

brain waves

Newsletter of the
Brain Research Foundation
Vol. 9, No. 2, 2008



Brain Research Foundation

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Filling the Funding Gap

Since the Seed Grant Program's inception in 1981, the Brain Research Foundation has continued to focus on this signature program that fills a critical funding gap in the scientific community. The fundamental notion of seed granting is to support new, innovative research that has the potential to develop into comprehensive projects suitable to obtain funding from the National Institutes of Health (NIH) and other outside sources.

The NIH, which is a part of the United States Department of Health and Human Services, is the primary federal agency for conducting and supporting medical research. The agency has a budget of over \$29 billion—of which approximately \$15.5 billion is designated for Research Project Grants. Although the budget may seem large, obtaining a Research Project Grant is extremely competitive. In fact, the NIH data indicates that the average age of first-time investigators obtaining research funding has risen to 42 years for Ph.D. and 44 years for M.D. and M.D./Ph.D. degree holders.

The NIH award system practices caution. To obtain an NIH grant, an investigator needs to

write a grant proposal that incorporates preliminary data, demonstrating a high expectation of success. However, finding funding to gather the necessary data to acquire that federal grant is hard to do. That is where the Brain Research Foundation comes in.

Our Seed Grant Program provides a relatively small amount of support for promising neuroscience research. The goal is to generate data that can be included into a grant proposal for substantial funding. We are pleased that our donors' generous contributions have grown. Researchers have attracted over \$26 in subsequent funding for every BRF \$1.

We would like to continue to grow this successful program. In 2008–09, the Seed Grant Program will be expanded to reach more neuroscientists by opening the grants up to all eligible neuroscientists in the greater Chicago area. The Foundation will also be increasing individual grants from \$25,000 to \$40,000. We envision having even more impact on neuroscience and hope you continue to support this investment in the future.

dear friends

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Each year, our commitment to brain research is growing. We want to make more people aware of the Brain Research Foundation and educated about neuroscience. And we want to fund more researchers working on neurological disorders.

I have never been more excited to be part of the Foundation. You will read in this issue about how our Seed Grant Program continues to fill a critical funding gap. By increasing our Seed Grant awards and expanding to greater Chicago, the Foundation is determined to help close that gap.

You will also read about our three new trustees that will work with the board to bring the Brain Research Foundation to the next level. The Foundation is committed to this growth pattern. The compelling nature of our mission simply demands it of us.

We hope that you will talk to your friends about the Brain Research Foundation. We continue to need your financial support and the support of others.

Sincerely,

Terre A. Sharma, Ph.D.
Executive Director

in the spotlight

Welcome New Board Members

We are pleased to welcome three passionate individuals who have recently joined the Brain Research Foundation's board of trustees. We look forward to working with them to promote the Brain Research Foundation and the importance of neuroscience research.

Richard J. Daly



Rich abides by the four Aristotelian principles in his daily work and life: goodness, truth, beauty and unity. With more than 17 years of experience in the pharmaceutical industry, Rich has found that these principles guide him in making the right decisions.

Rich has been with the Takeda family of companies for most of his career where he currently serves as Senior Vice President of

Integration. In this role, he is charged with overseeing the merger of three of Takeda's US based companies.

At 41, he was diagnosed with a benign brain tumor (which was surgically removed) and epilepsy secondary to the tumor. This experience provided an opportunity for him to reflect on his life priorities. A lasting result is that he is more committed to his family, his health and his community. Six months after his surgery, he ran his first triathlon, raising more than \$7,000 for brain research.

He currently lives in a suburb of Chicago with his wife, Susan, and two teenage sons, Tynan and Shane. He began serving on our board of trustees in early 2008.

Rich earned a bachelor's degree in microbiology from the University of Notre Dame in South Bend, Indiana. He also earned a master's degree in management from the Kellogg School of Management at Northwestern University in Chicago.

Seed Grants: Growing Discovery

For the past 28 years, the Brain Research Foundation has been supporting neuroscientists through our annual Fay/Frank Seed Grant Program. These small grants are one of the most important and productive things the Foundation does to support promising investigative leads. The program provides start-up money to launch an innovative project that will likely become competitive for federal funding. Through the generous support of our donors, the Foundation has awarded over \$7.3 million in Seed Grants. Following are two summaries of the 2008 Seed Grant projects:



Dr. David Freedman,
Department of Neurobiology
The University of Chicago

Mechanisms of Visual Learning

Humans and other advanced animals have an impressive capacity to recognize the behavioral significance, or category membership, of a wide range of sensory stimuli. While much is known about the encoding of basic visual features (such as contrast, orientation and motion direction) in early stages of the visual system, less is known about how the brain learns and encodes more abstract and meaningful information about visual stimuli. This ability, which is disrupted by a number of brain diseases and conditions such as Alzheimer's disease, schizophrenia and stroke, is critical because it allows us to respond appropriately to the continuous stream of stimuli and events that we encounter in our interactions with the environment.

Dr. David Freedman, Department of Neurobiology at the University of Chicago,

plans to determine the brain mechanisms underlying the learning and recognition of the behavioral relevance, or category membership, of visual stimuli. Recently, Dr. Freedman found that neurons in both the prefrontal cortex (PFC) and lateral intraparietal (LIP) area can encode meaningful information about the category of stimuli that monkeys had previously learned to assign into categories. This suggests that visual representations in PFC and LIP are highly plastic and can reflect abstract information about the learned significance of visual stimuli. Dr. Freedman proposes to develop a mechanistic understanding of the relative roles of PFC and LIP in the learning and representation of the behavioral significance, or category membership, of visual information.

A greater understanding of visual learning and categorization is critical for addressing a number of brain diseases and conditions (e.g. stroke, Alzheimer's disease, attention deficit disorder and schizophrenia) that leave patients impaired in everyday tasks that require visual learning, recognition and/or evaluating and responding appropriately to sensory information. The long term goal of Dr. Freedman's research is to help guide the next generation of treatments for these brain-based diseases and disorders by helping to develop a detailed understanding of the brain mechanisms that underlie learning, memory and recognition.

2008 Seed Grant Recipients

David Freedman, Ph.D.

Department of Neurobiology
Neuronal Mechanisms of Visual
Category Learning and Recognition

David Gallo, Ph.D.

Department of Psychology
An fMRI Study of Complex Scene
Memory in Younger and Older Adults

William Green, Ph.D.

Department of Neurobiology
The Role of Rapsyn in the
Formation of the Neuromuscular
Junction and Disease

Nicholas Hatsopoulos, Ph.D.

*Department of Organismal
Biology & Anatomy*
Encoding of Cortical Information
in the Coordination of Reach to
Grasp and Feeding

Naoum Issa, Ph.D.

Department of Neurobiology
Mechanisms for Coding Complex
Images in the Early Visual System

Adil Javed, Ph.D.

Department of Neurology
Immunological and Molecular
Mechanisms Involved in the
Pathogenesis of Devic's Disease

Chunyu Liu, Ph.D.

Department of Psychiatry
Genetic Mapping of DNA Methylation
Regulators in Human Cerebellum

Jason MacLean, Ph.D.

Department of Neurobiology
Imaging Locomotor Network
Activity — Toward a Wiring
Diagram of the Locomotor Central
Pattern Generator

James A. Mastrianni, Ph.D.

Department of Neurology
The Role of the AGAAAAGA
Palindrome in Prion Disease

Brian J. Prendergast, Ph.D.

Department of Psychology
Cytokine and Adrenocortical Mediation
of Cancer-Induced Depression

Raymond P. Roos, Ph.D.

Department of Neurology
A Study of Provocation and
Treatment of HNPP

Steven Roth, Ph.D.

*Department of Anesthesia &
Critical Care*
Rodent Model of Perioperative
Ischemic Optic Neuropathy

Ilya Ruvinsky, Ph.D.

Department of Ecology & Evolution
Sex-Specific Regulation of
GABAergic Neurons

Nancy B. Schwartz, Ph.D.

Department of Pediatrics
Glycogenesis in the Hindbrain:
A Slice Culture Approach

Kamal Sharma, Ph.D.

Department of Neurobiology
Neural Control of Motor Functions

Sangram Sisodia, Ph.D.

Department of Neurobiology
Biochemical and Crystallographic
Characterization of Abeta in Complex
With Transthyretin — A Proposed
Abeta Scavenger

Women's Council Seed Grant**Danyan Mao, Ph.D.**

*Department of Anesthesia &
Critical Care*
Nicotinic and D1 Dopamine Receptor
Interactions in Brain Reward Areas



Dr. Brian Prendergast,
Department of Psychology
The University of Chicago

Mediation of Cancer-Induced Depression

There is a strong correlation between physical illnesses and mood disorders. This relationship is particularly robust for cancer and depression; cancer patients carry a 50% risk of depression. Depression is associated with decreased cancer survivorship, and depressed cancer patients are three times more likely to be noncompliant with treatment protocols. Surprisingly, however, causal links between chronic peripheral diseases, such as cancer, and emotional disturbances have not been established and have remained largely uninvestigated.

A number of chemical messengers in the body are capable of inducing depressive-like states; these signaling molecules include neurotransmitters, hormones and cytokines. Cytokines are signaling molecules produced by cells in the immune system, but they are also secreted into the general circulation by some types of tumors. **Dr. Brian Prendergast**, Department of Psychology at the University of Chicago, with Dr. Leah Pyter, is investigating these signaling molecules by using a rodent model of breast cancer to examine whether tumor-derived cytokines cause depression.

Experiments test whether tumor-derived cytokines gain access to the brain and if so, whether they trigger changes in neural systems that regulate emotion (the limbic system) that ultimately lead to a depressive-like syndrome. Additional experiments examine whether cancer suppresses the activity of the endocrine stress-response system (the hypothalamic-pituitary-adrenal axis) which normally functions to inhibit cytokine signaling in the brain. Such a hormone-cytokine interaction could result in an amplification of the depression-inducing effects of even modest increases in cytokines. Establishing a role for cytokines or stress hormones in cancer-induced depression would have implications for cancer treatment. This information would revise the development of therapies that target specific receptors to alleviate cancer-induced mood disorders, and prophylactic treatment of depression in individuals at risk for certain types of cancers. The work also stands to generate novel insights into immune-to-brain signaling which will increase our basic understanding of how chronic diseases affect emotions.

in the spotlight



Peter J. Eschenbach

Peter's understanding of nonprofit institutions and research universities makes him a good match for the Brain Research Foundation. Peter is the leader of Huron Consulting Group's Healthcare and Education Technology practice, which focuses on helping educational and healthcare organizations improve their management of research. This work includes the selection, development, and implementation of technology in a manner that facilitates measurable operational improvement within the research function.

Peter's experience includes helping research institutions around the country assess and resolve difficult business issues. He works with his clients to improve the pre-award, post-award, compliance and grant making processes. He has helped his clients develop strategic plans for increasing the volume and value of their

research enterprises. He has also worked with several commercial software vendors to design and build software to better address specific research administration issues.

As one of his first tasks at the Brain Research Foundation, we are pleased that Peter has agreed to help our team manage its 2009 Seed Grant Program. His attention to detail and the overall picture have been beneficial in developing the Seed Grant guidelines and review process. Peter's guidance will play a considerable part in the continued success of the Fay/Frank Seed Grant Program.

Peter is married with four children and lives in Oak Brook. In addition to serving on the Brain Research Foundation board, he is also a member of his children's school board and active in various other community activities.



Kathryn G. Johnson

Kathryn is new to Chicago. By training, she is an attorney, and she practiced corporate law with a major Wall Street firm until "retiring" in 1984 when her twins were born. She and her husband (W. Bruce Johnson) have five children.

She has been an active volunteer. While living in Bronxville, New York, she was a member of the Junior League of Bronxville and served as treasurer, among other positions; she was awarded the Sustainer Award in 1998 and the JLB President's Award in 1993 for her contributions to her community. She served as a trustee for the board of the Bronxville Public Schools from 1995-98, was vice-president in 1997-98 and chair of the finance committee in 1996-98.

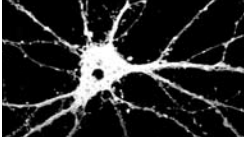
In 1998, Kathryn and her family moved to Paris, where they lived for six years. While in Paris, she served as a trustee for the board of the American School of Paris from 1998-2004 and was president from 2001-04.

Kathryn and her husband and two youngest children repatriated in 2004 to Franklin, Michigan, where she served as secretary to the board of the League of Women Voters of Oakland County from 2005-06 and as treasurer of the Cranbrook House Auxiliary from 2005-07.

Since moving to Chicago in 2006, she has joined the boards of Landmarks Illinois and of the City Community Associates of the Art Institute of Chicago and the women's boards of the Lincoln Park Zoo and of the Field Museum. She also is a member of the board of the Duke Law School Alumni Association and is president of the board of the American School of Paris Foundation.

Kathryn's family, in common with so many others, has a history of brain-related illness. Kathryn learned about the Brain Research Foundation from trustee Jeani Jernstedt. She would like to commit time and energy to further the work of the Brain Research Foundation.

brain matters



Neuroscience Day 2008

On Friday, December 12, 2008, the Brain Research Foundation will sponsor the 10th Annual Neuroscience Day. This event is held every year to promote the interaction of neuroscientists and to learn about new, exciting research through posters and lectures. This unique forum is intended to provide all members of the Chicagoland neuroscience community the opportunity to share interests in an informal setting and to stimulate scientific interactions between laboratories. This year the event will be held in downtown Chicago at the Gleacher Center.

The program consists of poster presentations and lectures from prominent neuroscientists. The keynote speaker for the event is: Dr. Robert Malenka, M.D., Ph.D., professor in psychiatry & behavioral sciences at Stanford University School of Medicine.

Additional speakers for the event will be: Scott Brady, Ph.D., Department of Anatomy and Cell Biology at the University of Illinois at Chicago; Nicholas Hatsopoulos, Ph.D., Department of Organismal Biology & Anatomy at the University of Chicago; Jeffrey Kordower, Ph.D., Section of Neurobiology at Rush University Medical Center; D. James Surmeier, Ph.D., Department of Physiology at Northwestern University.

Many thanks go to Dr. Sangram S. Sisodia, the Thomas Reynolds Sr. Family Professor of Neurosciences and director of the Center for Molecular Neurobiology, for organizing this extremely informative event.

For more information on the Brain Research Foundation, please call (312)759-5150 or visit our website at www.theBRF.org

111 West Washington Street
Suite 1710
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