

NEUROSCIENCE

FALL 2011

Q U A R T E R L Y

“As SfN strives to meet the needs of our global members, we value and partner with many other organizations — including other societies, global and national — to further our common neuroscience agenda.”

— Susan Amara, SfN President

Animal Spirits: How Human Behavior Drives the Economy



Robert Shiller, PhD
Dialogues speaker at
Neuroscience 2011

While the world economy’s recent volatility might not be explained by one incident or cause, what role might human decision-making systems play in driving modern global markets, currencies, and stocks? Join the 2011 Dialogues Between Neuroscience and Society Lecture “Animal Spirits: How Human Behavior Drives the Economy” to discuss this fascinating topic at Neuroscience 2011 on Saturday, November 12, 11 a.m. to 1 p.m.

The featured Dialogues series speaker, Robert Shiller, PhD, an American economist recognized among the top of his field, will join noted neuroscientists to discuss the interplay between economics, human psychology, and the neural basis of behavior. The Arthur M. Okun Professor of Economics at Yale University and a regular contributor to the *New York Times* column “Economic View,” Shiller is also a best-selling author of 10 books, including co-author of *Animal Spirits*, an alternative and timely interpretation of the role of human psychology in economic crises and booms.

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Message from the President

Serving Members Worldwide, Forging Global Partnerships



Susan Amara,
SfN President

Neuroscience is both a highly individual and, simultaneously, profoundly collaborative pursuit. While we each have our individual scientific questions and our unique passions, *collaboration* — across specialties, disciplines, animal models, and borders — is a hallmark of our field. This connection between individual passion and collective action is, I believe, part of what makes our field dynamic and promising for established and young scientists alike.

Working collaboratively on a global scale is a growing reality for the neuroscience community — most of you probably study with, work with, learn from, and befriend colleagues from many countries in pursuit of scientific knowledge. These same globalizing trends mean international programming and collaboration are an increasingly important part of SfN’s focus. With nearly 40 percent of our membership residing outside of the United States, the reality is that SfN is an international society; today, it is comprised of members from nearly 90 countries.

As a society committed to serving members wherever they live or work, SfN has the opportunity and obligation to provide leadership, programs, and services that meet the needs of members worldwide. Over the last few years, our Council voted to enable

Continued on page 2...

non-North American members to serve on Council, and SfN members elected Nancy Ip from the Hong Kong University of Science and Technology as our first councilor from Asia.

Additionally, SfN has increased international participation on SfN governance committees by 49 percent over the past four years, and many additional international members are being tapped to serve on SfN advisory bodies. To date, members have opted to form 39 chapters outside the United States, empowering them with the same resources and leadership opportunities available to U.S. chapters.

New programs are providing more avenues to hear from and connect with members worldwide. In a survey conducted last fall to identify interests and preferences of our international members, it was striking that most of the issues were similar, regardless of country of residence, access to funding, ability to get published, and job opportunities. Additionally, SfN recently launched *NeurOnLine*, an online community forum where members can discuss topics related to their science or professional development, or ideas about advocacy and education. Active members on the site hail from dozens of countries, including the United Kingdom, France, Canada, Malaysia, and Iran. As the site grows, I hope it will expand as a year-round, global venue for scientific dialogue that complements the collective energy and breadth of activity at the annual meeting.

As SfN strives to meet the needs of our global members, we value and partner with many other organizations — including other societies, global and national — to further our common neuroscience agenda. For example, in today's uncertain world for neuroscience funding, many leading organizations are eager to further support neuroscience through both advocacy and public outreach. But SfN recognizes that each country may need different strategies to effectively pursue greater governmental and public support for basic research.

For that reason, SfN has supported financially the development of country-specific advocacy programs in Canada and Mexico for several years. In 2011, SfN expanded this support by partnering with the Federation of European Neuroscience Societies (FENS) to launch a new grant program — equally funded by SfN and FENS — to help strengthen the advocacy capacity of European neuroscience societies. Kicked off at a June event at the new FENS headquarters in Brussels, the event was attended by more than 40 representatives of national societies and neuroscience advocacy groups and the program's first grants will be distributed this winter. SfN is also taking part in wider global conversations — led by the International Brain Research Organization (IBRO) through

a Global Advocacy Working Group — on how this grant model might be expanded and adapted to serve additional regions. SfN also is working with FENS and the Japan Neuroscience Society to develop global approaches to public outreach on animal research issues.

At a time of heightened visibility for the field, global awareness of professional ethics in scientific publishing is another shared need. As you will read in this issue of *Neuroscience Quarterly*, SfN collaborated with several international partners this summer to highlight issues and provide training related to ethics and responsible conduct in scientific publishing. These included a joint symposium at the IBRO World Congress in Florence, Italy, featuring editors from four leading international neuroscience journals; a workshop in Beijing cosponsored by the Chinese Neuroscience Society (CNS); and a panel on scientific ethics at the CNS annual meeting in Zhengzhou where I was honored to participate, along with leading scientists from China and the United States.

SfN continues to partner with FENS and IBRO to support other areas of professional development for members around the world, such as an annual European/U.S. “school” for neuroscience trainees and a teaching workshop to build capacity for neuroscience training in Africa. With funding from The Grass Foundation, SfN's Ricardo Miledi Training Program for young investigators in Latin America is now in its seventh year.

Looking ahead, SfN Council recently approved efforts to significantly expand professional development initiatives — programming in great demand by growing numbers of younger members worldwide. Because of this universal demand, SfN will initially emphasize the leveraging of technologies to deliver these programs, beginning spring 2012. Through the Web, members will access and benefit from online professional development content, in both live and recorded formats, at their own time and pace. In these and other ways that support the global neuroscience community, SfN continues to expand and explore collaborations with national and regional strategic partners.

It has been an honor to serve as president this year, and to contribute my energy and perspective to the 41-year record of accomplishment for the Society. Fostering these global connections has been among my most enjoyable activities, together with meeting many of you along the way. Your individual contributions give me great hope for the field's bright future, as does our growing international collaboration. I look forward to seeing how you — who make up the Society — continue to shape our global future, together. ■

Council Round-Up: Summer 2011 Meeting

The SfN Council met August 23–24 in Portland, Oregon for its annual summer meeting. The meeting focused on high-level discussion of strategic opportunities with an emphasis on prioritization. The following overview highlights key discussions.

FINANCE UPDATE

Council reviewed the multi-year planning targets and financial planning principles adopted in summer 2010 and validated their continued relevance to the current and future fiscal years. Council remains committed to having the Society serve member needs while preparing for volatile financial markets and an uncertain outlook for science funding. Small annual increases in fees will help ensure the Society can invest in important member-focused programs, such as advocacy and professional development efforts. Increased revenue from grants, donations, and sponsorships also are part of SfN's strategy, and good progress has been made in this area.

PRIORITIZATION DISCUSSION

Council reviewed a proposed framework and set of criteria for prioritizing future initiatives and evaluating the success of activities already underway. The framework identified key factors that make initiatives worth pursuing as well as factors that urge caution before implementing. Priority initiatives appropriately balance these two sets of factors.

STRATEGIC OPPORTUNITIES

Guided by data from recent member surveys, Council applied the prioritization framework to key strategic opportunities, resulting in new programs and initiatives for the Society. Noteworthy action steps included approval of expanding the Society's professional development offerings; renewed focus on advocacy for strong science funding; endorsement of an annual meeting survey to collect data that will inform future meeting enhancements; adoption of technology implementation principles to ensure new technologies are used to the greatest benefit of the Society's members; and an extension of the Membership Survey Advisory Group's mandate to develop a plan for enhancing the member experience based on the results of the 2011 member survey.

Council also reviewed the data-driven research efforts guiding the development of the new *BrainFacts.org* and SfN.org Web sites, aimed respectively at the public and the broad neuroscience field. The new sites will launch in 2012.

Overall, Council remains committed to strategically positioning the Society toward further growth and greater membership value, particularly through increased advocacy efforts, expansion of professional development programs, and new opportunities for member engagement.

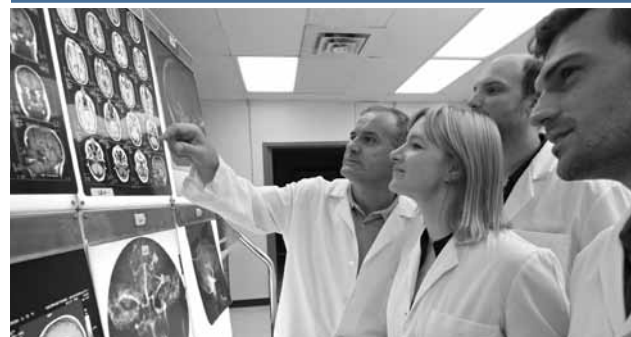
ENGAGING WITH SfN

The SfN Members' Business Meeting at Neuroscience 2011 is your opportunity to participate in a key forum to share your thoughts and suggestions with the Society's leadership while learning about your professional society's latest accomplishments. Learn how to get involved in SfN committees and enjoy light refreshments with other SfN members. The meeting will be held Tuesday, November 15, 6:45–7:45 p.m. at the Walter E. Washington Convention Center in room 103.

SfN also invites regular Society members — including emeritus and postdoctoral members — to nominate Council officers and committee members this fall for the 2012 elections. Check www.sfn.org for more information about the submission period. ■

GIVE TO THE FRIENDS OF SfN FUND

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



To inquire about specific initiatives, or to make a tax-deductible donation, visit www.sfn.org/supportsfn or e-mail: development@sfn.org.



Q&A

Neuroscience: Adapting, Thriving in Tough Times

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The NIH Blueprint for Neuroscience Research brings together the resources and expertise of 16 NIH Institutes, Centers, and Offices to identify common areas of research and address common challenges. Through a unique Q&A, Neuroscience Quarterly asked three Blueprint directors about the impact recent and potential reductions in NIH funding may have on the field of neuroscience. Their collective response is below.



Thomas R. Insel,
Director, National
Institute of Mental
Health, NIH



Story Landis, Director,
National Institute of
Neurological Disorders
and Stroke, NIH



Nora Volkow,
Director, National
Institute on Drug
Abuse, NIH

For many neuroscientists, this may seem like the best of times and the worst of times. Best of times because of the unprecedented opportunities to make progress — new tools and new approaches are giving us traction and opening up new frontiers for understanding the nervous system and how it is affected by disease. But countering this enthusiasm are the bleak financial predictions that raise concerns for investigators seeking NIH support for research.

New investigators applying for their first grant and seasoned investigators renewing long-standing grants are facing the same distressing news: NIH institutes are paying fewer grants and reducing support of currently funded grants.

As directors of three of the NIH institutes, we thought it would be useful to summarize the financial situation, describe what we are doing to adapt to this period of relative austerity, and suggest some approaches for the future.

FUNDING: RECENT PAST AND PRESENT

What exactly is the funding situation? After the doubling of the NIH budget (1998–2003), in most years we saw modest increases, less than the rate of biomedical inflation (3 to 4 percent). Thus, by 2010, the cumulative effect was approximately a 20 percent loss of purchasing power. During this same period, the average direct cost of a Research Project Grant (R01) increased, from \$347,000 to \$419,000.

With relatively flat budgets, the increased costs meant we could fund fewer grants each year. This scenario changed dramatically, albeit temporarily, in 2009 with the American Recovery and Reinvestment Act (ARRA), which included \$10 billion for NIH spread across two fiscal years (2009–2010). ARRA was like a good rain in the middle of a drought. It allowed us to fund hundreds of new grants and support much needed infrastructure projects. It also obscured, for a short time, the continuing drought in our base funding.

We are now in the fourth quarter of fiscal year 2011 (the government fiscal year begins October 1), in the post-ARRA era. While we are beginning to harvest many of the ARRA investments made in 2009–2010, this year has been notable in two respects. Due to a delay in the appropriations process, we did not receive a budget until mid-April, more than six months into the fiscal year. In addition, the final NIH budget was not only less than inflation and less than the President's proposed budget, it was roughly 1 percent less than the 2010 budget.

STRETCHING DOLLARS, PRESERVING PRIORITIES

NIH institutes adjusted to this decrease with several policies meant to stretch the dollars over more grants. While previously funded (non-competing) grants usually receive an inflationary annual increase, this year we reduced non-competing budgets by 1 percent, the same reduction as in the NIH budget. The budgets of new grants were often reduced, sometimes substantially; and many larger mechanisms, such as centers and program projects, were cut even more drastically. Some institutes cut intramural budgets. Some reduced the number of new extramural grants, or trimmed out-year commitments.

While we do not have a budget for fiscal year 2012, every indication is that next year will again be less than the proposed President's budget (2.7 percent increase). Indeed, we are concerned that it will fall below the 2011 funding mark.

In tough times, there is an unavoidable tendency to blame whatever may have been changed. We have heard the problem with falling paylines can be attributed to changes in the peer review process, a new policy to limit re-submissions to one attempt, and greater investment in clinical trials. While all of these are changes, the simple fact is that the payline problem is caused by the budget, not these innovations. Collectively, we have adopted policies to address some major concerns.

First, we worry about losing the next generation during this challenging period. Each of our institutes has implemented

a more generous payline for new investigators, ensuring the success rate for early-stage scientists will be no worse than for those who have been previously funded and thus are more seasoned in the grant writing process. In addition, NIH has created new mechanisms, such as the Director's Early Independence Award, to provide independent funding to select very early-stage scientists. This new program complements the Career Transition Award (K99/R00) that facilitates the transition from fellow to faculty.

Second, we are concerned about the loss of innovation during a period when competition for support becomes more intense. Each of us has supported the High-Risk Research programs of the NIH Common Fund, such as the Director's Pioneer Awards and New Innovator Awards, as well as the EUREKA program. While these programs support innovative science across NIH, neuroscience has fared especially well. Roughly 36 percent of the Pioneer Awards have been for neuroscience.

Third, we are committed to using the budgets we have as efficiently as possible. By standardizing approaches, integrating data, and sharing data and resources across funded projects, we can leverage our investments to support more science. Ultimately, the integration of data sets in an open access format will enable the creation of large databases that will profoundly accelerate the rate of discovery, as it has for the human genome project.

Indeed, the 1000 Functional Connectomes Project provides a grassroots example of the feasibility and value of integrating data on brain imaging across independent laboratories. The NIH Blueprint for Neuroscience Research has pooled funds from 16 NIH Institutes, Centers, and Offices to support shared needs for tools, technologies, and training.

ADAPTING FOR AUSTERITY, DEMONSTRATING VALUE

These are uncertain times. NIH is funded one year at a time and increasingly these budgets are not finalized until well into the fiscal year, complicating planning. We recognize the next year and potentially subsequent years also may be periods of diminishing support, but we remain hopeful the neuroscience community will thrive. To thrive in periods of relative austerity, we will all need to adapt. NIH will strive to be more efficient by assessing ongoing investments while continuing to support early stage investigators, innovation, and partnerships. Research resources (e.g., antibodies, transgenic mice, software) will need to be shared broadly. Sharing of genomic data is now a widely accepted practice, but this culture change still needs to be adopted in other communities. And all of us will need to be increasingly accountable for how we use public funds, demonstrating that NIH continues to be a good investment for taxpayers. Ultimately, we must ensure the extraordinary opportunities now available in neuroscience are realized to benefit public health. ■

Legislative Update: Budget Cuts Loom Large

When the U.S. Congress returned from its August recess, the Congressional "super committee" began crafting a package to reduce the federal budget deficit by at least \$1.2 trillion over the next 10 years. What impact the committee's work will have on federal investment in research is unclear, but the stage is being set for massive budget cuts. Formally known as the Joint Select Committee on Deficit Reduction, the bipartisan committee was created in the wake of deliberations over raising the federal debt limit. The 12 members are: Co-Chairs Rep. Jeb Hensarling (R-TX) and Sen. Patty Murray (D-WA) as well as Sens. Max Baucus (D-MT), John Kerry (D-MA), John Kyl (R-AZ), Rob Portman (R-OH), Pat Toomey (R-PA) and Reps. Dave Camp (R-MI), Fred Upton (R-MI), Jim Clyburn (D-SC), Xavier Becerra (D-CA), and Chris Van Hollen (D-MD).

If the committee fails to make timely recommendations or Congress does not enact them, "across-the-board" (ATB) spending cuts would begin in FY2013. Traditionally, ATB cuts enacted by Congress have excluded defense and other "security" funding. That is not the case under this plan. The only exemptions to the cuts would be Social Security and Medicaid; Medicare cuts would be limited.

SfN continues to advocate for sustained growth in research funding, even in this challenging fiscal environment. Now, more than ever, it is important for neuroscientists to make their voices heard in the halls of the U.S. Congress. Check out www.sfn.org/advocacy to learn what you can do. ■

FENS-SfN INTERNATIONAL ADVOCACY WORKSHOP AND GRANTS PROGRAM

The FENS-SfN joint advocacy grants program launched in June with a workshop in Brussels attended by more than 40 FENS member national societies. This is the beginning of a three-year joint FENS-SfN project to provide grants to European national neuroscience societies to strengthen their capacity for advocacy and public awareness efforts. A call for proposals was issued in July with an application deadline of September 30. Grant awards will be announced by the end of the year for projects beginning in 2012. For more information, visit the FENS Web site at www.fens.org.

Inside Science

Brain-Machine Interface

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Brain-machine interface harnesses the brain's ability to process, decode, and use information to develop therapeutic treatments and technologies for some of the brain's most challenging injuries, diseases, and disorders, such as paralysis, spinal cord injury, and ALS. It relies on advances in the fields of neuroscience, computer science, math, and engineering. With this interdisciplinary approach, neuroscience is developing a greater understanding of how the brain works and is translating those findings to restore function.

Most brain-machine interfaces collect neural signals, convert them into commands a machine could understand, and then immediately transmit those commands to external actuators. Miguel Nicolelis of Duke University moderated a press conference at Neuroscience 2010 discussing emerging applications of this technology in controlling drug cravings, aiding stroke rehabilitation, and restoring vision after retinal degeneration.

CONTROLLING CURSORS WITH THOUGHTS

Anna Rose Childress of the University of Pennsylvania School of Medicine, discussed a new form of biofeedback using real-time fMRI that allowed study participants to accurately and rapidly control a computer cursor with their thoughts.

While their brains were being scanned, study participants were asked to switch between imagining two tasks: a repetitive motor activity (hitting a tennis ball) and spatial navigation (moving from room to room in a familiar space). Childress and her colleagues developed a "whole-brain classifier" based on a Partial Least Squares algorithm that could recognize the brain activity patterns produced by these cognitive control tasks.

Study participants were instructed to switch between the two imagined thought states while their brains were scanned. They viewed feedback on their brain activity from the classifier in real time in the form of a computer cursor.

Childress and colleagues found their classifier predicted brain state with greater than 80 percent accuracy, and all 14 study participants were able to move the cursor with their thoughts.

This study has implications for people with "locked-in" syndrome, in which people are aware but unable to communicate. Childress hopes to use the technology



Researchers answered questions about brain-machine interfaces during a press conference at Neuroscience 2010.

to help people addicted to drugs control their cravings, allowing them to identify the conditions that cause cravings and switch their thoughts to something else to avoid such conditions in the future.

BRAIN STIMULATION IN REHABILITATION

When used in combination with traditional physical therapy, another brain technology improved motor recovery following stroke, according to research presented by Satoko Koganemaru of Kyoto University in Japan.

Stroke is the leading cause of disability in adults worldwide. Many patients have limited abilities for years after the acute stroke experience. Stroke often limits the use of limbs due to damage to brain motor circuitry and changes in muscle tension. Koganemaru and her colleagues found a hybrid rehabilitation therapy, mixing repetitive transcranial magnetic stimulation (TMS) with motor practice, helped patients to unfurl and relax affected hands.

Twice a week for six weeks, participants received repetitive TMS over the primary motor cortex governing the affected side of the body. During their sessions, study participants also exercised their wrist and finger extensor muscles.

Koganemaru reported study participants experienced increased range of motion, reduced muscle tension, and increased utility of their paretic hands. She and her colleagues believe these studies indicate functional motor recovery is possible for patients suffering from stroke-related paralysis and other movement disorders.

RETINAL PROSTHETIC RESTORES MORE NORMAL VISION

Sheila Nirenberg of Weill Cornell Medical College presented research on how the eye’s own computational “code” can improve retinal prosthetics. Retinal prosthetic devices now exist, but current models require surgery to implant electrodes into the eye and are only capable of restoring crude vision, such as seeing a spot of light or the edge of an object.

Normally, photoreceptors in the retina collect visual information, which is transmitted to retinal ganglion cells and then on to the brain. During retinal-degenerative diseases, photoreceptors and other circuitry dies, but ganglion cells maintain their connections to the brain. Nirenberg’s past work has focused on understanding the code of action potentials that neurons in the eye use to transmit visual information. In the current study, she converted images into that neural code and transmitted it to ganglion cells in mice. Encoding the information allowed the ganglion cells to send nearly normal signals to the brain, Nirenberg showed, presumably resulting in more natural vision.

Although traditional retinal prosthetics are electrode-based, Nirenberg’s system operates via optogenetics — she uses gene therapy to express channel rhodopsin in mouse ganglion cells, enabling them to respond to light pulses. She foresees the same technology might one day be available to help restore vision in people, using the same gene therapy approach and glasses containing a camera, a signal encoder, and an array of lights.

Together, these studies describe technological advances in the brain-machine interface that in the short term help neuroscientists to investigate how the brain processes information and in the long term may benefit those afflicted by injury or disease. Press conference moderator Nicolelis noted that many of the technologies examined in these studies are becoming more portable, making them more practical for use in a wide range of settings. In addition to addiction, stroke, and retinal degeneration, the speakers noted that brain-machine interface studies may be particularly suited to restoring mobility and communication for people with spinal cord injury, paralysis, and ALS. ■

bioengineering

Society for Neuroscience 2011

Join us for a Seminar on Knockout Rats

Our New Allies in the Fight Against Autism

Walter E. Washington Convention Center
Meeting Room 152A
November 15, 6:30 p.m.



SAGE LABS
Sigma Advanced Genetic Engineering

Speakers and Reception:

Edward Weinstein, PhD, Director, SAGE™ Labs – 6:30-6:40 p.m.

- Gene targeting strategies
- Creation of novel animal models
- Advantages of the rat in neuroscience research

Robert Ring, PhD, Vice President Translational Research, Autism Speaks – 6:40-7:10 p.m.

- State of autism research
- Animal models of autism

Richard Paylor, PhD, Professor, Department of Neuroscience, Baylor College of Medicine – 7:10-7:40 p.m.

- Gene targets in autism research
- Phenotypic characterization of knockout rat models of autism

Reception - Drinks and hors d'oeuvres will be served – 7:40-9:00 p.m.

To pre-register, visit sigma.com/sfn2011

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SfN's Global Collaboration on Responsible Scientific Communication

Since its inception, SfN has taken seriously its role in promoting the responsible conduct of research and scientific communication within the neuroscience community. Most recently, this has included adoption of a set of revised policies and guidelines related to responsible conduct in scientific communications, the use of animals in research, and dealing with allegations of scientific misconduct. Concerns around issues of scientific ethics — of fostering healthy scientific research culture and practice — have become increasingly prominent around the world and across scientific disciplines.

As part of its strategy to promote research ethics and responsible conduct within the global neuroscience community, this summer SfN collaborated with the International Brain Research Organization (IBRO), the Federation of European Neuroscience Societies (FENS), the Japan Neuroscience Society (JNS), and the Chinese Neuroscience Society (CNS) to organize three educational programs on responsible scientific communication.

ETHICS SYMPOSIUM AT IBRO WORLD CONGRESS

The first of these was a symposium on the “Ethics of Scientific Publishing — Why Does It Matter? Advice from Editors of Neuroscience Journals” at the 8th IBRO World Congress of Neuroscience in Florence, Italy, on July 17. The symposium, cosponsored by SfN and IBRO, featured presentations by the editors-in-chief of the FENS, IBRO, JNS, and SfN journals on the ethical considerations for authors when preparing articles for submission. The IBRO Congress, attended by 4,200 neuroscientists from around the world, provided an excellent venue for reaching a broad international audience.

SfN Councilor Nancy Ip, who was a member of SfN's Responsible Conduct Working Group, served as moderator and opened the session with an introduction on the importance of responsible conduct and common causes of misconduct — including career pressure, conflicts of interest, and lack of understanding of established guidelines. Stephen Lisberger, chief editor of IBRO's *Neuroscience*, presented on problems associated with authorship, including policies on dual submission and duplicate publication.

Jean-Marc Fritschy, co-editor-in-chief of FENS's *European Journal of Neuroscience*, discussed plagiarism and copyright issues, describing how advances in plagiarism detection technology have led to a surge in new cases. JNS's *Neuroscience Research* editor-in-chief, Atsushi Iriki, presented cases involving fabrication and falsification of images, figures,

and data. Finally, SfN's *The Journal of Neuroscience* editor-in-chief, John Maunsell, offered his experience working with authors and their institutions in handling misconduct cases, and highlighted how certain types of misconduct may result in career-damaging consequences.

The audience of about 200 attendees engaged in a lively Q&A session with the panelists, who provided additional examples of misconduct cases as well as helpful educational and informational resources on the topic.

WORKSHOP AT PEKING UNIVERSITY

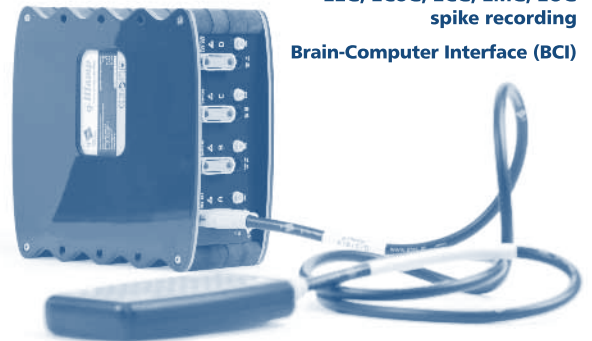
Ten days later, SfN and the CNS conducted a workshop in Beijing, entitled “Responsible Scientific Communication: Guidelines for Getting Published,” for a group of 52 neuroscientists (graduate students, postdoctoral fellows, and faculty) from 17 different universities and institutes throughout China, from as far as away as Guangzhou and Chengdu.

Continued on page 14...

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Brain-Computer Interface (BCI)



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NEUROSCIENCE 2011 - Washington, DC



MEET US AT BOOTH 1030

"I am delighted Dr. Shiller will join our field for such a timely and engaging dialogue, particularly as SfN returns to Washington, DC where much global economic policy is considered," said SfN President Susan Amara. "We all feel the impact of economic events — in our lives, in our careers, and in society — and this lecture provides an opportunity to consider and discuss how the same brain processes that many of us study can profoundly shape financial decisions and economic outcomes."

"There are forces affecting economics decision-making within the reach of both economists and neuroscientists."

— Susan Amara, SfN President

THE INVISIBLE HAND AND IMPERCEPTIBLE SPIRITS

The economic concept of "supply and demand" assumes humans always make rational economic decisions when in reality, Shiller argues, they don't. Shiller thinks that legendary economist John Maynard Keynes' theory of "animal spirits" — basic mental energy and life force — are equally significant economic bellwethers to concepts of economic self-interest and mutually beneficial actions advanced by Adam Smith.

"To understand how economies work and how we can manage them and prosper, we must pay attention to the thought patterns that animate people's ideas and feelings, their animal spirits," Shiller and his coauthor, Nobel Laureate George Akerlof, write in *Animal Spirits*. "We will never really understand important economic events unless we confront the fact that their causes are largely mental in nature."

NEUROSCIENCE AND ECONOMICS

The 2011 Dialogues presentation, the seventh of its kind, showcases another facet of how neuroscience and society interact — in this case how neuroscience and economics each give context to the other's questions and advances.

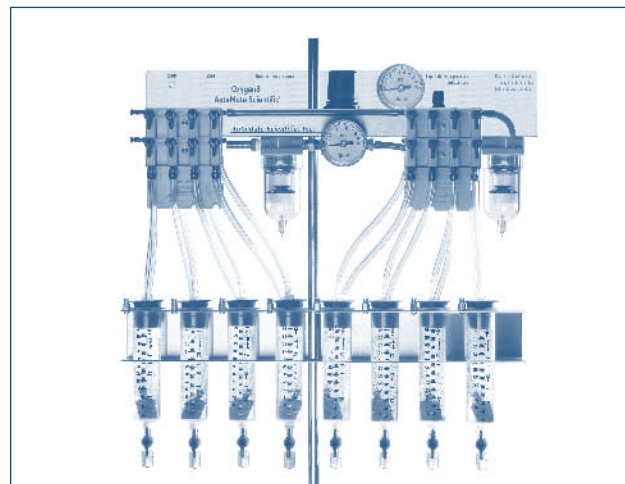
Neuroscience draws on and advances the understanding of decision-making, reward anticipation, the nesting instinct, risk-taking, the emotional component of making good decisions, and greed. The patterns of neurological activity

manifest themselves in actions like spending addictions, real estate purchasing choices, stock market investments, financial splurging and securing, and avarice.

In turn, economic behaviors and patterns described by Shiller and other economists may inform biomedical research investigating those same human actions at the neurological level. Shiller writes about confidence, fairness, corruption and bad faith, money illusion, and common stories about financial success or hardship, naming and giving evidence of the psychological motives of global economic trends.

"There are forces affecting economic decision-making within the reach of both economists and neuroscientists," Amara said. "The world's neuroscientists are exploring the human brain's potential; the world's leading economists, among whom Shiller ranks, can help us explore and explain the economic impact of human actions with neurological origins."

Join SfN to kick off Neuroscience 2011 with a discussion of human economic "Animal Spirits" — a lively conversation salient to society and scientists alike. ■



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Neuroscience 2011

Nov 12-16

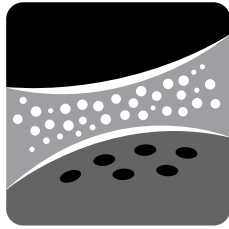
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Maximize Your Time at Neuroscience 2011

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NEUROSCIENCE 2011

EARN CME CREDIT AT LECTURES, SYMPOSIA, AND MINISYMPOSIA

Neuroscience 2011 offers physician attendees many opportunities to earn CME credits by attending lectures, symposia, and minisymposia. Learn more about CME at www.sfn.org/cme.

As one example of a CME credit opportunity, the Fred Kavli Public Symposium, “The Brain on Trial: Neuroscience and the Law,” will explain the challenges that advances in neuroscience pose for the judicial system. Read more about this symposium, taking place on Saturday, November 12, 1:30–4 p.m., and others at www.sfn.org/symposia and www.sfn.org/minisymposia.

Physician attendees also can earn CME credit for the four Presidential Special Lectures highlighting key research in neuroscience such as “Neurotrophins: From Axon Growth to Synaptic Plasticity” and “The Basal Ganglia: Binding Values to Action.” See the final *Program* or the list of scientific programs and lecture dates and times at www.sfn.org/am2011.

NANOSYMPOSIA

The nanosymposium format is an innovative way for abstract submitters to present slide-based sessions. Submitters can link presentations with their colleagues’, the way poster presenters do, to form their own session. A session consists of a group of about 10 to 12 topically matched abstracts, with each abstract presented for 15 minutes (10-minute slide presentation, plus five minutes for questions from the audience). Nanosymposia will be held November 12, 1–5 p.m. and November 13–16, 8 a.m.–noon and 1–5 p.m.

BROWSING THE NEUROSCIENCE 2011 PROGRAM

There are a variety of ways to browse the annual meeting program. The Neuroscience Meeting Planner (NMP) (www.sfn.org/nmp) is the best online tool for attendees to navigate annual meeting sessions and events, search full abstracts, and

build a personal meeting itinerary. Poster presentation and lecture schedules are also accessible through the downloadable PDF and e-reader formats of the *Program* and daily books available at www.sfn.org/am2011 on the *Program* page. Full-text PDF abstracts are also available for download at www.sfn.org/am2011.

NEUROSCIENCE 2011 EXHIBIT HALL

The Neuroscience 2011 Exhibit Hall is a chance to learn what’s new in neuroscience products and services from more than 550 companies from around the globe. Take advantage of the opportunity to see and feel the latest scientific products and talk to companies about their recent advances in neuroscience. Use your time at the annual meeting to visit companies selling similar products, compare pricing and services, and make important purchasing decisions. ■



The Walter E. Washington Convention Center is conveniently located near several public transportation options, such as the Metro subway and direct bus routes.

Getting Around Washington, DC

While SfN operates complimentary shuttle service regularly between the Walter E. Washington Convention Center and most official SfN hotels during the annual meeting, Washington, DC, offers a variety of alternative transportation options for those wanting to tour the U.S. capital.

METRO

The Washington Convention Center conveniently has its own Metropolitan Area Transit Authority (Metro) subway station with direct access to two of the five Metro lines, and easy access to the rest for a base fee of \$1.95. An entrance to the Washington Convention Center is directly in front of the Mt. Vernon Square/7th Street/Convention Center Metro stop on the Green and Yellow Lines.

THE CIRCULATOR

The Circulator is a public bus system designed to take riders to the city's cultural, shopping, dining, and business destinations for only \$1 per ride — no matter the distance. There are two routes near the Washington Convention Center. One runs between historic Georgetown and Union Station and the other runs from the Convention Center through the National Mall toward the Southwest waterfront, both from 7 a.m. to 9 p.m. Visit www.dccirculator.com to see other Circulator routes and schedule information.

BIKE SHARING

The sights of Washington, DC, are easily accessible with the city's nationally recognized bike share system, Capital Bikeshare. Use a bike to ride in the new lanes along Pennsylvania Avenue, tour the National Mall, or get to your next destination.

With 1,100 bikes at more than 110 stands in Washington, DC, and Arlington, Virginia, it is easy to rent a bike at a kiosk near you and return it near your final destination. More pricing and system information is available at www.capitalbikeshare.com. If you plan to use Capital Bikeshare, be advised to bring a helmet and that SfN is not liable for attendees using the system.

CAR SHARING

Sights of interest beyond the Metro's limits — such as visiting George Washington's home or historic Annapolis, Maryland — might require a car. There are several ZipCar (www.zipcar.com) stations around the city, including a few near the Washington Convention Center. Rent compact or midsize cars by the hour or the day without worrying about the cost of insurance, gas, or mileage. ■

Professional Development Workshop and Events for Every Career Stage

EARLY-CAREER

The Art of Networking offers tips on how to effectively use networking to advance scientific careers. *Monday, Nov. 14, 9 a.m.–noon.*

A doctorate in neuroscience can open many career doors outside of academia. **Careers Beyond the Bench** includes a successful entrepreneur, education specialist, academy director, and editor who will provide insights into these alternatives to the professorate. *Saturday, Nov. 12, 1–2:50 p.m.*

The **NeuroJobs Job Fair** provides neuroscience job seekers a chance to meet employers from industry, nonprofit, and academia. *Saturday, Nov. 12, 8:30–11 a.m. and 1–4 p.m.*

To cap off **Career Day**, experienced neuroscientists will offer mentoring on 24 unique topics ranging from graduate school selection to career transitions. Bring your questions to **Career Development Topics: A Mentoring and Networking Event**. *Saturday, Nov. 12, 7:30–9:30 p.m.*

MID-TO-LATE CAREER

Research Careers in Industry and the Private Sector offers industry researchers discussion opportunities and tips for pursuing research outside academic settings. *Saturday, Nov. 12, 8–10:45 a.m.*

Men and women in neuroscience face the challenge of balancing family life with the pursuit of a scientific career. **Time Management: Balancing Family and Neuroscience** addresses this issue with a panel of neuroscientists maintaining this balance. *Sunday, Nov. 13, 2–5 p.m.*

Negotiating a Senior Position include how to manage graduate students, buyout lab equipment, negotiate promotions, and balance administrative duties. *Monday, Nov. 14, 2–5 p.m.*

A panel of senior members from the global neuroscience community will lead **Beyond the Bench: Supporting the Neuroscience Community Through Leadership, Outreach and Accumulated Wisdom**. Established scientists can learn how to engage in advocacy and public outreach, and increase professional contributions outside the laboratory. *Monday, Nov. 14, 2–5 p.m.*

Learn how to make a case for NIH and NSF funding to legislative representatives. Hear from fellow neuroscientists, Capitol Hill staffers, and administration veterans. Attend **Advocating in Congress for Federal Research Funding**. *Sunday, Nov. 13, 10 a.m.–noon.*

The Journal of Neuroscience

12

A decade after the Society for Neuroscience (SfN) formed, the SfN Council decided the Society would publish its own scientific journal to fill the need for a multidisciplinary brain research publication and encourage neuroscientists to read beyond their own areas of expertise.

Solomon Snyder was SfN's president in 1979 when the Council deliberated the formation of a society journal. Snyder argued then that *The Journal* would be an asset to neuroscience, the Society, and its members. He had no doubt the Society would be equal to the challenge.

"Being a nonprofit society, the paramount role of the society is to enhance brain research, to make better neuroscience for the world," Snyder said in a recent interview. "One way of improving the quality of great neuroscience is publishing great papers and encouraging people to do more research."

Today, *The Journal of Neuroscience*, which came into existence in 1981, publishes 50 issues per year and has an average weekly online readership of nearly 50,000 unique visitors. Fifteen hundred issues and 30 years later, *The Journal* has become the most frequently cited journal in the field.

THE BEGINNINGS OF A SUCCESSFUL JOURNAL

Creating *The Journal* was not a simple decision. The Council's biggest question — why start another journal? At the time, there were many specialty journals across the field of neuroscience focusing on niche disciplines.

According to the Society's 1979 Council meeting minutes, W. Maxwell Cowan, who would become *The Journal's* first editor-in-chief, "stressed that the Society for Neuroscience journal would intend to buck this trend because of the great need to encourage scientists to read beyond their own areas of expertise."

In the early meetings, Snyder argued there was a great need for a society neuroscience journal. He said, "Although there are a number of interdisciplinary journals, they are put out by commercial publishers, not by a society that can apply the very highest standards of scientific excellence."

The Council also considered how long it would take to build a reputable journal with a strong subscriber base. Tying SfN's membership to *The Journal* subscription was a way to create a readership 7,500 strong with the first issue. With positive feedback from the SfN membership, *The Journal* began publishing in January 1981.

PUBLICATION MILESTONES

The Journal owes much of its success to the initiative of its seven editors and their ability to adapt *The Journal* to the changing needs of SfN members and the field of neuroscience.

Before most journals in neuroscience established an online presence, *The Journal* established its e-publication in 1996. Now *The Journal* only prints about 500 copies per issue, and few members request the print edition. Nearly 50,000 unique readers from around the globe visit *The Journal* online on a weekly basis.

E-submissions also strengthened *The Journal's* already respected review process. With 2,500 submissions per year, *The Journal* decided in 2003 it was time to invest in software to make the submission and review processes electronic.

As *The Journal* began to publish more papers, the editorial board reconsidered how frequently it should publish each issue, which typically had 40-50 articles. Instead of cutting the number of papers accepted, *The Journal* started in 2003 to publish fewer papers on a weekly basis, making each author's paper more visible.

THE JOURNAL'S PLACE IN NEUROSCIENCE

The Journal of Neuroscience's high-quality papers, fair review process, and dedication to the multidisciplinary field of neuroscience have helped maintain its excellent reputation.

"The editors are all working scientists," said John Maunsell, *The Journal's* current editor-in-chief. "That means they're current with what is going on. They are in a position where they can make an informed decision about the reviews they get."

The Journal accepts 25 to 30 percent of its 6,500 annual submissions; those accepted cover the spectrum of neuroscience and those not accepted are given thorough and thoughtful feedback. "What I hear from authors is that they are always grateful for *The Journal of Neuroscience* and can count on getting a fair review," Maunsell said.

The Journal publishes papers that deliver high-quality research from many disciplines that represent novel advances in science rather than trending research.

"We strive to serve a broad community of authors while maintaining high standards for quality," Maunsell said. "Because the neuroscience community has come to appreciate and respect *The Journal*, they send us their best work." ■

Neuroscience Scholars Program

Throughout its 30-year history, the SfN Neuroscience Scholars Program (NSP) has provided more than 550 fellowships to underrepresented minorities (URM) in neuroscience, including access to valuable networking, training, and professional development resources to advance their careers. What began as a one-year travel fellowship for five trainees to attend the SfN annual meeting has evolved into a three-year fellowship — funded by the National Institute of Neurological Disorders and Stroke (NINDS) — for 16-18 URM trainees each year to support their annual meeting attendance, SfN membership, extracurricular scientific pursuits, and mentoring and networking opportunities.

According to a retrospective survey of former NSP Scholars, participants in the program have reached high levels of achievement — seventy-six percent currently work in academia and 11 percent are full professors. According to SfN's 2009 Survey of Neuroscience Graduate, Postdoctoral, and Undergraduate Programs, only 5 percent of tenure-track neuroscience faculty members in the United States are URMs.

ADDRESSING THE “LEAKY PIPELINE”

National surveys and studies in the U.S. have documented well the phenomenon of a decrease or flattening in the number of URM scientists, including in the biomedical sciences, at each higher educational and professional level. NSP helps its scholars make it through the proverbial “leaky pipeline” by offering them mentoring support, exchange visits to other labs, assistance for job search-related activities, and many networking opportunities.

Recollecting her experience in the NSP in the mid-90s, Genevieve Neal-Perry, assistant professor at Albert Einstein College of Medicine, said that NSP gave her unique access to professional networks and resources. “(The NSP) afforded me the opportunity to meet people that I wouldn't have usually met. It helped me in funding research efforts and helped me become a more competitive grant applicant.”

Joseph Whittaker, dean and professor of biology at Morgan State University, also had valuable opportunities to build his professional network when he was an NSP fellow in 1986. “I think the program gave you that sense that you had this group of individuals around you that were always willing to support and mentor and guide you,” Whittaker said.

Many NSP Scholars have gone on to successful careers, winning numerous professional awards and making important contributions in neuroscience to the body of published work in the field.

NINDS CONTINUED SUPPORT

NIH's National Institute of Neurological Disorders and Stroke has been a strong supporter of the NSP, funding it since 1988. Michelle Jones-London, program director at NINDS and a former NSP fellow, said NSP is one of the four programs NINDS funds to promote diversity in neuroscience. “Our mission is to cure the burden of neurological disease for all segments of society,” Jones-London said. “The (NINDS Advisory Panel for Workforce Diversity) felt strongly that NSP was an important program in retaining diverse trainees.”

NINDS values the mentoring and peer networks that NSP fosters. “At home institutions (diverse trainees) can feel a sense of isolation,” Jones-London said. “When they come to SfN, they meet other people with backgrounds like theirs. It is a powerful experience. When it comes time to apply for faculty positions, their network is now bigger.”

In 2010, NINDS expanded NSP funding to support a pilot program aimed at coaching talented minority postdoctoral fellows and junior faculty through the submission process for K or R awards to the NIH.

“NSP has been into a more comprehensive program that centers around transitioning people into independent careers,” said Jones-London. “Part of that is being able to secure individual awards or funding.”

Erich Jarvis, the NSP PI and former NSP scholar, said that NSP funding gives scholars freedom to choose what research they present at conferences and how they want to establish themselves professionally. “NSP enhances the career trajectory of NSP fellows,” Jarvis said. “If you look at the dollar amount of the funding, it doesn't compare to the increased enhancements that these fellows experience in the program's mentoring and networking opportunities.”

Jarvis continued, “Bringing together talented, energetic, Type-A people creates a social network where the sum is greater than the parts.”

The NSP represents a cornerstone of SfN's enduring commitment to promoting diversity within the neuroscience profession. Join the Society in celebrating the program's 30th anniversary at the “Diversity in Neuroscience Symposium” on Tuesday, November 15, 2–5 p.m. at the Walter E. Washington Convention Center in Room 146C. ■



Michael Zigmond poses a question to the panel of the SfN-IBRO-FENS-JNS Symposium on research ethics at the IBRO World Congress.

Held July 27–28, the workshop was organized by SfN and CNS, and hosted by Peking University, with SfN-supported instructors from the University of Pittsburgh: Beth Fischer and Michael Zigmond. Fischer and Zigmond have conducted similar workshops around the world, and Zigmond has served on SfN's Responsible Conduct Working Group. The workshop provided step-by-step, practical instructions on preparing an article for publication as well as presenting research at conferences and meetings.

Students learned about the article review process, how to plan and format a research article, and select a journal for submission. The training was infused with examples of errors to avoid — highlighting issues of authorship, plagiarism, and fabrication. Participants also learned how to prepare for an oral poster session and best practices for developing PowerPoint presentations to effectively present their research.

Workshop attendees found particularly useful the small, facilitated breakout groups where participants engaged in animated discussions around real-world scenarios of ethical dilemmas related to scientific research. One scenario centered on the issue of sharing reagents and another on the question of sharing unpublished research results.

CHINESE NEUROSCIENCE SOCIETY SYMPOSIUM

The Beijing workshop was organized to precede the CNS annual meeting held in Zhengzhou, China, where SfN and CNS cosponsored a symposium entitled “Being a Successful Scientist: The Importance of Responsible Conduct.” The session featured four speakers offering varying perspectives on the growing challenge of scientific

misconduct worldwide and what is being done by scientific societies, journal editors, and academic institutions to address the problem.

Ip provided an overview of the issues and described recent efforts of SfN's Responsible Conduct Working Group to update and revise SfN's responsible conduct guidelines. Emilie Marcus offered perspectives as editor-in-chief of *Cell*, sharing her experience handling cases of plagiarism, fabrication, and falsification, and working with authors and institutions to address allegations of misconduct.

Guoqiang Bi of the University of Science and Technology of China in Anhui presented examples of the growing problem of scientific misconduct in China and what Chinese organizations such as the National Natural Research Foundation of China are doing to address it. SfN President Susan Amara rounded out the presentations by discussing the important role faculty and lab directors can play as mentors to help the next generation of scientists understand the policies and guidelines that should inform the conduct and communication of their research.

INTERNATIONAL SOURCES OF FUNDING FOR NEUROSCIENCE

In the 2010 SfN International Affairs Committee survey of members living outside the United States, members expressed a strong interest in getting more information about grants and funding opportunities available internationally. SfN has responded by developing a new online directory of “International Sources of Funding for Neuroscience” on its Web site. The directory aims to provide information on potential sources of research funding, grants, fellowships, and travel awards by country and region — including sources of government funding as well as grants from private research foundations focused on neuroscience research. SfN invites members to update and add to the directory by e-mailing Global Programs staff at globalaffairs@sfn.org. Visit the directory and learn more about global funding at www.sfn.org/global.

Published quarterly by the Society for Neuroscience

Circulation: 41,000

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Neuroscience Quarterly is printed on New Leaf Reincarnation Matte made from 100% recycled fiber and 40% post-consumer waste, printed with vegetable inks, and processed chlorine free. By using this environmental paper, SfN saved the following resources:

54	trees
24,518	gallons of water
1,488	pounds of solid waste
5,090	pounds of hazardous effluent



A breakout discussion group during the SfN-CNS Workshop on "Responsible Scientific Communication" at Peking University in Beijing.

Several hundred conference attendees in the audience engaged in an active discussion with panelists following the presentations. Attendees pointed out the need to think about ways of educating faculty in addition to students. They also described some of the pressures they face — including family and financial concerns — that contribute to the problem.

PROMOTING RESPONSIBLE CONDUCT GLOBALLY

Looking to the future, SfN is working with Zigmond and Fischer to develop a training manual that will be available online for use by instructors at academic institutions around the world. The manual will provide a resource that draws on SfN's *Guidelines on Responsible Conduct for Scientific Communication*, guidelines from NIH and NSF in the United States, and those produced by other countries. The resource will contain training modules that include ethics case studies and practical exercises to stimulate discussion and greater understanding.

SfN also plans to use existing and new collaborations with funding agencies and other national neuroscience societies to explore further opportunities to promote education and awareness about responsible scientific communication in the United States and globally. Lessons learned from the pilot workshop in Beijing will be used to inform future training efforts.

Copies of presentations from both the IBRO World Congress and CNS conference symposiums can be found on SfN's Web site at www.sfn.org/global. ■



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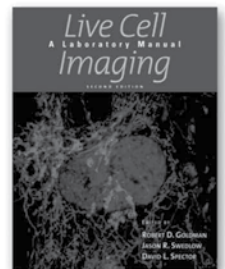
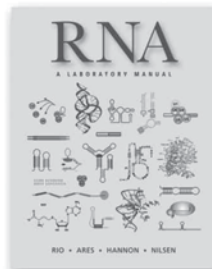
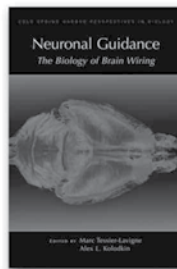
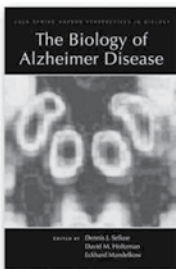
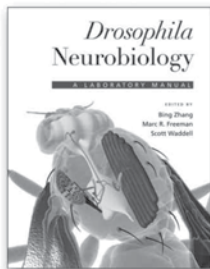
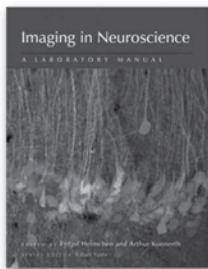
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