The Official Member Newsletter of the Society for Neuroscience July–August 2002

SfN Neuroscience Newsletter

Ethics and Neuroscience

by Fred H Gage, President Society for Neuroscience

With the tremendous advances in neuroscience, many of us in the field are sensing a critical turning point. Recent advances have brought us to the threshold of understanding some fundamental principles of brain function and developing treatments for some of the most devastating neurological diseases and conditions. At the same time, much of this knowledge and implications for treatments and diagnostics have social implications. Pursuing these lines of scientific inquiry in a responsible way requires that we reexamine what we do as scientists.

What are the implications of what we learn about the brain for defining behavior, medical ethics and social policy? This emerging set of issues comprises a field that is coming to be known as "neuroethics," in which scientists and ethicists are beginning to reflect on the work of neuroscience in areas such as moral vision, decision-making, conduct and policies. We are likely to hear, think and talk a lot more about neuroethics in the coming years.

Neuroethics was the subject of a conference I attended this spring in San Francisco sponsored by the Dana Foundation in conjunction with Stanford University and the University of California at San Francisco. In this column, I will describe just some of the issues discussed by attendees who included basic and clinical neuroscientists, economists, philosophers, journalists, sociologists, lawyers and others.

Need for Ethical Framework

It is likely that the potential application of new knowledge to human behavior will generate a great deal of ethical and public policy concern, noted University of Pennsylvania bioethicist Arthur Caplan. "In fields as diverse as forensic psychiatry, athletics, education, college admissions, corporate hiring, policing, admission to seminaries and the judiciary, knowledge about why persons and categories of persons behave as they do will lead those in these fields to eagerly seek to utilize new knowledge about the human brain. As the brain sciences advance, it is important to have available a moral framework that might help to guide the utilization of the new knowledge . . ."

Morality

The neural basis of morality is rooted in evolutionary biology, in the conditions that selected for individuals morally equipped to modify social behavior through reward and punishment and to develop skills in cooperative behavior, noted Patricia Smith Churchland of the University of California at San Diego. Discoveries in neuroscience reveal that learning right from wrong is dependent on late myelinating neural tissue in the ventromedial frontal cortex and several other brain regions and systems. Given this knowledge, what does it mean for behaviors such as self control, obeying the law and the extent played by cultural differences in behavior?

continued on page 2

Landis Becomes SFN President-Elect

Story Landis has been voted president-elect of the Society for Neuroscience. She is the scientific director of the division of intramural research at the National Institute of Neurological Diseases and Stroke in Bethesda, MD.

"I am very honored to have been elected and excited and enthusiastic about the opportunities and challenges facing the Society in the coming years," Landis said. "The strategic planning process will help us tremendously, particularly in finding improved ways to communicate with the membership."

In other results, Richard Huganir, an investigator of the Howard Hughes Medical Institute at Johns Hopkins University School of Medicine, was elected treasurer-elect. David Van Essen of the Washington University School of Medicine was elected secretary. Newly elected councilors are Joanne Berger-Sweeney of Wellesley College; Hollis Cline of the Cold Spring Harbor Laboratory; Eric Nestler of the University of Texas Southwest Medical School; and William Newsome of Stanford University.

These officers and councilors will take their positions at the Neuroscience 2002 annual meeting in Orlando.

Election results were tallied by Specialty Association Services of Sandy Spring, MD. ■

Congress Takes First Step in Completing NIH Doubling Effort; Total at $27.2 Billion

Senators Tom Harkin (D-IA) and Arlen Specter (R-PA), chairman and ranking minority members of the subcommittee that provides funding for NIH, announced on July 17 that the final installment of the NIH doubling effort would be completed this year. Their subcommittee completed action the previous day on a bill providing a $3.7 billion increase to NIH in FY 2003, bringing total funding to $27.2 billion.

The NIH doubling effort has led to the funding of 10,000 additional research grants over the last five years as well as providing training support to more than 1,500 more scientists each year since 1998. NIH has also doubled clinical trial funding from $1.4 billion in 1998 to $2.8 billion.

The full Senate has yet to consider this legislation and the House of Representatives has taken no action to date. A final bill is expected to be completed this fall. ■

Message from the President

continued from cover

Fred H. Gage, SFN President

Social Behavior
Neurobiological factors may play a role in disturbances in social behavior. Patients with dysfunction in selected brain regions, caused by disease occurring during development or adulthood, exhibit behavioral changes that may be indistinguishable from those of developmental sociopathy, said Antonio Damasio of the University of Iowa. Since modern neuroscience can investigate the mechanisms behind disturbed behaviors, society must ponder the manner in which it manages individuals who are found to violate its rules by taking into account those with medical conditions, he said. This situation raises questions regarding the punishment and treatment of such individuals.

Social Policy
Because neuroscience has the potential to transform our understanding of human nature, we may be able to make predictions about an individual's future including risk for ill health and cognitive impairment, potential success in school or employment, and violent behavior or addiction to drugs. Of particular concern, said Barbara Koenig of Stanford, is the potential role for neuroscience in delineating the boundary between what society views as normal and what is determined to be pathological. She noted that many boys are being prescribed medicines such as Ritalin for conditions that many worry may not be clear-cut brain diseases. And she questions who should have access to such agents. "If learning can be sped up and attention deepened through pharmaceuticals, should such drugs be available to all, or should resources be devoted to transforming the environment of the classroom?"

Genetics
Sequencing the human genome went hand in hand with an investment in studying the ethical, legal and social implications of human genetics, said Henry Greely, a Stanford law professor. Neuroethics may play an important role in issues arising from genetics such as the social consequences of using DNA to predict the future; the non-reproductive use of cloning; and genetic determinism.

Brain Injury
Since traumatic brain injury may cause a person to experience significant cognitive, personality, emotional and behavioral changes, sufferers may become legally incompetent, noted William Winslade of the University of Texas Medical Branch at Galveston. Traumatic brain injury may excuse or mitigate a person's responsibility for acts that otherwise would be classified as crimes. But how does the medical profession determine a person's pre-injury baseline behavior compared to post-injury behavior when data are inconclusive? "This poses serious problems for clinical evaluators as well as for the legal system," Winslade said.

Alzheimer's Disease
With the likelihood of developing effective treatments for Alzheimer's disease (AD), it will be important to identify individuals who are at risk in order to prevent neuronal loss at the earliest stage. Yet, there is little precedence for such early intervention, especially in a disorder associated with progressive cognitive decline that affects large numbers of people, said Marilyn Albert of Harvard Medical School. Moreover, AD is a genetically complex disorder with multiple genes and degrees of risk associated with each. Thus candidates for treatment must understand their risk for severity of AD and evaluate the potential risks and benefits of treatments that are unlikely to be benign, she added.

Informed Consent in Research
Special care must be taken in the informed consent process and throughout the research protocol when individuals have cognitive or emotional impairments that might affect their decision-making capacity, said Steven Hyman, former director of the National Institute of Mental Health and now provost at Harvard University. Consent is an ongoing process that should involve education of the potential research participant and, when appropriate, family members. Researchers must exercise greater attention to scrutiny and safeguards and enhance participants' grasp of a study, including risks and benefits.

. . . scientists and ethicists are beginning to reflect on the work of neuroscience in areas such as moral vision, decision making, conduct and policies. We are likely to hear, think and talk a lot more about neuroethics in the coming years.

Public Discourse
Several speakers emphasized the important role of fostering understanding in the media to ensure public confidence in science. Colin Blakemore of Oxford described a UK government report recognizing the importance of involving the public in ethical issues concerning science, especially in the rapidly moving fields of the biosciences, such as genetics and neuroscience. The report emphasized the crucial importance of openness and involvement, rather than didactic pontification to the masses. Ron Kotulak, a Chicago Tribune science writer, described research indicating that most of the brain gets built after birth and uses experiences from the outside world to forms its circuits. With this as background, he asked whether society has a moral obligation to ensure that millions of children no longer grow up in violent and impoverished environments that can stunt their brains.

At this stage, the field of neuroethics offers more questions than answers. It poses challenges to scientists and to the public to work through the social implications of our discoveries. The issues are too broad-based to expect that scientists alone will supply the answers. But as neuroscientists, we are well-positioned to help shape and contribute to the debate and discussion.

One of the hallmarks of neuroscience as a field has always been the drive toward integrating information from disparate fields and specializations to increase knowledge. Sorting through the complex issues captured under the umbrella of neuroethics will provide an important opportunity for contributing to informed and rich discussions among scientists and the public. ■

Canadian Association of Neuroscience 2002: Back to Our Roots

by Ken Rose, President, Canadian Association of Neuroscience

The Canadian Association of Neuroscience (CAN) is approaching a significant milestone—its 25th anniversary. As this event approaches, it is timely to revisit the objectives of CAN, articulated more than 20 years ago are to:

• Promote communication among neuroscientists through out Canada.
• Represent the interests of Canadian neuroscientists at national and international levels.
• Promote research in all disciplines contributing to the understanding of the nervous system.
• Contribute to the advancement of education in neurosciences.
• Provide for and assist in the dissemination to the general public the results of current neuroscience research and its significance in relation to health and disease.

These are laudable goals. However, in a complex research and academic environment where we are expected to wear several 'hats,' each equivalent to a full time job, our resources are stretched to the limit. Are these goals realistic? The answers to this question can be found by asking, what have we accomplished recently? For a mere C$20 per member (C$5 for students), we have:

• Supported a superb mini-symposium in honour of Dr. K. Krnjevic at the 2001 meeting of the Canadian Physiological Society.

• Created a forum for the dissemination of new funding opportunities launched by the Institute for Neuroscience, Mental Health and Addiction (INMHA), one of 13 virtual institutes belonging to the Canadian Institutes for Health Research (CIHR). We thank Dr. Rémi Quirion, Scientific Director of INMHA, for his enthusiastic participation at the Annual Business/Social Meeting in San Diego during the 2001 SFN annual meeting. Rémi has also generously offered to describe further developments at the 2002 SFN meeting in Orlando.

• Organized an e-mail campaign to lobby the Canadian government for increased funding for neuroscience research. Although the impact of this endeavor is difficult to gauge, it is impossible to ignore the fact that the total budget for the now defunct Medical Research Council of Canada in 1997–98 was C$238 million. The current CIHR is C$560 million! Is this enough? No! The dollar value per CIHR grant remains dismally low compared to funding agencies in the United States and Europe. There are still too many new and established investigators who receive the dreaded "try again" letter.

• Launched two new travel awards that will enable up to 20 graduate students and postdoctoral fellows to defray some of the expenses associated with attending the 2002 SFN annual meeting. CAN acknowledges the very generous support of Eli Lilly Canada. Their support was instrumental in our ability to single out graduate students for travel support.

In spite of the day-to-day demands of teaching, research and administration, CAN is fulfilling at least part of its mandate. Nevertheless, much more needs to be done. We must revitalize our role as a vehicle for disseminating the importance of neuroscience to the general public. Several Canadian chapters of the Society for Neuroscience play a key role in arranging events related to Brain Awareness Week organized by the Society. It would seem appropriate for CAN to play a more active role in this important education enterprise. CAN must also improve its electronic communication services. These services could play multiple roles: a repository for information about Canadian graduate programs in neuroscience; a means of advertising faculty and post-doctoral positions; a 'hot-line' for rapid responses to government funding decisions.

Addressing these specific issues is consistent with our original objectives. Given the dramatic changes in academia and research over the past 20 years, it is a testament to the far-sighted wisdom of our predecessors that the goals of our society, despite their age, remain valuable guideposts as we strive to maintain and promote a healthy and vibrant neuroscience community in Canada. ■

European Neuroscience Schools

The Federation of European Neuroscience Societies (FENS) will continue its highly successful winter school program with the next session taking place Dec. 8–14 at the Castle Hotel Schloss Lebenberg in Kitzbuehel, Austria. The program will cover the dynamic aspects of cortical processing at the level of cellular interactions, micro- and macro-circuits and models, with an emphasis on cellular neurophysiology, imaging in animal and man, neuroanatomy, MEG/EEG, behavioral neurophysiology and computational neuroscience. The German Hertie Foundation is sponsoring the school in full. The FENS Schools hope that this will be the beginning of a fruitful collaboration with the foundation and its director Michael Madeja of the Neuroscience/Multiple Sclerosis program. FENS Schools have international faculties composed of about 25 renowned scientists. The schools accept a total of 40 advanced PhD students and young postdocs from all over the world.

Registration deadline: Sunday, Sept. 15, 2002. FENS Web site: www.fens.org.

The next FENS summer school, titled the "Peripheral Nervous System: From Biology to Disease," is scheduled to take place in July 2003 at the Hotel Ofir in the beautiful Costa Verde town of Porto, Portugal. ■

New Travel Award to Annual Meeting

The Burroughs Wellcome Fund (www.bwfund.org) will sponsor eight postdoctoral travel awards to the SFN Annual Meeting in Orlando, Fla. These awards, based on scientific merit, will provide $1,250 in travel expenses to honor outstanding postdoctoral trainees nominated by their local SFN chapters. The Chapters Committee will make the final selection this summer. Awardees will be announced in September and will be recognized at a special reception on Monday, November 4 in Orlando. Watch for more details in upcoming editions of the *Neuroscience Newsletter*. ■

Neuroscience 2002 Lectures

www.sfn.org/lectures

The roster of lectures for the Neuroscience 2002 annual meeting covers a wide array of topics, the titles of which are listed below. In an attempt to increase attendance through Thursday, the Program Committee has scheduled more activities for the latter part of the week. Please note that excellent presentations will continue throughout the week and will culminate with a special lecture by Francis Collins titled "Genomics, Neuroscience, Medicine and Society." See Web site for details on these events.

Presidential Special Lectures

Cell Transplantation: Helping the Brain To Repair Itself
A. Björklund, Wallenberg Neuroscience Ctr., Univ. of Lund

Molecular Mechanisms of Development and Disease in the Retina
C.L. Cepko, Howard Hughes Med. Inst., Harvard Med. Sch.

Roles of Hippocampal NMDA Receptors in Associative Memory
S. Tonegawa, Massachusetts Inst. of Tech.

Presidential Symposium

Control of Cell Fate Decisions in Vertebrate Neural Stem Cells
D.J. Anderson, Howard Hughes Med. Inst., California Inst. of Tech.

The Assembly of Neuronal Circuits in the Developing Spinal Cord
T.M. Jessell, Howard Hughes Med. Inst., Columbia Univ.

What Are the Defining Properties of a Neuron and How Are They Regulated?
C.F. Stevens, Salk Inst., Howard Hughes Med. Inst.

Special Lectures

What the Eye Tells the Brain's Clock
D. Berson, Brown Univ.

Birds and Crocodiles: Insights into Auditory Coding
C.E. Carr, Univ. of Maryland

Genomics, Neuroscience, Medicine and Society
F.S. Collins, National Human Genome Res. Inst.

Molecular Biology of Pheromone Detection in Mammals: From Genes to Behavior
C. Dulac, Harvard Univ.

Neural and Physiological Mechanisms Underlying Drug Addiction: The Impact of Learning and Prospects for Treatment
B. Everitt, Univ. of Cambridge

Breathe Easy: Respiratory Rhythm is an Understandable Behavior
J.L. Feldman, Univ. of California, Los Angeles

Drugs, Flies, and Videotape: Molecular Genetics of Drug-Induced Behaviors in Drosophila
U. Heberlein, Univ. of California, San Francisco

fMRI Investigations of Human Extrastriate Cortex: People, Places, and Things
N. Kanwisher, Massachusetts Inst. of Tech.

Neuroendocrine Regulation of Aging in Caenorhabditis elegans
C.J. Kenyon, Univ. of California, San Francisco

"With the availability of the complete sequence of the human genome and a wealth of other genomic tools and databases, the stage is set for a transformation of our understanding of biology and medicine." — Francis Collins.

Collins' special lecture will be delivered from 10 am to 11 am on Thursday, November 7, 2002.

Nerve, Muscle, and Synapse: Insights from Drosophila
H. Keshishian, Yale Univ

From Silence to Heavy Traffic: Synaptic Plasticity Mechanisms
R. Manilow, Cold Spring Harbor Lab.

Reciprocal Coupling of Metabolism and Circadian Rhythm
S.L. McKnight, Univ. of Texas, Southwestern Med. Ctr.

Thalamic Relay Functions and Their Role in Corticocortical Communication
S.M. Sherman, State Univ. of New York, Stony Brook

Estradiol Is a Critical Neuroprotective Factor: Insights into Multiple Mechanisms of Action
P.M. Wise, Univ. of California, Davis

Pfizer Lecture

Building Glycinergic Synapses: From Receptors to Human Disease
H. Betz, Max-Planck Inst. fuer Hirnforschung

The Grass Foundation Lecture

Genetic Control of Apoptosis in the Nematode Caenorhabditis elegans
H.R. Horvitz, Massachusetts Inst. of Tech.

Public Lecture

Dynamic Interplay Between Nature and Nurture in Brain Wiring
C. Shatz, Harvard Med. Sch.

History of Neuroscience Lecture

The Origins of Modern Neuroscience: A Personal Perspective
G.M. Shepherd, Yale Univ. Sch. of Med.

CD-ROM Mailing

The Itinerary Planner/Abstracts CD-ROM will be mailed in the Sept/Oct issue of this newsletter, as well as with the 2002 *Program.* Because this will mean some members receive more than one copy, we encourage the sharing of this exciting science. The CD-ROM will not be available for sale this year. ■

New Program Lightens the Load

Mindful of the miles walked at each annual meeting in order to make it to one exciting event after another, we have reworked the 2002 *Program* into a friendlier publication to carry with you throughout the week. The sessions will be divided by day into mini-booklets that fit nicely in the pocket folder provided. The package will also contain the Itinerary Planner/Abstracts CD-ROM. ■

Head's Up: Hotel Reservation Requirement

This year you must first be registered for the annual meeting in order to obtain a hotel room from the official Society hotel block. This requirement will be effective July 15–Sept. 2, and lifted Sept. 3. ■

Special Interest Socials: Mix, Mingle and Meet Your Colleagues

Neuroscience 2002 boasts Special Interest Socials where members can meet informally with colleagues who share common scientific interests. The socials will be held in the Orange County Convention Center. Socials are open to all Annual Meeting registrants and their guests. Please remember that the size of the rooms in which these events are held is based on previous years' attendance. Because there are space constraints within any facility, it is possible that some socials will fill quickly. Please have more than one option in mind if you plan to attend the Special Interest Socials. ■

Orlando Information & Attractions

Planning to stay in Orlando after attending the Neuroscience 2002 meeting? If so, check out the Society for Neuroscience's link to the Orlando Convention and Visitors Bureau Web page. There you will find an interactive map of Orlando, up-to-date weather reports, and information about dining, shopping, nightlife and local attractions in the Orange County area. The page can be accessed at: www.orlandomeetinginfo.com. ■

Neuroscience 2002—Find It Online

In an effort to make information accessible to members no matter where they may roam, all Neuroscience 2002 information is available online. Answers to frequently asked questions about fees, hotel rooms, exhibits, transportation, luggage check, child care arrangements and message services can all be found at: www.sfn.org/am2002/faq. ■

It's More Cost Effective To Become a Member!

Preregistering as a member is $205.
Preregistering as a nonmember is $355.
The difference is the cost of membership!

(It's actually $5 cheaper to become a member and register as a member for Neuroscience 2002!)

Member benefits:

- Ability to sponsor an abstract at the annual meeting
- Ability to submit a proposal for a Society-sponsored symposium at the annual meeting
- Free *Neuroscience Newsletter* subscription
- Free subscription to *The Journal of Neuroscience* online and discount subscription to print version

See the full list of member benefits at www.sfn.org/membership.

Note: Membership must be confirmed before registering as a member. Membership application processing takes 2–3 weeks. ■

Neuroscience 2002 Important Dates

Aug. 23 Recommended registration receipt deadline for non-North American advanced registrants to ensure timely receipt of name badge and program (if ordered).

Sept. 3 Advance registration requirement to make hotel reservations is lifted.

Sept. 6 Receipt deadline for advance registration by mail, fax and phone.

Sept. 23 Last day for students to make hotel reservations from the special student block.

Oct. 1 Online advance registration deadline.

Last day to apply for membership prior to annual meeting registration.

Oct. 2 Last day to make hotel reservations.

Deadline for education workshops' registration.

Oct. 8 On-site online annual meeting registration opens and continues through the annual meeting.

Oct. 15 Last day to cancel annual meeting registration and receive refund.

Oct. 25 Last day to cancel hotel reservations and receive deposit refund.

Nov. 2 On-site registration opens at the convention center.

Austin Chapter Meeting Features Past President, NAS Member

The Institute for Neuroscience at the University of Texas at Austin held its Seventh Annual Symposium on Neuroscience on February 16, 2002. Some 180 people attended who were affiliated with the University of Texas at San Antonio, at Dallas, and at Houston, several high school science teachers and 24 visiting applicants to the graduate program in neuroscience. The symposium provides an opportunity for faculty, postdoctoral students, graduate and undergraduate students to attend talks and poster presentations by UT scientists and students conducting neuroscience research.

Grass Lecturer Dr. Bruce McEwen presents his talk titled "Stress, Sex, and the Hippocampus: From Serendipity to Clinical Relevance".

Bruce McEwen of the Rockefeller University in New York was the keynote speaker and lecturer. His talk titled "Stress, Sex and the Hippocampus: From Serendipity to Clinical Relevance" was sponsored by the Society for Neuroscience's Grass Traveling Scientist Program. McEwen also participated the entire day with insightful comments to questions from both faculty and students who work in different sub-disciplines of neuroscience. As an active participant in Brain Awareness Week, McEwen also discussed the many ways neuroscientists can become involved in this important event. ■

New Changes to Chapter Guidelines and Reporting Requirements

In an effort to improve communication among chapters and better serve local chapters, the SFN Council established three new guidelines for administration. They are: 1) Reporting a roster to the SFN office of the full chapter membership following the annual meeting of the chapter no later than May 1 of each calendar year. 2) Electing a chapter representative by majority vote of membership during its annual meeting. The results of this election, including the number of members who voted in the election, must be reported to the SFN office no later than May 1 of each year. 3) Establishing terms for chapter representatives of no more than three years. At the end of the three-year term, a new representative must be elected.

For the full set of chapter guidelines including information on how to establish a chapter in your area, please visit www.sfn.org/chaps or contact Greg Willoughby, Chapters and Special Programs Director (greg@sfn.org) at (202) 462-6688. ■

Minority Fellowships Available

The Society for Neuroscience Minority Neuroscience Fellowship Program (MNFP), established in 1991 through a grant from NIMH and recently sponsored in part by NINDS, continues to recruit, train and track outstanding minority students to work in preeminent research laboratories. Under the direction of Joanne Berger-Sweeney, associate professor of biological sciences, Wellesley College, the MNFP provides fellows with training stipends, travel support, enrichment opportunities and networking activities. The next application deadline is Tuesday, Sept. 3, 2002. You must be a U.S. citizen or permanent resident to apply. Additional information, including an application form and instructions, is available online at www.sfn.org/fellowships, or contact the MNFP Administrative Assistant Dale Clarke. E-mail: mnfp@wellesley.edu. Phone: (781) 283-3503. ■

Fire at Morehouse School of Medicine

On Monday, May 20, a devastating fire at the Morehouse School of Medicine (MSM) destroyed the Multidisciplinary Research Center that housed several programs including the Neuroscience Institute. All laboratories within the Institute suffered severe damage but the hardest hit were those belonging to Drs. Peter MacLeish and Walter Royal III. At this point, all investigators have been assigned alternative laboratory space, and the cause of the fire is under investigation.

Major pieces of equipment were lost in the blaze. These include a confocal microscope, a fluorescence activated cell sorter, and numerous microscopes with digital imaging capability. In some cases, the loss was to items gathered over a period in excess of 30 years.

Officials from the National Institute of Neurological Disorders and Stroke (NINDS) visited MSM to assess the damage and reassure the institution and its investigators of their support in reestablishing the research programs. "A top priority for the NINDS is to continue to work hand-in-hand with officials at the Morehouse School of Medicine to quickly restore the promising neuroscience research programs in the Neuroscience Institute," said Dr. Alfred Gordon, associate director for minority health and research, NINDS.

The Neuroscience Institute was the first of its kind to be established at a historically Black college or university and was founded, in part, to redress the serious shortage of minority biomedical scientists. The success of the Institute led to the development of specialized neuroscience research programs at eight other minority-serving institutions across the country. ■

Survey results

In June, the Society conducted an online membership survey rating the importance and quality of many of the Society programs and services. A total of 5,646 members responded. Results of the survey will be discussed in the Sept/Oct issue of the newsletter.

SFN Women's Career Development Mentoring Program: Call for Mentees

Sign up soon! Limited spaces are available!

The Society's Committee on the Development of Women's Careers in Neuroscience will launch an expanded mentoring program to include men and women at this year's annual meeting. Participants will be assigned a mentor and will meet them at an open bar reception the evening of Saturday, November 2. The committee will also host an exhibit booth throughout annual meeting which will feature a lounge area so that mentors and mentees can meet to discuss career goals.

Graduate students, postdoctoral fellows, new faculty members and faculty members who have just received tenure, are good candidates to participate in this new program. The committee hopes that these meetings will be the start of valuable and effective relationships that last well beyond the annual meeting.

Those who are interested should visit www.sfn.org/workshops to complete a questionnaire which will help central office staff pair interested members with a mentor. Completed questionnaires should be returned to Charyl Serago at charyl@sfn.org or by fax to 202-234-9770. ■

Photo: © Paul Fetters for HHMI

Max Cowan, Former SFN President, Dies at 70 After Long Illness

W. Maxwell Cowan, a world-renowned neurobiologist who was a founding member, president of the Society for Neuroscience and editor-in-chief of *The Journal of Neuroscience*, died on June 30 after a long illness. He was 70.

Cowan retired in 2000 as vice president and chief scientific officer of the Howard Hughes Medical Institute (HHMI) where since 1987 he helped define its biomedical research program. He set the program's high scientific standards, identified promising new areas of research and took a personal interest in identifying scientists around the country whose work merited support from HHMI. The research program seeks to make important contributions to understanding fundamental questions in biology. With an endowment of about $11 billion, the Chevy Chase, Maryland-based institute is one of science's largest philanthropies.

A native of South Africa, Cowan immigrated with his family to the United States in 1966. In the field of neurobiology, Cowan was best known for discovering that during the development of the brain, considerable numbers of nerve cells die and many pathways are reorganized by the elimination of particular branches of axons. He showed that these two phenomena are widespread in the developing nervous system and together play a key role in refining the brain's initial connections.

Cowan served as SFN president in 1977 and as editor-in-chief of *The Journal of Neuroscience* from 1981–87. He also served on the committee for the first SFN annual meeting in 1970 and on the communications and publications committees.

He attended the University of the Witwatersrand in South Africa, where he graduated with honors in 1952. Cowan then went to England, where he received his PhD in 1956 and his MD in 1958, both from Oxford University. He was on the faculty of Oxford from 1953 until 1964. In 1965, Cowan spent a sabbatical year at Washington University, after which he joined the faculty of the University of Wisconsin School of Medicine. In 1968, he returned to Washington University as professor and chairman of the department of anatomy and neurobiology.

Cowan moved to The Salk Institute in 1980 as director of the developmental neurobiology laboratory. Shortly thereafter he was appointed vice president. In 1986, he became provost and executive vice chancellor of Washington University. He left Washington University in 1987 to join HHMI.

After retiring from HHMI, Cowan joined the faculty of the University of Texas Southwestern Medical Center at Dallas as a distinguished adjunct professor in the Center for Neuroscience and department of neurology.

He was a foreign associate of the National Academy of Sciences, a member of the Institute of Medicine and a fellow of the Royal Society of Great Britain. He was a founding member and vice-chairman of the Dana Alliance for Brain Initiatives, a non-profit organization of more than 200 scientists who are dedicated to improving public knowledge of brain research.

Cowan is survived by his wife, Margaret, of Rockville, MD., a daughter, Ruth, of England; and two sons, Steven, of St. Louis, MO, and David, of San Diego, CA, and two grandchildren. ■

(The Society acknowledges the passing of members on our Web site at www.sfn.org/obituaries. It is the practice of the *Neuroscience Newsletter* to print obituaries only for those who have had a very special relationship to the Society, such as a founding member, past president or Nobel Prize winner. – The Editors.)

President's Bioethics Council Weighs in on Cloning Debate

President Bush's Council on Bioethics on July 10 endorsed a ban on all reproductive cloning and a four-year moratorium on human cloning for research. The majority report unanimously endorsed a ban on cloning to reproduce humans. Ten of the 18 members voted for the moratorium. Seven members recommended permitting cloning-for-biomedical-research to go forward. One member abstained from taking a position.

The report included specific recommendations for Congress if legislation is considered. It recommended that everyone be covered by cloning restrictions – individuals, corporations, and both public and private institutions. The report further recommended that any legislation should be narrowly drafted by only prohibiting human cloning while allowing other stem cell research to continue unaffected. The full report can be accessed on the Internet at the following address: www.bioethics.govcloningreport.

It is unclear whether the Congress will act on cloning legislation this year. On July 31, 2001, the House of Representatives approved a ban on all forms of human cloning. The bill included both civil and criminal penalties for violations of its provisions. The Senate has not considered legislation on this issue to date, and it is not clear that action will be taken in that body prior to adjournment in the fall. For parliamentary reasons, controversial legislation cannot be approved in the Senate unless either side on an issue can muster 60 votes. ■

Society for Neuroscience Reorganizes Structure of Central Office

A new organizational structure has been put in place at the SFN central office in Washington, DC. The most visible change is the establishment of five divisions headed by senior directors who report to SFN Executive Director Marty Saggese. This replaces a system in which 12 department heads reported directly to the executive director.

New Divisions

SFN's longtime Annual Meeting Director B.J. Plantz has been named Senior Director, Meeting Services. B.J. continues to be responsible for annual meeting logistics and management of other Society meetings.

Katie McCollins Sale, who most recently served as the Society's Associate Director, has taken on the position of the Senior Director, Planning & Membership. This new position oversees the Membership Department, Chapters & Special Programs Department, and the Executive Department—including the executive director's office, Council activities, strategic planning, governance issues and legal issues.

Joe Carey, formerly the Public Information Director, is now the Senior Director, Communications & Public Affairs, a division that includes the Editorial Services Department, the Creative Services Department, and Government Affairs. This division has editorial and design responsibilities for the content of print and online communications, publications and the Web site. It also coordinates the Society's work on governmental relations, animals in research issues, media relations and coordination with advocacy groups.

Benz Joins Staff

In early June, Helen Benz joined the Society as the Senior Director, Finance & Administration/CFO. She will oversee the Accounting, Information Systems and Administration departments. Helen comes to the Society from Counterpart International, a Washington, DC-based international nonprofit, where she was Vice President for Finance & Administration since 1994.

The Society is currently seeking a Senior Director, Scientific Programs to oversee three departments: the Journal, Annual Meeting Program Department and Educational Programs. The Society is searching for a candidate who is a PhD with a background as a scientist. The candidate will need to possess excellent program management skills and a strong background in academic electronic publishing.

The reorganization should help strengthen the staff's capacity to support the Society's expanding programs and activities. According to SFN Executive Director Marty Saggese, "The senior directors will be responsible for managing internal staff functions effectively and providing analysis to enable the volunteer leaders of the Society to continue to play their historical leading role on scientific matters." ■

Hearing, Smell and Taste Research

by James Battey, NIDCD Director

The mission of the National Institute on Deafness and Other Communication Disorders (NIDCD) is to support and conduct research and training on the normal and disordered processes of hearing, balance, smell, taste, voice, speech and language. The opportunity for rapid progress in our understanding of these areas is greater today than ever before.

Remarkable progress has been made in determining the structure of the human and other genomes, with thousands of useful markers mapped and most of the sequence determined. Public databases contain the sequence for the overwhelming majority of genes, with finished sequence available for many genes. This infrastructure provides the fuel for discovering the genes that determine susceptibility to communication disorders, in particular hereditary hearing impairment.

Hearing Impairment

It is estimated that one child in a thousand is born with hearing impairment that compromises the development of normal language skills. In about 70 percent of these cases, mutations in one or more genes results in hearing impairment without any other clinical findings (nonsyndromic autosomal dominant, recessive, or X-linked hereditary hearing impairment). Within the last six years, scientists have determined the location in the genome of more than 70 genes that cause nonsyndromic hereditary hearing impairment. About 20 of these genes have been cloned and shown to encode proteins with varied functions, including unconventional myosins (intracellular motor molecules), transcription factors (gene regulatory proteins), and intra- and inter-cellular signaling molecules.

These breakthroughs provide the tools for precisely determining the complex etiology of hereditary hearing impairment, allowing for more informed diagnosis and earlier intervention to optimize the development of language skills, as well as prevention strategies in some cases where the hearing impairment is progressive. Beyond any question, understanding the genes whose mutation results in hereditary hearing impairment will continue to reveal hitherto unknown molecular pathways essential for normal auditory function, which may lead to novel approaches for ameliorating this disorder in the future.

Mouse Models

The creation and characterization of spontaneous and designed mouse models for disorders of hearing, balance, smell, and taste represent another important research opportunity. In the mouse, one can obtain enough affected animals to hasten the task of positional cloning the relevant gene, if that is not already known. The consequences of the mutation for the anatomy, cell biology, and physiology of the inner ear can be assessed systematically and in detail, in a manner not often possible in humans. Indeed, one of the first steps often taken to understand the function of a human gene is to create a mouse model that is missing the gene of interest.

Smell and Taste Perception

Within the last few years, scientists have made great progress in furthering our understanding of the molecular basis for smell and taste perception. Genes encoding G protein coupled receptors have been shown to encode receptors that are activated by sweet, bitter, and amino acid ligands, in addition to a family of hundreds of receptors selectively expressed in individual olfactory receptor neurons that appear to respond to odorant ligands. These genes pave the way for future research studies of smell and taste perception at the cellular and cognitive levels, as well as studies to determine how the senses of smell and taste develop and regenerate.

Early Detection and Treatment

Research on language development reveals that early identification of hearing impairment and early intervention (within the first six months of life) is critical for optimizing language skills in individuals born with hearing impairment. Recent advances include rapid screening techniques to identify neonates with hearing impairment within the first few days of life. Prospective clinical studies are needed to develop and determine which intervention strategies are most effective, and they will need to take into account significant variations in the socioeconomic status and parental involvement among families dealing with an infant that has hearing impairment.

Otitis Media

Otitis media, an infection or inflammation of the middle ear, is the most frequent cause for a sick young child to seek medical attention in the United States. The estimated annual cost for medical and surgical treatment of otitis media is between $3 and $5 billion. Extensive and at times inappropriate use of antibiotics have contributed to the emergence of bacterial pathogens resistant to the antibiotics. Future attention should focus on improved prevention and treatment of otitis media, as well as research aimed to develop vaccines to fight the major bacterial pathogens that cause it.

The Cochlear Implant

The cochlear implant has proved to be clinically useful for restoring sound perception and communication skills in individuals with profound sensorineural hearing impairment. This remarkable device uses a speech processor to direct the activation of an array of electrodes surgically implanted in the cochlea. These electrodes stimulate the auditory nerve directly, bypassing the sound-transducing hair cells that frequently malfunction or are destroyed in individuals with hearing impairment.

Although a striking range of language skills has been attained in individual cases, more research is needed to determine post-surgical speech and language intervention strategies that will optimize the benefit for all individuals with a cochlear implant. Longitudinal clinical studies are needed to assess the benefit of expanding implant use to a greater subset of individuals with hearing impairment, including children less than two years old.

To learn more about NIDCD and our research and research training opportunities, please visit our Web site at www.nidcd.nih.gov. ■

Publishing Pointers

Say it Simply: Tips for Clear Writing

Gary Westbrook, Senior Editor, The Journal of Neuroscience
Linda Cooper, McGill University

Precise sentences, the hallmark of effective writing in science, help make complex research accessible and enhance communication in a highly interdisciplinary field such as neuroscience. Conversely, unnecessarily complex sentences can lead to impenetrable texts that frustrate even diligent readers. Ideas stated simply have a better chance of being understood. Here we offer tips for clear writing by revising sentences published in *The Journal of Neuroscience* within the past five years.

Original: It is generally agreed that the ability to discriminate between different auditory signals is supported by neurons of the auditory cortex and surrounding cortical areas, yet some ability to perform auditory discriminations is retained after loss of regions of the cortex.
Revised: While neurons of the auditory cortex and surrounding cortical areas discriminate among different auditory signals, some ability to perform auditory discriminations remains after these cortical regions are damaged. *This revision limits the verb 'to be,' reduces prepositional phrases, and eliminates redundancy by removing the obvious.*

Original: The stimulus for the sprouting is not known, but it has been suggested that it might be in response to BDNF released from the terminals of small-diameter DRG cells.
Revised: BDNF released from the terminals of small-diameter DRG cells might stimulate sprouting. *This revision eliminates the verb 'to be,' reorganizes information into an appropriate stress position, and eliminates redundancy by removing the obvious.*

Original: The physiological activity of LHC mutant synapses is also consistent with there being a defect in vesicle tethering or docking, because transmission is reduced and release appears less synchronous than in wild-type animals.
Revised: Reduced transmission and asynchronous release at synapses in LHC mutant animals also suggest a defect in vesicle tethering or docking. *This revision uses the active rather than the passive voice, eliminates the verb 'to be,' and moves information into an appropriate stress position.*

Original: Given the importance of the NET to noradrenergic transmission, it is conceivable that regulation of the level of expression of the NET gene in noradrenergic neurons may be a natural mechanism by which noradrenergic transmission can be adjusted in vivo in response to physiological demands placed on this system.
Revised: Regulating norepinephrine transporter (NET) gene expression may be a natural mechanism to adjust noradrenergic transmission in response to physiological demands. *This revision reduces the verb 'to be' and prepositional phrases.*

Original: The diffuse plaques are composed of nonfibrillar amorphous Aß aggregates that are not associated with degenerative changes, whereas the cored plaques contain abundant Aß fibrils that are associated with pathological changes in the surrounding brain parenchyma.
Revised: Cored plaques, composed of abundant Aß fibrils, cause pathological changes whereas diffuse plaques, composed of nonfibrillar amorphous Aß aggregates, do not. *This revision eliminates the verb 'to be' and reinforces parallelism.*

Original: The role of BDNF in DRG cells is given added importance by the fact that BDNF synthesis is greatly increased after nerve injury.
Revised: BDNF synthesis increases greatly in DRG cells after nerve injury suggesting that BDNF plays an important role (in what?) *This revision eliminates the verb 'to be,' reorganizes information into an appropriate stress position, and identifies missing information (role for what?).*

Original: In view of the role of BDNF and TrkB in synapse plasticity, the clarification of this issue is crucial.
Revised: Here we clarify the role of BDNF and TrkB in synapse plasticity. *This revision uses the active rather than the passive voice.*

Original: The goal of the present study was to evaluate directly a role of the cAMP pathway in opiate withdrawal behaviors by studying, in vivo, whether withdrawal is influenced by intra-LC infusion of compounds known to activate or inhibit protein kinase A (PKA).
Revised: Here we evaluate a role of the cAMP pathway in opiate withdrawal behaviors by monitoring withdrawal after infusing the LC with protein kinase A (PKA) activators or inhibitors. *This revision replaces nouns with verbs, eliminates the verb 'to be,' and reorganizes information into an appropriate stress position.*

Original: These data imply that a family of high-affinity semaphorin binding sites similar in complexity to the semaphorin ligand family exists.
Revised: The high-affinity semaphorin binding sites are as complex as the semaphorin ligand family. *This revision eliminates unnecessary phrases and moves information into an appropriate stress position.*

Original: In this study, the appearance of this boundary and the mechanism by which cell movement is restricted were examined through a number of approaches.
Revised: We used numerous approaches to examine the mechanisms that restrict cell movement and create this boundary. *This revision uses the active rather than the passive voice and eliminates prepositional phrases.*

Learn More at the Annual Meeting
At the Society's annual meeting, we cover these and other writing techniques in a *Journal*-sponsored workshop called "Writing, Editing, and Publishing in Science." For more information about the Orlando workshop, contact Linda.Cooper@mcgill.ca.

THE CAUSE OF A GROUP OF BRAIN-ATTACKING DISEASES, KNOWN AS SPONGIFORM ENCEPHALOPATHIES, WAS ONCE A MYSTERY. RESEARCHERS SPENT YEARS TO NO AVAIL SEARCHING FOR A BACTERIUM, VIRUS OR OTHER TYPICAL DISEASE-CAUSING AGENT. NOW INCREASING RESEARCH POINTS TO AN UNUSUAL SUSPECT. MANY SCIENTISTS BELIEVE THAT A MERE PROTEIN, TERMED A PRION PROTEIN, IS BEHIND THESE DISEASES. THIS DISCOVERY IS HELPING RESEARCHERS GET CLOSER TO DEVELOPING TREATMENTS FOR THOSE WITH THE FATAL AILMENTS.

PRION PROTEINS

You open the tainted mail and inhale bacterial spores. Soon flu-like symptoms and breathing problems erupt. It's anthrax.

The bacteria behind the anthrax disease, as well as the smallpox virus and plague bacteria, for example, use nucleic acid to take hold of your body. This genetic material carries special codes that allow the microbes to replicate and create overpowering troops that swarm, attack and launch illness.

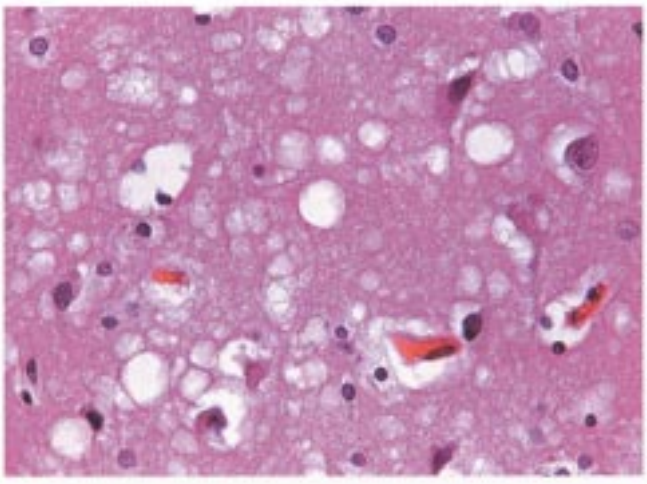
For years, scientists firmly believed that all infectious agents had to contain the nucleic acid replicating machines to trigger disease. But now mounting evidence debunks this dogma. An abnormal form of a simple protein that is free of nucleic acid—termed a prion protein—appears to cause a group of related diseases that affect humans and some other mammals. Known as spongiform encephalopathies (SE), these untreatable ailments, including Creutzfeldt-Jakob disease, mad cow disease and scrapie, leave the victim's brain pocked with holes, typically causing dementia and eventually death.

This new focus on the proteins is leading to:

- Fresh views on how disease emerges.
- Innovative treatment ideas.

People can acquire the well-known, yet rare SE, Creutzfeldt-Jakob disease, through both infectious and noninfectious routes. Exposure to infected human nervous system tissue during certain medical procedures can produce the disease. Most frequently, Creutzfeldt-Jakob disease erupts spontaneously, with no detectable cause. Less frequently, it results from inheriting a faulty prion protein gene. Another form, variant Creutzfeldt-Jakob disease, recently emerged in Great Britain. It's creating great concern because some suspect that you can catch it by eating meat contaminated with infected nervous system tissue from cows with the cattle SE, mad cow disease. So far, it has killed approximately 100

▼ THE SWISS-CHEESE HOLES DEPICTED IN THIS SAMPLE OF BRAIN TISSUE FROM A PATIENT WITH CREUTZFELDT-JAKOB DISEASE ARE A TELL-TALE SIGN OF SPONGIFORM ENCEPHALOPATHY. IT APPEARS THAT ABNORMALLY SHAPED PRION PROTEINS ENTER THE BRAIN EITHER FROM EXPOSURE TO INFECTED TISSUE, OR FROM NON-INFECTIOUS ROUTES, SUCH AS BY INHERITING A FAULTY PRION PROTEIN GENE FROM A FAMILY MEMBER. THEN THEY CONVERT NORMAL VERSIONS OF THE PROTEIN, WHICH NATURALLY EXIST IN THE BRAIN, INTO THE PATHOLOGICAL FORM. THE PATHOLOGICAL PROTEINS SEEM TO CREATE AN AVALANCHE OF DESTRUCTION. HOLES OCCUR IN REGIONS WHERE BRAIN CELLS COMMUNICATE WITH EACH OTHER. THIS DISRUPTS INFORMATION TRANSFER BETWEEN THE CELLS, WHICH ULTIMATELY CAUSES BRAIN CELL DEATH AND THE END OF LIFE.



STEPHEN DEARMOND, MD, PHD, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

FRED H. GAGE, Ph.D.
President
The Salk Institute

HUDA AKIL, Ph.D.
President-Elect
University of Michigan, Ann Arbor

DONALD L. PRICE, M.D.
Past President
The Johns Hopkins University
School of Medicine

FOR MORE INFORMATION
please call Joseph Carey, public information director, or Leah Ariniello, science writer, at 202-462-6688

PAST ISSUES
http://www.sfn.org/briefings

people. Fortunately, findings on prion proteins provide a better understanding of these ailments and may provide some relief.

In 1982 researchers discovered prion proteins in brains infected with scrapie, an SE that occurs in goats and sheep. Since that time, studies that extend to a variety of SEs led many to blame abnormally shaped prion proteins as the triggering agent. It's thought that these proteins can appear in the central nervous system and convert naturally existing, normal forms of prion protein into a pathological form (see image).

Among other work, experiments designed to be free of contaminants, such as a virus or other typical infectious agent, back the protein trigger theory. In one, researchers found that under specific chemical conditions they could get a normal form of the protein to convert itself into the abnormal form tied to disease. Other scientists believe they created a SE disease in certain mice by injecting them with a synthetic abnormal prion protein developed in a contaminant-free environment. Diseased tissue from these rodents also infected other mice, according to preliminary work.

While some still suspect that a stealth virus or other agent with nucleic acid is the real transporter of infection, it's clear that prion proteins at least play a major role in SEs. Therefore, many scientists are testing ways to target the protein and treat disease.

Quinacrine, one investigative treatment for Creutzfeldt-Jakob disease, will soon be tested in a human clinical trial. Some earlier work showed that quinacrine, which has been used for years to treat malaria, and chlorpromazine, an antipsychotic drug, seemed to clear the abnormal form of the prion protein from infected cell samples through an unknown mechanism.

Other researchers are testing molecules that specifically target the prion conversion process. One method attacks the chemical structure of abnormal prion proteins and has some success in transforming them back into healthy forms, according to cell studies. The technique also delayed the appearance of symptoms in mice infected with scrapie.

In addition, scientists have developed attacking proteins, known as antibodies, which zone in on prions and prevent the conversion process in cell studies. They also rid infected samples of abnormal prion proteins. Next, the researchers plan to test the antibodies in animals.

Brain Briefings

Brain Briefings, the Society for Neuroscience's two-page monthly newsletter, explains how basic neuroscience discoveries lead to clinical applications. This lay audience publication is sent to 1,000 science writers, the 8,000 members of the National Association of Biology Teachers and other interested parties. *Brain Briefings* are also useful to neuroscientists when they speak to lay audiences. It is published in the *Neuroscience Newsletter* and appears on the Society's Web site at: www.sfn.org/briefings.

Society members may receive a single, full-color, paper version of one issue of *Brain Briefings* free of charge. To receive your free issue, please send an e-mail with your full mailing address to mary@sfn.org. Please specify the title and date of the issue you wish to receive. Society members and members of the public are welcome to subscribe to *Brain Briefings* for $30 a year (12 issues) including shipping. You can subscribe to *Brain Briefings* online or contact the Editorial Services Department at (202) 462-6688.

Note: The *Brain Briefings* newsletter series is prepared for a lay audience. Unfortunately, the Society is unable to handle requests from scientists for background lists of sources or references.

brain
SUMMER 2002 BRIEFINGS

EVEN SIMPLE MOVEMENTS, SUCH AS PICKING UP FOOD TO EAT, CAN DISAPPEAR WHEN AN ACCIDENT OR INJURY CAUSES THE LOSS OF A LIMB OR DAMAGE TO THE SPINAL CORD. NOW, FOLLOWING YEARS OF RESEARCH, SCIENTISTS HAVE DEVELOPED SYSTEMS THAT CAN BYPASS THE LOSS OR DAMAGE BY DIRECTLY INTERPRETING AN ANIMAL'S BRAIN SIGNALS AND LAUNCHING MOVEMENT IN ROBOTIC LIMBS. THE ADVANCES MAY LEAD TO NEW WAYS TO HELP DISABLED PEOPLE REGAIN MOBILITY.

ROBOTIC LIMBS

Zip, zap, zing. Pure mental power propels a robotic arm to reach out and clutch an apple.

This scenario once seemed more relevant to a science fiction movie script than a scientific study. But over the past three decades a better understanding of how the brain controls movement urged many scientists to seriously scrutinize the notion of thought-driven artificial limbs. Most recently researchers translated their knowledge into the development of systems that can interpret an animal's brain signals and launch movement in robotic devices. The new advances are leading to:

- Creative methods to provide movement in disabled people who have lost a limb or are paralyzed from a spinal cord injury.
- Insights into how technology can boost medical progress.

In healthy animals and humans, the brain constantly computes and sends complex signals in order to move an arm, hand, leg or foot. Much of today's research in the robotic limb field comes from earlier studies that decoded this special language. For example, back in 1970, researchers discovered that a specific pattern of activity in a small set of brain cells could predict the force changes in wrist movements of a monkey. Several other animal studies revealed additional aspects of the movement language, such as the type of cell activity required to propel the arm in a certain direction.

Armed with this information, researchers began to develop computer programs that could read and decode the language and then set off an intended movement in a robotic limb.

So far researchers have had success with the programs in monkeys, rats and

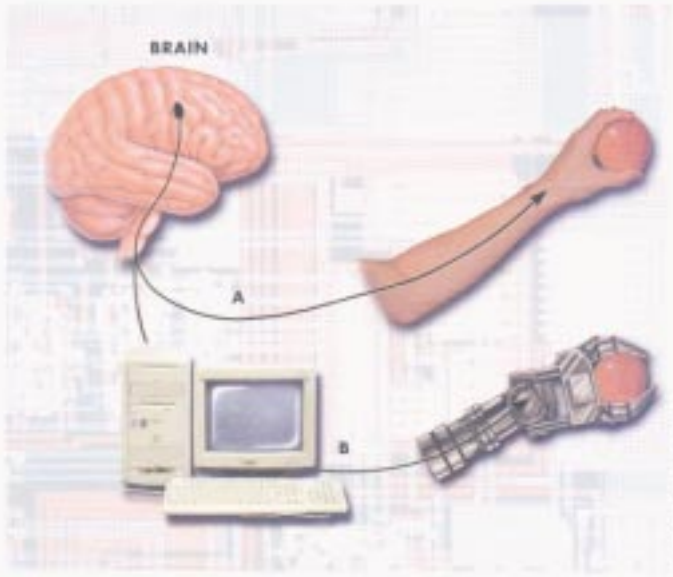


ILLUSTRATION BY JEN A. KRUK

A) THE BRAIN EMITS A BARRAGE OF SIGNALS THAT FORM A PLAN ON HOW THE MUSCLES AND JOINTS OF THE ARM, FINGERS AND WRIST NEED TO MOVE TO ACCOMPLISH A DESIRED TASK. SENT DOWN THE SPINAL CORD TO THE ARM, THESE SIGNALS ALLOW YOU TO GRASP AN APPLE FOR LUNCH. AN ACCIDENT OR INJURY THAT CAUSES THE LOSS OF A LIMB OR DAMAGE TO THE SPINAL CORD, HOWEVER, CAN SEVER THIS COMMUNICATION LINE AND PREVENT A DESIRED MOVEMENT. B) IN AN EFFORT TO COUNTER THE PROBLEM, SEVERAL GROUPS OF RESEARCHERS ARE TESTING SYSTEMS IN ANIMALS THAT CAN INTERPRET BRAIN SIGNALS AND LAUNCH MOVEMENT IN ROBOTIC LIMBS. WITH FURTHER ADVANCES, THEY HOPE THAT DISABLED PEOPLE WILL BE ABLE TO INCORPORATE THE ROBOTIC DEVICES INTO PART OF A REPRESENTATION OF THEIR BODY AND REGAIN LOST MOVEMENT ABILITIES.

FRED H. GAGE, Ph.D.
President
The Salk Institute

HUDA AKIL, Ph.D.
President-Elect
University of Michigan, Ann Arbor

DONALD L. PRICE, M.D.
Past President
The Johns Hopkins University
School of Medicine

FOR MORE INFORMATION

please call Joseph Carey, public information director, or Leah Ariniello, science writer, at 202-462-6688

PAST ISSUES

http://www.sfn.org/briefings

even lamprey, eel-like creatures. For example, in recent work scientists implanted electrodes that detect cell activity into the brains of two monkeys. Computer programs analyzed the activity, predicted the monkey's planned movement and sent the command to a robotic arm. When a monkey extended its arm, the robotic arm would move simultaneously in a similar fashion.

Early work also shows that a variation of the brain-reading systems, designed for people who can barely move or speak, helped one person use their thoughts to move a computer cursor and spell words.

Researchers believe that in the future the more complex robotic limb system also could help disabled humans replace their lost movements. But first they need to work on several areas, including feedback components. For real-world use of a robotic limb, the brain needs to exchange signals to and from the appendage, creating a loop of interaction. Already, rat and lamprey studies showed that the brain could detect and react to feedback. Currently, researchers are providing feedback components, such as visual cues, to monkeys. For example, in early work, one group trained monkeys that had both arms restrained to use their brain power to make a cursor, a sort of animated arm, reach toward a target in a virtual reality environment. The monkeys can see how their thoughts move the cursor, which allows them to adjust their reactions and improve their performance. Next they want to replace the cursor with a robotic limb.

Researchers also are trying to find the best areas to insert the electrodes. Many focus on the motor cortex, a brain area known to control movement. Another group is investigating the nearby posterior parietal cortex. They believe this area processes sensory information, such as signs of touch and visual cues, to make the earliest plans of a movement.

In addition, more work is needed on the technical side. Today's electrodes are not extremely stable. Researchers are working to create systems that stay rooted in their intended area and provide long-term, high-quality signals.

With continued advances, however, the zip, zap, zing may soon help human brains launch movements in robotic limbs, putting apples and life back in reach.

ANDP Spring Meeting

The Association of Neuroscience Departments and Programs (ANDP) held its spring meeting in Bethesda, MD on May 4–5. The meeting featured eight sessions that each focused on a major issue that impacts the content, evaluation and scope of graduate education. James S. King from the Department of Neuroscience at The Ohio State University serves as the current president of ANDP.

Sessions for the spring meeting included:
"Graduate Education: Variations of a Theme." Michael Lehman (University of Cincinnati), Gerry Oxford (University of North Carolina) and Daniel Johnson (Baylor College of Medicine) presented features of the design, successes and failures of their individual PhD programs.

"Evaluating Doctoral Education." Chris Golde (Carnegie Institute) presented a summary of the Carnegie Initiative on Doctorate Education and the basis for choosing neuroscience as one of the areas of graduate education to be evaluated as part of this five-year study. Ed Stricker then discussed data from the current (2001) ANDP survey of neuroscience graduate programs in North America.

"Assessing The Methodology of Assessing Doctoral Programs." Charlotte Kuh (National Research Council) described the scope and format of the upcoming NRC's assessment of the quality of doctoral programs.

"Beating the Odds: Preparing Minorities for Research Careers in the Health Sciences." Freeman Hrabowski, President (University of Maryland, Baltimore County) was a keynote speaker and described the nationally acclaimed Meyerhoff Scholars Program for gifted African American undergraduates in science and engineering.

"Undergraduate Education: Preparing Students for Graduate School." ANDP has fostered exchanges between Faculty for Undergraduate Neuroscience (FUN) and as part of that information exchange Ed Stricker (University of Pittsburgh) and Mike Loose (Oberlin College) presented features of their undergraduate education programs from their respective perspectives at a major research institution and a liberal arts college.

"The Graduate Student Perspective: Staying on the Road to Success." ANDP for the past three years has selected and supported students as ANDP Fellows to provide a meaningful exchange between the providers and recipients of graduate education. Allison Hall (Case Western University) moderated this session, which included presentations by Kim Byrnes (Uniformed Services University), Gretchen Neigh (Ohio State University) and Barbara Puder (Northeastern Ohio University).

Chris Golde presented a summary of the Carnegie Foundation's Initiative on Doctoral Education.

"Current Events and the Future of Laboratory Animals in Research and Education." Frankie Trull, (President Foundation for Biomedical Research) provided a current update on issues, events and policies that affect the use of animals in research and education.

"Federal Policies Related to Education and Training." Leslie Tolbert (University of Arizona) moderated this session, which included Stephen Foote (NIMH), Constance Atwell (NINDS), Linda Kennedy (NSF) and Carol Van Hartsveldt (NSF).

"Connecting our Students to the Scientific World." was the topic of an address given by Lorne Mendell (SUNY, Stony Brook), Past-President, Society for Neuroscience after the banquet on Saturday evening.

Other ANDP Activities:

ANDP Award: Nominations of candidates for the ANDP Education Award are being solicited. The recipient(s) will be recognized as part of ANDP activities at the SFN meeting in Orlando this fall.
Election Results & Nominations for 2003:
Newly elected officers include, Leslie Tolbert (University of Arizona) president-elect, and Allison Hall (Case Western University) Councilor. Nominations for president-elect, councilor and secretary for terms beginning in November are now being solicited.
Survey Results: The results of the 2000 survey of graduate and undergraduate programs in neuroscience can be found on the ANDP Web site at www.andp.org. ■

Society for Neuroscience
11 Dupont Circle, NW
Suite 500,
Washington, DC 20036
info@sfn.org
www.sfn.org

Published bimonthly by the Society for Neuroscience

Circulation: 29,000

ISSN 0278-3738

SfN Neuroscience Newsletter

11 Dupont Circle, NW
Suite 500
Washington, DC 20036

NONPROFIT ORG.
U.S. POSTAGE
PAID
WASHINGTON, D.C.
PERMIT NO. 4929

Inside this issue: