

brain waves

Newsletter of the
Brain Research Foundation
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Expanding the BRF—a Combination for the Future



We are pleased to announce that the Brain Research Foundation (BRF) merged with another Chicago-based neuroscience foundation, the Children's Brain Research Foundation (CBRF). After 10 years of supporting promising children's brain research, educating healthcare professionals and promoting public education, the CBRF came to a crossroads. Considering various options, the CBRF ultimately approached the BRF with a proposal to combine the foundations. Because each organization had a similar mission, a merger was determined to be beneficial to both foundations. The newly merged organization will continue to carry the BRF name and will work to incorporate the vision of the CBRF by continuing to fund research and education that will help children who are living with brain disorders.

The CBRF brings significant experience and resources to the BRF. In the last few years, the CBRF has funded important research and programs in such areas as autism and children's bullying. The CBRF has also supported an exciting symposium of leading researchers in the area of Disruptive Behaviors in Children and Youth. The CBRF has generated significant awareness, built an impressive base of support and funded innovative children's brain research.

The entire board of the CBRF was enthusiastic about the merger and has now joined the BRF Board of Trustees. We are excited by the ideas that are being brought forward, utilizing many that will help the BRF improve and grow. As the new trustee group has come together, the combined organization is even more enthusiastic about accelerating new discoveries in brain research.

In addition to expanding our Board of Trustees, the Foundation is pleased to welcome the Associate Board of the BRF (previously of the CBRF). This group of dynamic individuals is committed to increasing awareness and making a positive difference in the lives of children and adolescents who have problems with brain development and function.

This merger will strengthen our position in the community and bring forth many exciting opportunities for the BRF. As research funding continues to be challenged nationally, and neurological disorders are an increasingly difficult problem, the role that the BRF plays is critical. We hope you will continue to support the organization and the valuable research that we make possible.

dear friends

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Dear Friends,

This past year was an extremely busy and productive time. The Brain Research Foundation continues to change and grow apace with new advantages; a merger with

another neuroscience foundation, an evolving board, an expanded seed grant program, and a fresh look and updated website.

We are excited to have merged with the Children's Brain Research Foundation (CBRF). This merger brought a new group of civic leaders to our Board of Trustees, infusing it with new ideas. We will continue our mission of funding neuroscience research that will help all humankind while also bringing special attention to the needs of children and adolescents.

The Brain Research Foundation has a new logo and new website. We are grateful to AbelsonTaylor for donating their services to update the BRF brand. The new website has been many months in the making, incorporating a variety of interesting tools and resources, to create a site that is informative, user friendly and technologically advanced for both the general public and researchers. Visit it to learn more about the Brain Research Foundation, to read the latest in neuroscience research around the world and to support neuroscience research by donating online.

We have successfully completed a cycle of the expanded Seed Grant Program which funds neuroscience research in the greater Chicago area. We expect similar results for the 2010 Seed Grant Program which opened at the beginning of October 2009 and continues through April 2010. And because of our new website the entire seed grant process will be conducted electronically. The researcher will create an account to access and download

forms, submit completed documents and receive notices. This will make the process more efficient.

In conjunction with the remodeled Seed Grant Program, we established the BRF Scientific Review Committee (SRC) to review our annual grant applications. This year we broadened the SRC to include two well-known researchers located outside of Chicago to provide additional expertise when scoring grant proposals.

The year 2009 ended on a very positive note. We want to thank our donors for responding so generously to our yearend appeal. With support from our Board of Trustees, our longtime friends and new donors, we had another successful year.

Your support helps us maintain our commitment to research and education that betters the lives of children and adults. We hope you will help us continue our mission in 2010.

Sincerely,



Terre A. Sharma, Ph.D.
Executive Director

in the spotlight

Brain Research Foundation Scientific Review Committee

Established in 1981, the Brain Research Foundation Seed Grant Program funds innovative ideas and promising investigations that drive advances in our knowledge of how the human brain functions. Last year, the Program was expanded to reach more scientists by opening the grants up to all eligible neuroscientists in the greater Chicago area. At the same time, the Brain Research Foundation Scientific Review Committee (SRC) was established to lend their scientific expertise when reviewing the seed grant proposals. This committee, made up of well regarded researchers in the field of neuroscience, evaluated proposals and made suggestions for funding to the Brain Research Foundation.

The 2009 Seed Grant Program was very successful, receiving 81 letters of intent from 8 different Chicago institutions. Of those, 32 were invited to submit a full application, of which 15 researchers we chosen to receive seed grants.

We expect even more applicants this year. In order to provide additional expertise and accommodate the potential for even more applicants to the Seed Grant Program, we are pleased to announce that we have added two more researchers to our Scientific Review Committee: Dr. Michael D. Ehlers (Duke University) and Dr. A. Kimberley McAllister (UC Davis). Following are summaries of the new SRC members' research interests.

Michael D. Ehlers, M.D., Ph.D.



Dr. Michael D. Ehlers
Howard Hughes Medical
Institute
Department of Neurobiology
Duke University

Dr. Michael Ehlers' research at Duke University is focused on the intricate circuitry of neural networks. His work is directed at understanding the organelles and mechanisms for protein trafficking and turnover in dendrites (projections of a neuron that receive signals from another neuron), and the relationship to synapse formation (the junctions at which impulses pass from one nerve cell to another) and function. The complex morphology of the neuron, with its elaborately branched dendrites onto which impinge hundreds to thousands of individual synapses, requires that highly specialized mechanisms exist for localizing, maintaining, and removing proteins at the synapse. Such mechanisms are crucial for the initial establishment of postsynaptic specializations during the formation of a synapse and for activity-dependent changes in synaptic strength that underlie experience-dependent plasticity.

Dr. Ehlers explores how neurons maintain their complex circuitry and store information at a molecular level. He focuses on three cellular processes that underlie brain cell plasticity: how molecules are localized and maintained at dendritic spines (small protrusions from a dendrite that receive signals from a single synapse); the trafficking and regulation of glutamate receptors which are important for neural communication, memory formation and learning; and plasticity-induced remodeling of the postsynaptic membrane. Investigation of these three processes has provided new insight into compartmentalized membrane trafficking and signaling at synapses. More recently, Dr. Ehlers lab has begun to develop and employ mouse genetic models to probe the functional organization and plasticity of complex circuits. With these studies, Ehlers seeks to reveal the fundamental workings of neural circuitry.

Scientific Review Committee

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Dr. A. Kimberley McAllister,
Center for Neuroscience
UC Davis

A. Kimberley McAllister, Ph.D.

Dr. Kimberley McAllister's laboratory at UC Davis studies how synapses, the points at which impulses pass from one nerve cell to another, are initially formed. The mammalian brain requires the proper formation of exquisitely precise circuits to function correctly. These neuronal circuits are assembled during development by the formation of synaptic connections between hundreds of thousands of differentiating neurons. Synapses are initially established through physical contact between presynaptic axonal growth cones, which are located at the tip of an axon (the projection of a nerve cell that transmits signals away from the cell body), and postsynaptic dendrites (which receive signals from axons). These rudimentary connections are subsequently transformed into the highly specified, complex structure of the mature synapse. While much has been learned about formation of the neuromuscular junction in the peripheral nervous system, surprisingly little is known about the cellular and molecular mechanisms responsible for formation, stabilization, and refinement of synapses between neurons in the central nervous system (CNS).

Dr. McAllister's lab uses dissociated, cultured neurons from the developing visual pathway as a model system to study the formation of individual synapses. There are several techniques she utilizes to investigate synapse formation. One approach is to image the

sequence of molecular events during synapse formation using confocal microscopy. Another is to determine how synaptic activity may modulate synaptic formation. Finally, she studies the signals or proteins that may guide synapse formation. By combining data from these molecular and physiological approaches, her lab hopes to construct a vivid picture of synapse formation and stabilization in the developing CNS.

In addition to studying the cellular and molecular mechanisms of synapse formation, Dr. McAllister is also interested in elucidating the role for immune molecules in early postnatal cortical development. McAllister's lab is working to identify the role for cytokines (signaling substances secreted by the immune system) in regulating molecules that mediate the adaptive immune response called major histocompatibility complex I (MHC I). Since these immune molecules are implicated in several neurodevelopmental disorders, including autism and schizophrenia, MHC I molecules could mediate the effects of the environment on synaptic connectivity both in typical development and in neurodevelopmental disorders. Understanding how MHC I molecules and cytokines act in the developing brain could reveal possible therapeutic targets for preventing or treating autism and/or schizophrenia.

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Founded in 2007 to increase community awareness of childhood diseases, the Associate Board develops new programs and initiatives to educate the public and get more people involved. It does so by focusing specifically on children's brain disease and disorders.

The Associate Board is committed to making a positive difference in the lives of children with

brain disorders and their families by helping to fund cutting-edge neuroscience research, public education programs, and professional education. Its goal is to ease the enormous challenges that children with brain disorders face—from loss of function and lengthy hospital stays to difficulty making friends and differential health coverage.

BRF Associate Board hosts Second Annual Night Out at US Cellular Field

On Monday, August 17th, 2009, the Associate Board of the Brain Research Foundation (BRF) hosted its second annual night out at US Cellular Field. Despite a rainy start to the night, we had amazing turnout—over 300 family, friends, colleagues and supporters joined us as the Chicago White Sox took on the Kansas City Royals and won. As you can see from the pictures everyone had a fun time and looked great in their BRF t-shirts made especially for this event.

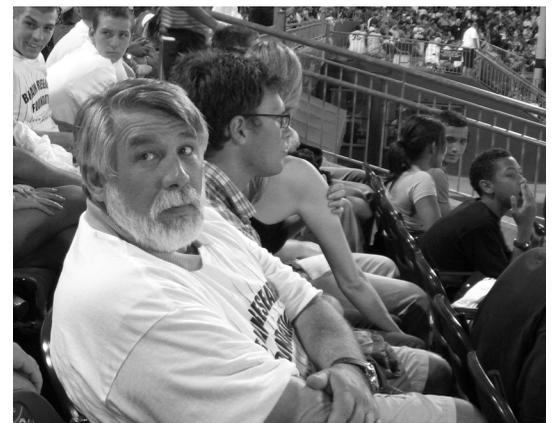
We hope to sell 500 tickets to our 2010 night out, so look for more information on how to get your ticket orders in early! Thanks to all of you who came out in support of the BRF Associate Board.



Kees Falconer



From left: Carly, Molly, Bridget and Jim O'Donnell



Dr. Bennett Leventhal

brain matters

Behind the Logo The stylized brain, in the form of a line drawing, represents the researcher's journey toward understanding, as well as our own. The "dots" on the line suggest this journey's beginning—a BRF-funded project—and its ultimate endpoint—the great breakthrough that is born of a small discovery. The dips and twists in the line represent important milestones along the way, while also hinting at areas of the brain that await further exploration. The labyrinthine line presents the viewer with a visual mystery that he is invited to unravel, and suggests the possibility of mapping new paths of discovery.

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

New Logo and Website

We are pleased to unveil our new logo and website. AbelsonTaylor, a world-renowned healthcare advertising agency, generously donated their services to renew how the Brain Research Foundation is perceived by our donors, scientists and the general public.

The new BRF website has updated content that is informative and accessible. You can learn about the foundation's mission, the research we fund, and support our cause by donating online. We hope you go there soon (www.theBRF.org)!

Ways of Giving

There are several ways in which donors can participate in the work of the Brain Research Foundation.

Direct Gifts Contributions are accepted in the form of cash, check, credit card, and stock.

Matching Gifts If you work for one of the growing number of companies that has a Matching Gift Program, the amount of your gift could be multiplied. Please check with your Human Resources Office to see if your company offers this benefit.

Planned Giving Long-term estate and financial planning can enable you to make a substantial contribution to the Brain Research Foundation. Examples of planned gifts include: bequests, life insurance policies, charitable remainder trusts, charitable lead trusts, and charitable gift annuities.

Memorial and Honorary Gifts You can make a donation in memory of someone or give a gift in honor of a special person.



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