through decades of federal funding — is a loss to us all and difficult to recover. In the United States — traditionally a pacesetter for strong investment — as well as in the UK and across Europe, threatened cuts in science funding jeopardize a global training system that fosters and encourages scientific creativity, flexibility, and enterprise.

As a young woman interested in science, I was inspired by the idea that the United States was a place where *anyone* with imagination, drive, and a passion for research could come, learn, and potentially do something great. Without our intervention, that culture of entrepreneurship and curiosity-driven research could be hindered for decades.

As a Society, SfN is working aggressively to strengthen the field and educate policymakers in the United States. Given the state of current debate in Washington, it may well be a long, hard effort. Throughout, our real strength comes from our individual voices and individual acts, aggregated into collective actions. What lawmakers, legislators, and the public don't know hurts us. Our leaders bear the burden of an economy in turmoil and the difficult choices that come with it. We cannot ask them to avoid making these hard decisions, but we can help them to make informed ones.

SCIENCE'S FUTURE: TWIN RESPONSIBILITIES IN ADVOCACY AND ACTION

We have twin responsibilities in the next few years. *The first is to advocate for the power of basic science.* We need to ensure the public and policymakers understand the importance of a rich pipeline filled with basic scientific knowledge from which translational and clinical advances are built. SfN has a spectacular series of publications highlighting the impact of basic science on human health and well-being. Called *Research & Discoveries*, the series of stories tells not only the outcomes of basic research, but also importance of the scientific pursuit to understand “*why*.”

I would encourage you to use these in your outreach. They have helped me as I talk with public audiences to bring to vivid life the incredible contribution of basic science. You can find this resource at www.sfn.org/R&D.

The second is to act. We can drive to congressional district or state offices, enlist students, chapters, and department chairs to call or write, invite Congress members to talk and tour our labs, and get involved in educational activities like Brain Awareness Week. It wasn't always apparent to me how easy it is to drop into my Congressman's district office or invite him into my lab — and how meaningful my actions can be.

Recently, I thought to actually call my member of Congress — to pick up the phone and describe what a draconian cut would mean for science. As a strong supporter of science, he told me how critical it is not to take *any* legislator's position for granted or as a lost cause. We need to affirm our friends and we need to educate new lawmakers. They need to hear and see first-hand how good science is made — how basic research dollars are put to good use. And they need to know they'll be accountable if they don't support science as a source of knowledge and treatments, an innovation engine, and a core component of local economies.

A call provides an invaluable link: to inform, to invite, to register our support or opposition to a vote. Sometimes you'll

get a staffer, and that's good. Once in a while, you might speak directly with the member, and that's great. And while one call is good — many respectful and knowledgeable calls are great. They add up, breaking through and building a relationship based on local knowledge and connection.

SfN has many resources at www.sfn.org/advocacy to help us do everything from finding out where a district office is, to how to get in touch with members of Congress, or basic facts and figures about research investments in our states. They can even provide sample letters, talking points, alerts on current issues, and more. They make it easier for us to make things happen. SfN also is working with international colleagues to share experiences and model approaches to building capacity for effective science advocacy in all of our countries.

SCIENCE ALWAYS

The pursuit of knowledge, the quest for understanding, the bringing of great ideas to life — great work and creativity is all around us. Science is and always will be a field where someone with drive and curiosity can come and *achieve* something meaningful. Let's continue to cherish these values, and use them to motivate and remind public officials that ultimately these principles are what drive societies and civilizations forward. SfN is here to help, but it starts with our individual commitment to engage and inform — and to keep at it. ■

SfN Members Take Neuroscience to Capitol Hill



SfN President, Susan Amara, Michael Goldberg, Bill Martin, Ken Miller, and Mark Rasenick discussed research funding with Representative Brian Bilbray (R-CA, pictured third from the left).

On April 12, SfN members and staff participated in SfN's annual Capitol Hill Day. SfN President Susan Amara, Past President Michael Goldberg, and members of the Government and Public Affairs Committee held more

than 20 meetings with members of Congress, senators, and their staff. They highlighted vital neuroscience research and its importance in ensuring America's health and competitiveness in the 21st century, and advocated for robust federal funding for scientific research through the NIH and NSF. To learn how you can effectively communicate with your elected officials, visit www.sfn.org/advocacy.

FY2011 RESEARCH FUNDING UPDATE

On April 14, Congress passed a continuing resolution to fund the federal government for the remaining five months of the FY2011 budget cycle. In the final budget package, the NIH received \$30.7 billion, a 0.8 percent reduction from the FY2010 funding level, and the National Science Foundation received \$6.8 billion, a .08 percent reduction from the FY2010 funding level. During the budget debate in Congress, the Society's U.S. membership sent more than 6,300 letters to Capitol Hill opposing cuts to scientific research in the FY2011 budget. ■

Irwin Levitan: Advancing Neuroscience within Medical Schools



Irwin Levitan,
AMSNDC President

Irwin Levitan is a professor and chair, Department of Neuroscience, Thomas Jefferson University, and director, Farber Institute for Neurosciences. Levitan also serves as the president of the Association of Medical School Neuroscience Department Chairpersons (AMSNDC), an organization dedicated to promoting neuroscience as a scientific discipline, and to representing the interests of departments within medical

school settings whose major focus resides in research and training in the neural sciences.

NQ: What do you see as the most pressing research, education, and training issues facing AMSNDC members today?

On the research side, it really comes down to money. The opportunities for research breakthroughs have never been greater, in the life sciences in general and particularly in neuroscience. At the same time, we are constrained by research budgets that are totally inadequate to pursue these opportunities. As department chairs, we are caught between the proverbial rock and hard place — on the one hand our faculty, whose careers we are tasked with supporting and nurturing, and on the other our medical school deans, whose budgets to support research are increasingly limited. I would say the question of how we can keep our promises to neuroscience faculty and help their research efforts to thrive in the face of these financial pressures is the one that keeps most AMSNDC members awake at night.

With respect to education, we are concerned that the teaching of neuroscience to medical students is gradually being taken out of our hands. There is a trend in medical schools to centralize and coordinate medical student education in clinical departments, which we feel bodes ill for the teaching of basic concepts in neuroscience. Indeed, this trend calls into question the role of and need for basic science departments in medical schools — an existential question for us! AMSNDC members are active participants in national efforts to address this fundamental issue.

Finally, the training of graduate students and postdoctoral researchers is subject to the same set of financial constraints that I referred to above. One corollary of our financial distress is that fewer American undergraduates are choosing to attend graduate school, and fewer of those who do obtain PhDs in neuroscience choose to pursue academic careers. They see their mentors struggling to

survive, and opt for what they hope might be a more secure life style. While this may be understandable, it is highly regrettable, and we as department chairs wonder where the next generation of neuroscience faculty will come from.

NQ: SfN recently created an Institutional Program (IP) membership category to represent the interests of neuroscience departments and programs (NDPs), as part of our consolidation with the Association for Neuroscience Departments and Programs in 2009. A large majority of AMSNDC members are among the more than 170 SfN IP members. How could the ties be strengthened between medical school neuroscience chairs and neuroscience program heads and chairs outside of medical schools?

Historically, ANDP focused its efforts on educational programs, whereas AMSNDC members have a broader mandate to oversee all aspects of medical school neuroscience research, education, and financial stewardship. As you point out, most AMSNDC member departments are already institutional program members of SfN, and we as chairs of course communicate closely with our IP representatives. One useful way to strengthen ties might be to appoint the sitting president or other representative of AMSNDC to either ad hoc or full membership of the Committee on Neuroscience Departments and Programs (CNDP). We hope this is a possibility that SfN Council and the Committee on Committees might seriously consider.

NQ: What are your goals for your term as president of the AMSNDC, and do you see any opportunities for synergy with the work of SfN's CNDP — the annual spring conference for NDPs and the biennial survey of neuroscience training programs, for example — in achieving both your short and long-term goals?

I am tempted to say, only in part facetiously, that my major goal as president of AMSNDC is to survive my term of office! AMSNDC really was conceived as a forum for discussion of areas of common interest and concern among the chairs, and we undertake few policy initiatives as an organization. As I indicated above, we are eager to cooperate with CNDP, and can bring to the table a department chair's perspective that may be broader than the traditional educational focus of NDP.

NQ: Medical schools and the scientific research community share common advocacy goals, including strong funding for NIH. There also are

times when medical schools may have additional priorities, including funding for Medicare and Medicaid. What priority should medical schools put on aggressive funding for NIH?

From our perspective, as basic neuroscience department chairs, nothing is as important as aggressive advocacy for strong NIH funding. The business models of most American medical schools are crucially dependent on continued robust support by NIH, so such advocacy clearly is in their best interest. Medical schools can hope to make a difference here by banding together and focusing on a coherent message, that research funding is not an *expenditure*, but rather an *investment* that will help to limit the need for vast increases in Medicare and Medicaid funding in the future.

NQ: The SfN Committee on Animals in Research (CAR) is exploring ways to partner with doctors, because physicians — as trusted caretakers and educators of the public — could help patients

understand that today’s clinical advances start with animal research. What role do you think physicians, and the schools that train them, should play in educating the public about the role of responsible animal research? What are some of the challenges in engaging this community on this topic?

SfN has done a terrific job of raising public awareness of the value of animal research. It clearly is desirable that physicians understand the importance of animal research for their clinical activities, and probably the best way to achieve this is to involve medical students in animal research during their training, to a greater extent than is done now. Realistically, however, CAR will need to think about how to best reach these audiences, given the enormous pressure on physicians to generate income and minimize time with each patient. Perhaps one should also consider targeting nurses and other non-physician health professionals, who have more time and may be closely connected with, and trusted by, patients. ■

Institutional Program Members Discuss Trends in the Field

The 2011 Annual Spring Conference of Neuroscience Departments and Programs (NDP), themed *Current Trends in Neuroscience Education: Training the Millennial Student*, was held on March 25 in Washington, DC. More than 80 attendees heard panel presentations and engaged in interactive discussions about undergraduate neuroscience education, the value of an MS degree in neuroscience, NIH and NSF funding for graduate neuroscience education, and more. The keynote address by David Rose, EdD, on the neuroscience and neurotechnology of teaching and learning in the digital age, and a panel featuring student input on the effectiveness of journal clubs and qualifying exams in neuroscience graduate curricula were among the highlights. Full conference coverage will appear in the Summer 2011 issue of *Neuroscience Quarterly* and slide presentations will be available on the SfN Web site.

The annual spring conference is a signature event of SfN’s Committee on Neuroscience Departments and Programs (CNDP) and one of many benefits offered to SfN’s Institutional Program (IP) members. The conference offers a venue for IP members to gather with fellow educational leaders to discuss and share ideas around common issues facing neuroscience training and education.

Other benefits of IP membership include a listing in the online directory of neuroscience training programs, reduced registration fees for the annual spring conference,

access to the NDP booth at the SfN annual meeting for displaying program brochures and information, one free e-mail blast each year to SfN’s student members, and discounted rates for multiple NeuroJobs postings.

For more information about CNDP and Institutional Program member benefits, visit www.sfn.org/ndp. ■



Stephen Korn, director of Training and Career Development, National Institute of Neurological Disorders and Stroke, discussed funding for graduate neuroscience education.

Tricking the Brain: Virtual Reality in Research

Some people may associate virtual reality with the movies or video games for fun, but computer-simulated environments are a useful tool for the exploration of brain functions, as well. These technologies have already provided insight into how the brain navigates, identifies, and remembers settings.

During Neuroscience 2010, researchers participating in a press conference on virtual reality discussed the potential real-life therapies and basic science findings emerging from studies that “trick” the brain. Press conference moderator Veronique Bohbot of the Douglas Institute and McGill University led a panel of speakers using simulated environments to examine memory, perception, and motor control in both animals and humans.

IMAGING PLACE CELLS IN A VIRTUAL ENVIRONMENT

Daniel Dombeck, a postdoctoral fellow working with David Tank at Princeton University, uses the virtual world to study place cells in the hippocampus, which are important in encoding spatial information. Previous work led to the theory that place cells — and an animal’s map of the local environment — were organized anatomically. However, Dombeck’s work may help modify that theory.

Most studies of place cells use extracellular electrodes, which do not allow for cellular resolution. Dombeck and his colleagues recorded single cell activity patterns in the hippocampus of mice moving through a virtual environment.

Dombeck explained he and his colleagues used a virus to deliver a genetically encoded calcium indicator to cells of the hippocampus before employing *in vivo* custom-built two-photon laser scanning microscopy to image cells while the mice navigated virtual rooms. The team “tagged” the place cells through hippocampal injections of an adeno-associated virus and used a hippocampal imaging window to detect activity as the neurons fluoresced during the animals’ activity. The researchers were able to get such enhanced cellular resolution in part because the heads of the mice were stabilized while they ran on a spherical treadmill through the virtual environment.

Based on the cells’ activity patterns, the researchers mapped their physical locations relative to other cells to examine whether place cells that encode for a specific location (a “place field”) are organized randomly or in a discrete zone. Dombeck said they found no evidence for an anatomically organized map on the local scale within the hippocampus.



Participants in the virtual reality press conference at Neuroscience 2010 answer questions from reporters about their research.

MEMORIES IN MOTION

Is there a relationship between how an animal explores its environment — real or virtual — and how it processes information? Loren Frank of the University of California, San Francisco, described work that expands neuroscientists’ understanding of memory by suggesting an important role for speed of movement and rate of activity.

The hippocampus contains several memory circuits. One is known as the “trisynaptic circuit,” which carries information from the entorhinal cortex to the dentate gyrus, the CA3 region, and the CA1 region. This circuit is most involved in rapid storage and consolidation of memory information. The other is the “direct circuit” with signals passing directly from the entorhinal cortex to CA1. This circuit carries sensory information in from the outside world.

Using optogenetics and selective electrical stimulation, the researchers showed the speed with which an animal moves continuously alters information processing in the hippocampus. Slower speeds correlated with increased activity in the trisynaptic circuit. When stimulating CA3, the strength of the signal in CA1, as measured by the slope of the field excitatory post-synaptic potential, was large when animals were still and decreased (by a factor of as much as three) as animals moved at progressively faster speeds. In contrast, faster speeds correlated with increased activity in the direct pathway circuit.

According to Frank, these data suggest animal behavior profoundly influences how memories are stored.

OBJECT DISCRIMINATION DECLINES WITH AGE

How an individual interacts with his environment changes over time. In both real and virtual environments, the aging

process affects object recognition. Sara Burke, a postdoctoral fellow working with Carol Barnes at the University of Arizona, presented work suggesting aging rats experience a decline in object recognition due to perceptual impairments.

The researchers showed that young rats explore new objects more than they explore well-known ones, while older rats appear to treat new and familiar objects as if both are familiar. Burke suggested this impaired capacity to distinguish old from new might help explain the increased incidence of false memories experienced by elderly people.

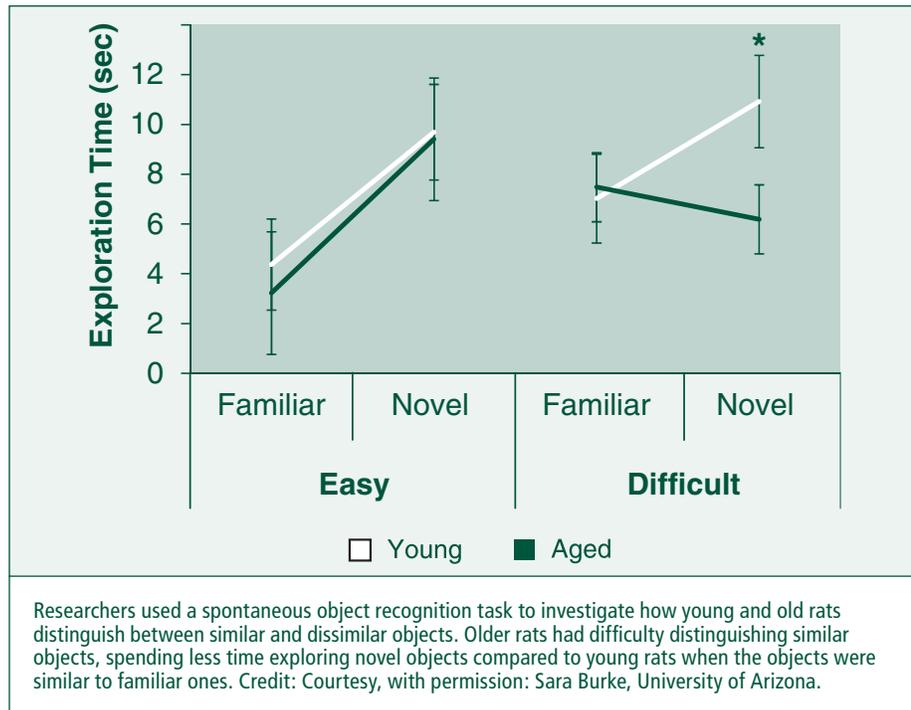
Using a spontaneous object recognition task, they investigated the ability of young and old rats to distinguish between two similar boxes (high perceptual difficulty), or between two dissimilar objects (low perceptual difficulty). Young and old rats seemed to be equally curious about the dissimilar objects. Yet, when it came to similar objects that required higher perceptual ability, only the young rats indicated they detected a difference by exploring the novel object longer. In contrast, the old rats sniffed at the familiar and novel objects for equal amounts of time.

The findings may suggest older rats are unable to resolve perceptual ambiguity, which other researchers have seen in young animals with perirhinal cortex lesions.

VIDEO GAME-BASED THERAPY HELPS STROKE PATIENTS RECOVER

Virtual reality may be a useful rehabilitation strategy for people attempting to recover arm and hand motion following stroke. Sergei Adamovich of the New Jersey Institute of Technology discussed an interactive video game-based therapy designed to help patients improve arm movement. The results suggest increased connectivity in the brain may lead to functional recovery.

In the study, 24 participants who had a stroke at least 6 months prior to therapy practiced with the video game for about 22 hours over a 2-week period. With the aid of a robotic arm, individuals attempted increasingly difficult tasks.



In virtual environments, people with arm and hand impairment practiced tasks such as reaching and touching virtual objects. For example, they took a cup from a shelf and put it on a table, hammered a nail, and played a virtual piano. The goal was to improve hand and arm function during the chronic post-stroke period when task-specific and highly repetitive activity can be the most effective. Adamovich and his colleagues observed that the volunteers moved their hands faster over the course of the tests.

Neurophysiological response was evaluated by functional magnetic resonance imaging and motor-evoked potentials in several participants two weeks before, one day before, and one to two days after the intervention. The results showed increased functional connectivity among bilateral sensorimotor and premotor brain regions following virtual reality training that further correlated with the improvements in the patients' clinical outcomes.

Together, these studies offer new insight into how the brain processes its environment — both real and virtual — and suggest new tools inspired by video games have potential to aid in the laboratory and clinic. These new techniques may open doors to understanding brain anatomy, neuronal circuit dynamics, and normal and pathologic events in the brain. ■

FOSTERING THE MENTOR-MENTEE CONNECTION

The online mentoring community is another addition to member networking resources. Launched in fall 2010, the site features a unique mentor-mentee matching program, resource library, and discussion groups. As of March 2011, enrollment included more than 175 members as mentors and 120 as mentees.

Jill Becker, University of Michigan and co-chair of the SfN Professional Development Committee (PDC), said the success of mentoring events at the annual meetings sparked a call for more opportunities year-round.

“We lead such busy lives these days that it isn’t always possible to carve time out of our busy schedules to visit with a mentee,” said Becker. “We hope this new online program will serve as a practical solution to help mentors and mentees find each other and stay connected during those times when face-to-face meetings aren’t possible.”

With a searchable database, mentees can locate mentors who have experience in a specific field. For added convenience, mentors can indicate when they are not available and determine the number of mentees they can work with at a time. Both can use discussion groups to talk about their fields and challenges.

SfN President Susan Amara noted that being a mentor doesn’t have to involve an overwhelming commitment. “Mentoring can be easy and only takes as much time as you have to give — a phone call, an e-mail, meeting for coffee at the SfN annual meeting — while the enjoyment and satisfaction can be huge,” said Amara.

CREATING AN ONLINE CONVERSATION

Populating the online mentoring community and the EMD is the first step toward the launch of *NeurOnLine*, SfN’s members-only online community, which debuts this summer. Designed to engage members at all career levels, *NeurOnLine* will provide a trusted venue for members to plug in to the global SfN membership community year-round. *NeurOnLine* will incorporate the EMD, the online mentoring community, and a number of other exciting features designed to facilitate scientific discussion, networking, and more.

Populating the enhanced member directory is the first step toward the launch of *NeurOnLine*, SfN’s members-only online community, which will debut this summer.

NeurOnLine will house a number of scientific, career-related, and other communities. Within these communities, members can post questions or comments and have conversations about research and other topics within a trusted venue. Members also will be able to establish their own personal networks to keep in contact with colleagues from across the globe. In addition, *NeurOnLine* can help members get a jumpstart on the annual meeting, allowing participants to start conversations about upcoming presentations before they land in Washington, DC, this November.

Council member Marina Picciotto, Charles B.G. Murphy Professor in the Departments of Psychiatry, Pharmacology, and Neurobiology at Yale University School of Medicine, and co-chair of SfN’s Social Technologies Advisory Group, believes *NeurOnLine* will become a valuable asset in preparing for the annual meeting.

“One of the main benefits to all of us as SfN members is attendance at the annual meeting. The ability to interact with our colleagues across the U.S. and the world from a large number of subfields in neuroscience and at many different stages of career development always renews my excitement for neuroscience,” said Picciotto, a past SfN Program Committee Chair. “One of the ideas behind *NeurOnLine* is to extend that experience through the rest of the year and to allow scientific interaction to occur freely among SfN members from the very beginning of their career through to emeritus professors.”

As with the annual meeting and *The Journal of Neuroscience*, *NeurOnLine's* content and discussions will be generated by members, for members — making member engagement key to its success.

ENHANCING NEUROJOBS — A COMPLETE CAREER GUIDE

Another online venue for professional development is the new NeuroJobs Career Center. While NeuroJobs has been a successful resource for posting and finding neuroscience jobs since 2005, the NeuroJobs Career Center — set to launch July 2011 — will offer more dynamic resource. From members starting a neuroscience career to senior-level development, someone visiting the site will find job openings, tips for resume writing, interviews, and other job hunting skills. A student wondering what he or she can do with a degree in neuroscience can look up information on different career paths, from academia to science writing, government, and beyond. In future phases, SfN plans to add content that will offer more insight into the job opportunities that a neuroscience education can provide and virtual job fairs. NeuroJobs will continue to allow job seekers to connect with prospective employers before the annual meeting.

SEEDING THE IDEA

The idea for enhancing the NeuroJobs site arose out of feedback from SfN members, starting with the 2007 membership survey. Focus groups involving students and postdoctoral trainees stressed a need for support in pursuing different types of neuroscience careers. More recently, the “Careers Beyond Academia” workshop at Neuroscience 2010 was a standing-room-only event with more than 300 attendees eager to learn about the span of careers in neuroscience.

Mike Lehman, research professor and co-director of the Reproductive Sciences Program at the University of Michigan in Ann Arbor, is incoming co-chair of the PDC and an advocate of the expanded career center.

“I am extremely enthusiastic about the opportunity to create an expanded career center Web site/resource for the neuroscience community,” noted Lehman. “I think it will fill an important void and have a very positive impact in our field. Although it will start with a focus on early career choices, I can see it naturally expanding to include career transitions for mid-and senior-level neuroscientists.”

USING SOCIAL MEDIA TO PROMOTE NEUROSCIENCE

While SfN has been developing its member resources, the Society’s public-facing online platforms continue to provide a great way to advance the organization’s mission of education and outreach — and these resources are growing in popularity every day. The SfN page on Facebook has more than 12,000 fans, and the Twitter account, @SfNtweets,

has nearly 600 followers. The annual meeting Twitter page, @Neurosci2011, has seen a seven-fold increase in followers since December of last year.

One of the most popular topics in the SfN social media sphere has been policy and advocacy updates surrounding the budget issues in Congress. On Facebook and Twitter, and through e-mail blasts, SfN urged members to contact their U.S. congressmen in opposition of cuts to science research funding. More than 6,000 members sent letters to Congress, and a number of comments about the federal budget were posted on SfN’s wall on Facebook.

In addition, the public-facing sites have been a source of increased traffic to www.sfn.org, providing a platform for increasing awareness of recent research, clinical applications, and advances in treatment of neurological and psychiatric disorders.

PROMOTING SfN’S MISSION IN AN ONLINE WORLD

The EMD, the online mentoring community, *NeurOnLine*, the NeuroJobs Career Center, and public social media tools collectively support SfN’s efforts to enhance the networking, professional development, and overall experience of SfN members online and year-round. The implementation of these resources serves the Society’s mission to create venues for great science, support the neuroscience community, and educate and engage the public. ■

NEW BENEFIT

for SfN members



Discover the enhanced member directory.

Complete your member profile, and enter into a drawing to win **a free Apple iPad®** or a **\$500 Apple Store Gift Card!**

For questions, contact membership@sfn.org or phone (202) 962-4000.



iPad is a registered trademark of Apple Inc.

A Global Perspective: SfN Surveys Non-U.S. Members

While the exchange of scientific knowledge is universal, the research infrastructure, and professional development opportunities differ greatly across regions, countries, and institutions. Recognizing that SfN international (non-U.S.) members are an increasing component of SfN's overall membership, the SfN International Affairs Committee (IAC) assessed a sample of non-U.S. members to identify ways SfN might better serve their professional and career development needs

To address the needs of this membership group, the IAC conducted a survey in October 2010 of a random sample of more than half of the non-U.S. membership and yielded a strong 30.6 percent response rate. The randomization was stratified by member category and country of residence according to SfN's 2009 membership percentages. Demographically, the respondents reflected SfN's current membership, roughly matching the proportion of member types and country income-level distribution, with male and regular members slightly over represented and students slightly underrepresented.

PRIMARY CAREER CHALLENGES FOR NON-U.S. MEMBERS

The survey asked members to identify key challenges to advancing their careers. Top challenges cited by survey respondents included the following:

- Access to funding and fellowship opportunities
- Ability to get research published

- Cost of travel to attend international scientific meetings
- Employment opportunities

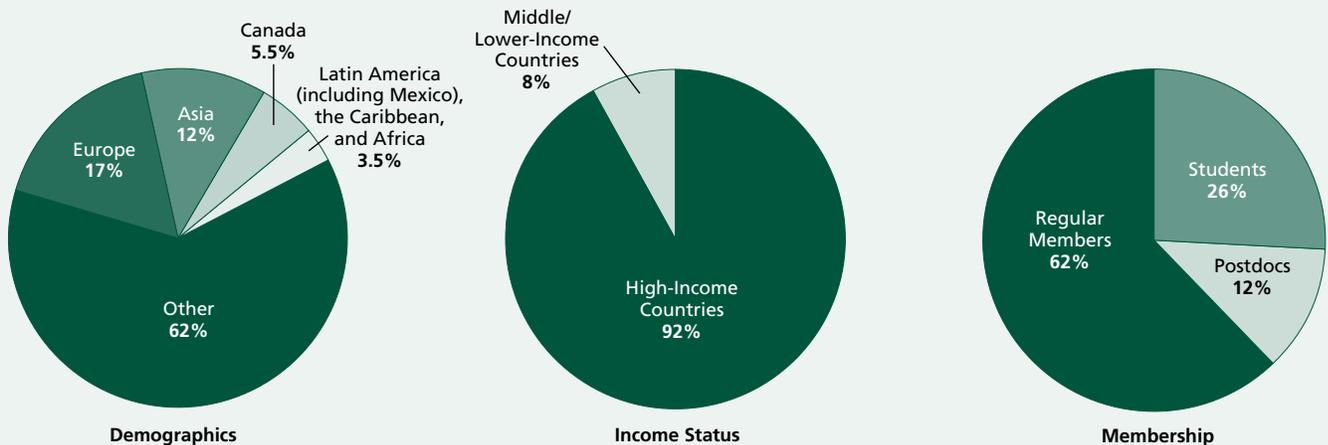
These challenges are similar to what all SfN members highlighted in previous general membership surveys. However, just below these categories in rank, non-U.S. members indicated several additional challenges, including lack of access to professional networks for research and scientific exchange and lack of necessary research infrastructure/technologies. Respondents from middle- and lower-income countries rated all challenges higher on average by more than half a point than members from high-income countries.

Asked about barriers to engagement in the Society, the most frequently cited constraints related to participation in the annual meeting, including travel costs and logistics, meeting size and focus, and lack of time. Several members also commented they perceive SfN's non-scientific activities as U.S.-focused, and that non-U.S. members are not often approached to serve on SfN committees or to participate in the annual meeting program.

RESOURCES AND PROGRAMS WANTED BY NON-U.S. MEMBERS

Asked about the types of resources and programs they would find most valuable, survey respondents put at the top of their list access to information about grants and funding opportunities relevant to international neuroscientists. Ranked second was support for international

SfN NON-U.S. MEMBERS



The non-U.S. membership has grown from 26 percent in 2002 to 38 percent (15,749) of the much larger 2010 membership total.

visiting scientist programs and lab visits, followed by the creation of an online networking community for members to share knowledge.

On the subject of the SfN annual meeting, members suggested SfN could try to increase the number of sessions held during the meeting on international topics and help organize national or regional networking events.

In the area of public education and advocacy, respondents said they would like to see SfN share tools and strategies developed for use in the United States to help members and national societies advocate more effectively in their countries. They also urged greater communication from SfN on advocacy-related news and issues outside the United States.

To support their professional development needs, non-U.S. members encouraged SfN to consider supporting the delivery of some of its professional development workshops internationally — working collaboratively through the International Brain Research Organization (IBRO) and the Federation of European Neuroscience Societies (FENS) as well as through national societies and SfN’s international chapters.

Finally, when asked about neuroscience education and training, survey respondents indicated their interest in a global directory of neuroscience graduate training programs as well as information about varying neuroscience education models used in different countries.

ADDRESSING MEMBER NEEDS

Over the past 10 years, SfN has been paying greater attention to increasing the value of membership for non-U.S. members. In 2003, SfN opened committee membership to non-North Americans and, in 2011, 27 non-U.S. members (including 20 non-North Americans) are serving among SfN’s volunteer leadership. This includes 3 of the 16 members of the SfN Council. SfN’s Committee on Committees and International Affairs Committee are both working to continually improve committee representation to ensure the membership’s diverse needs are reflected.

SfN also initiated several programs designed specifically to support non-U.S. members, including the Ricardo Miledi Neuroscience Training Program for graduate students in Latin America and the Caribbean, which has been supported with funding from The Grass Foundation since 2004; an IBRO Teaching Tools Workshop in Africa since 2008; a FENS-IBRO SfN School in Europe since 2010; and a FENS-SfN National Advocacy Grant

Program for FENS member societies, which is launching later this year. As part of the latter program, SfN is co-sponsoring a workshop with FENS in June where FENS member societies and SfN will be sharing advocacy-related experiences and tools. SfN also supports advocacy efforts in Canada and Mexico. In addition, SfN provides 30 SfN-IBRO travel awards each year to young neuroscientists in lower-and middle-income countries and gives out two \$25,000 Gruber International Research Awards to neuroscientists working in an international setting.

To address one of the top challenges and needs identified in the survey by non-U.S. members, SfN is working on the development of a directory of grants and funding opportunities for researchers outside the United States. The International Affairs Committee will further examine the survey results this spring to identify additional initiatives for a three-year strategic plan, designed to increase support to the Society’s growing number of members around the world.

For more information about SfN’s global programs and resources, visit www.sfn.org/international. ■



Abstract Submission Closes May 12

Washington, DC
November 12 – 16

SfN

Submit an abstract for a poster session or nanosymposium.

ABSTRACT SUBMISSION DEADLINE: THURSDAY, MAY 12, 5 P.M. EDT

LEARN MORE AT WWW.SFN.ORG/AM2011

Initially, material will draw on a wealth of scientifically reviewed public information and teaching tools developed or maintained by SfN and key content partners. As the site grows, *BrainFacts.org* will provide interactive information about basic and clinical brain research; facts about brain diseases and disorders; strategies to promote brain health and wellness; promising discoveries and key concepts such as neuroplasticity; and the growing role of neuroscience in societal discussions on health, education, ethics, law, and more. High-quality teaching tools for primary and secondary level educators will continue to be incorporated and the site will use multimedia and social media to foster learning and dialogue with public audiences.

Over time, the site will complement and leverage the field's global commitment to public information by integrating multimedia resources from leading neuroscience centers worldwide. Moreover, in an era where scientific misinformation is rampant, *BrainFacts.org* content will be evaluated by leading scientists to ensure accuracy and dispel "neuromyths," which range from poorly interpreted concepts of "left-brain or right-brain learners" to inaccurate claims of links between autism and childhood vaccines.

"With *BrainFacts.org*, The Gatsby Charitable Foundation seeks to ensure that accurate information about the brain and nervous system is available to the public, educators, and policymakers worldwide, without boundaries or borders," said Lord Sainsbury of Turville, the settlor of The Gatsby Charitable Foundation.

Fred Kavli, founder and chairman of The Kavli Foundation, said, "We are very pleased to be working with the Society for Neuroscience and The Gatsby Charitable Foundation on such an ambitious and important project — one that uses the power of the Internet to provide the world a trusted source of information about the brain, and does so by using the extraordinary resources and expertise of SfN."

The site will benefit the field in a number of ways. First, the site can become a major resource for neuroscientists' public outreach efforts, as it will include videos and other



content they can play or distribute during their own events and activities. Second, the site would help the neuroscience community understand how sponsoring and content partners are helping to serve their long-term interests and advancing the field.

Additionally, *BrainFacts.org* will benefit institutions, industries, and individuals conducting neuroscience research because the site would advance public knowledge and support for the research enterprise. Prominent reference would be made to major U.S. funding and research institutions like the National Science Foundation and National Institutes of Health, as well as the Medical Research Council in the United Kingdom and Canadian Institutes for Health Research, etc. Field-generated content on the site also would reference its originating institutions, providing recognition

for those neuroscience hubs that have invested in effective public content.

The collaboration between *BrainFacts.org* founding partners reflects the organizations' shared commitment to core principles that advance science, such as expanding public awareness of emerging scientific discovery, strengthening international scientific collaboration, and ensuring a strong and vibrant basic science enterprise.

"SfN's strong international presence makes them a natural partner to communicate discoveries being made by today's global neuroscience community and to invest in tomorrow's breakthroughs by helping to inspire and educate the next global generation of scientists and citizens," said Sarah Caddick, PhD, principal advisor for Neuroscience to Lord Sainsbury of Turville.

Said Robert W. Conn, president of The Kavli Foundation, "In the coming years, scientists hope both to uncover the secrets behind our most devastating neurological diseases, and to understand how the brain makes us who we are. *BrainFacts.org* will create a platform to share exciting developments in brain research with everyone, from teachers and policymakers to the person who simply needs to know more about a neurological disease." ■

Be Recognized! More than \$500,000 in Awards and Prizes

Nominations for the 2011 awards are now open and will close late spring/early summer. This is a great opportunity to recognize a colleague, student, or mentor whose work stands out in his or her field.

Every year, SfN acknowledges some of the best research and achievements by neuroscientists around the globe with more than \$500,000 in prizes and other compensation, such as complimentary travel and registration for SfN's annual meeting.

These awards recognize scientists at all stages of their careers for a variety of activities, including research, outreach programs, and mentoring efforts.

YOUNG SCIENTISTS' ACHIEVEMENTS AND RESEARCH IN NEUROSCIENCE

- Career Development Awards – \$2,000; originality and creativity in research
- Donald B. Lindsley Prize – \$2,500; outstanding PhD thesis in behavioral neuroscience
- Jacob P. Waletzky Award – \$25,000; research in the area of substance abuse and the brain and nervous system
- Peter and Patricia Gruber International Research Awards – \$25,000; research and educational pursuit in an international setting
- Young Investigator Award – \$15,000; research and scientific contributions in neuroscience

OUTSTANDING RESEARCH AND CAREER ACHIEVEMENTS

- Julius Axelrod Prize – \$25,000; achievements in neuro pharmacology (or related field) and mentoring
- Ralph W. Gerard Prize – \$25,000; outstanding contributions to neuroscience
- Swartz Prize – \$25,000; contributions in theoretical and computational neuroscience

SCIENCE EDUCATION AND OUTREACH

- Award for Education in Neuroscience – \$5,000; contributions to neuroscience education and training
- Science Educator Award – \$5,000; contributions to educating the public about neuroscience
- Next Generation Awards – More than \$2,000; efforts in public communication, outreach, and education about neuroscience by SfN chapter members

PROMOTION AND MENTORING OF WOMEN IN NEUROSCIENCE

- Bernice Grafstein Award – \$2,000; promoting women's advancements in neuroscience through mentoring
- Louise Hanson Marshall Special Recognition Award – promotion of women in neuroscience through teaching, advocacy, or other efforts not necessarily related to research.
- Mika Salpeter Lifetime Achievement Award – \$5,000; career achievements and promoting women's advancement in neuroscience
- Patricia Goldman-Rakic Hall of Honor – posthumously awarded for career achievements and dedication to mentoring young women in neuroscience

TRAVEL AWARDS

- Graduate Student and Postdoctoral Fellow Travel Awards – travel stipend (\$1,000 for North American and \$2,000 for International); trainees with outstanding abstracts
- Graduate Student and Postdoctoral Fellow Chapters Travel Awards – travel stipend (\$1,000 for North American and \$2,000 for International); trainees nominated by their local SfN chapters ■



GIVE TO THE FRIENDS OF SfN FUND

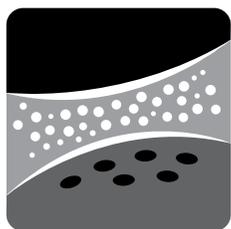
Support the next generation of neuroscientists through travel awards and other career development initiatives.

To make a tax-deductible donation, simply mail a check payable to the Society for Neuroscience and note Friends of SfN in the memo line:

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c/o Friends of SfN
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Suite 1010
Washington, DC 20005



To inquire about specific initiatives to support, visit www.sfn.org/supportsfn or e-mail: crush@sfn.org.



NEUROSCIENCE 2011

More than 30,000 scientists from around the world will gather November 12-16 in Washington, DC, for the Society for Neuroscience 41st Annual Meeting. The Walter E. Washington Convention Center, centrally located near all of DC's attractions, will play host to five days of symposia, lectures, and dialogues showcasing the latest research on the brain, spinal cord, and nervous system.

Through presidential and featured lectures, workshops, poster sessions and forums, members of the global neuroscience community will gain insight on notable studies, cutting-edge research techniques, and hot-button issues in the industry.

SPEAKERS TO SEE — PRESENTATIONS NOT TO BE MISSED

Featured at the 2011 Dialogues Between Neuroscience and Society lecture will be groundbreaking economist and bestselling author Dr. Robert Shiller. Ranked among the 100 most influential economists of the world, Shiller's work has addressed how psychological factors influence decision-making in the economic arena and the impact of group dynamics on financial markets. His lecture presents an exciting opportunity to examine the interplay between economics and the human brain.

Neuroscience 2011 will mark the third year of nanosymposia, which provide abstract presenters the opportunity to form and suggest the composition of their own sessions. The online Nanosymposium Topic Matching Forum is now available to spark potential collaborations for a group nano submission. Using the themes and topics list for November's event, attendees can search for members from other labs with similar interests to form a nanosymposium group ahead of abstract submission and increase chances of acceptance. For more information, visit www.sfn.org/cfa. Abstract submission opens April 21 and closes 5 p.m., EDT on May 12.

PLANNING AHEAD SAVES MONEY

Current SfN members can take advantage of substantial meeting registration discounts. Visit www.sfn.org/renewnow and log in with your membership ID and password. Membership benefits include the ability to sponsor or submit 2011 abstracts and propose symposia or minisymposia. Both regular members and student members will see cost savings with membership renewal.

This year's advance member registration opens July 13 and advance nonmember registration opens July 19. Details and registration fees can be found at www.sfn.org/am2011.

APPLY OR NOMINATE COLLEAGUES FOR FELLOWSHIPS, AWARDS, AND PRIZES

Don't miss the opportunity to apply for SfN awards and prizes. Several Society awards and fellowship programs offer travel assistance to the annual meeting and are available to scientists at all stages of their career. See page 13 for 2011 award details or visit www.sfn.org/awards for descriptions and deadlines.

TRAVEL AND HOTEL SAVINGS

If you're planning to fly to Washington, DC, get lower airfares by contacting the providers recommended by the Society. Visit the annual meeting site to access details on pre-negotiated discounts with major air carriers and rental car firms.

A special block of lower-priced hotel rooms has been set aside for student and member Category I, II, and III registrants until October 3. Rooms will be assigned on a first-come,

SPANNING THE DISCIPLINE — 2011 SCIENTIFIC CONTENT



Cornelia Bargmann
The Rockefeller
University

*Genes, the Environment,
and Decisions: How
Fixed Circuits Generate
Flexible Behaviors*



Ann Graybiel
McGovern Institute
for Brain Research at
Massachusetts Institute
of Technology

*The Basal Ganglia:
Binding Values to Action*



Andrew Feinberg
Johns Hopkins
University

*The Epigenetic Basis
of Common Human
Disease*



Mu-ming Poo
University of California
at Berkeley

*Neurotrophins: From
Axon Growth to
Synaptic Plasticity*

Published quarterly by the Society for Neuroscience

Circulation: 42,000

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27	trees
12,440	gallons of water
755	pounds of solid waste
2,583	pounds of hazardous effluent

FEATURED LECTURES

Albert and Ellen Grass Lecture

Dora Angelaki, Washington University School of Medicine

Fred Kavli Public Symposium

Alan Leshner, American Association for the Advancement of Science

David Kopf Lecture on Neuroethics

Svante Paabo, Max Planck Institute for Evolutionary Anthropology

History of Neuroscience Lecture

Anne Young, Massachusetts General Hospital

Peter and Patricia Gruber Lecture

To be announced in late April

first-serve basis. SfN encourages you to take advantage of our online booking service. Those who do will be given priority over phone, fax, or mail reservation requests.

Visit www.sfn.org/membership for category details.

ENSURE SMOOTH INTERNATIONAL TRAVEL

If you're planning to visit Washington, DC for Neuroscience 2011 from abroad, be sure all of your travel documents including a visa or passport are up-to-date and will not expire while you're traveling. If you are from a nation participating in the Visa Waiver Program (VWP), it is important to review guidelines early to ensure

compliance. International attendees that require visas also may request a letter of invitation from SfN through an online form. See the four-step process and more at www.sfn.org/am2011.

DISTRICT OF COLUMBIA

SfN's home city has plenty to offer meeting attendees outside of the convention center. World-class restaurants, theaters, and free museums are within easy reach. The Walter E. Washington Convention Center is located in the heart of the U.S. capital and serviced by DC Circulator buses and the Metro. District public transportation is convenient, inexpensive, and located near the nation's most popular attractions including the Smithsonian museums, the Kennedy Center for Performing Arts, and the Verizon Center.

While you are in DC, tour the city's historic landmarks on the National Mall or schedule a tour of the National Institutes of Health (NIH) — the primary U.S. federal agency for conducting and supporting medical research — headquartered in nearby Bethesda, Md.

Get details on how to spend your spare time in the nation's capital by visiting the "At the Meeting" tab of www.sfn.org/am2011.

SEE YOU IN DC!

Neuroscience 2011 is a unique opportunity for learning and professional development. In addition to all of the lectures, symposia, and workshops — plus hundreds of neuroscience exhibitors — the meeting offers a variety of services for members, networking, and a great city.

Check future issues of *Neuroscience Quarterly*, bookmark www.sfn.org/am2011 and follow SfN on Twitter @Neurosci2011 for more money-saving and trip-planning tips as the meeting approaches. ■

ONLINE NEUROSCIENCE CAREER CENTER

NeuroJobs
Only from SfN

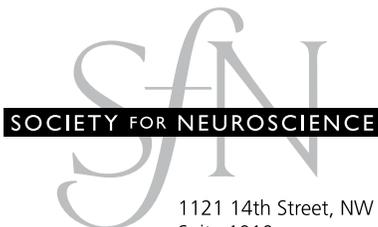
SfN



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Visit www.sfn.org/neurojobs to browse job listings. SfN members enjoy premium services that include resume posting and job alert e-mail notices. For your next career search, visit NeuroJobs first!





1121 14th Street, NW
Suite 1010
Washington, DC 20005

A graphic of a clapperboard with a brain illustration on it, tilted to the left.

BRAIN AWARENESS VIDEO Contest

Convey a Neuroscience Concept on Video!

Demonstrate a concept about the brain that could be used as a teaching tool or resource — such as an animation, song, reenactment, or your own creative approach!

Who's eligible? Society for Neuroscience members and SfN members partnering with K-12 teachers, students, and the general public. Don't know an SfN member? Check out the Neuroscientist-Teacher Partner program at www.sfn.org/NTP to connect with a neuroscientist volunteer near you!

All content must be less than five minutes, original, non-published, and non-grant-funded.

Submissions due by June 10, 2011.

Great Prizes!

Win up to \$1,000 and a trip to SfN's annual meeting, Neuroscience 2011, in Washington, DC! Top videos will be showcased at Neuroscience 2011 and will be featured on the SfN Web site.

For more information and contest rules, visit the SfN Web site, www.sfn.org/BAVideoContest.

Brain Awareness Week (BAW) is a global campaign that the Dana Alliance for Brain Initiatives founded to promote the wonders of the brain and nervous system. Visit www.sfn.org/BAW for more information.

