

Discover!

news from the Brain Research Foundation

Brain Research Foundation Awards Grant to Study Concussive Events Among Grade School Children

The Brain Research Foundation (BRF) is supporting research that aims to improve pediatricians' ability to evaluate and manage sports-related concussive injuries among young children, and guide future research regarding the diagnosis, treatment and long term effects of these events.

In 2010, the American Academy of Pediatrics (AAP) Council on Sports Medicine and Fitness published a report that

reducing the risk of long-term symptoms and complications. Although clinical tools to measure concussive recovery are available, their efficacy is based on research with college and high school aged athletes. Post concussion cognitive tests have not been validated for use with grade school athletes.

BRF awarded a \$30,000 grant to collect data that is vitally needed to identify valid and reliable

clinical tools pediatricians

can use to measure concussive recovery in younger children. In time, this funding will help advance clinical practices when pediatricians face these injuries among younger patients. Through the BRF's work as an advocate of education around the long term effects of concussions and

traumatic brain injury (TBI), we have identified the gap in clinical tools for sports-related head injuries in grade school children.

Cynthia LaBella, M.D. will lead the research team behind this effort. Dr. LaBella is the Medical Director for the Institute for



Cynthia LaBella, M.D.

Sports Medicine at Ann & Robert H. Lurie Children's Hospital of Chicago and Associate Professor of pediatrics at Northwestern University's Feinberg School of Medicine. "As one of a small number of academic pediatric sports medicine departments in the country, we are intimately aware of the unique needs of children and adolescents suffering sports-related concussions," states Dr. LaBella. "We believe that BRF's grant will help mitigate some of the challenges pediatricians encounter while evaluating and managing concussions in this young population."

To learn more about concussions, you can attend an **Advanced Concussion Training session**.

The next session will be held at the **Park District of Forest Park** **Wednesday, Sept. 5, 2012** **7-8:30 p.m.**

provides recommendations for pediatricians and other child health care providers who manage sports related-concussions in children and adolescents. The report emphasizes that appropriate management is essential for



**BRAIN RESEARCH
FOUNDATION**

Innovate. Explore. Discover.

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Dear Friends,

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As the fiscal year came to a close on June 30, I took some time to reflect on the remarkable accomplishments of the Brain Research Foundation (BRF) over the last year.

We expanded our funding to support even more ground-breaking research. In addition to our annual Fay/Frank Seed Grant Program, the Foundation awarded two larger grants at \$150,000 each to distinguished investigators. The winners were the first recipients of the newly established BRF Scientific Innovations Award (SIA). The Foundation expects these grants will lead to exciting results about the brain.

Our Fay/Frank Seed Grant Program continues to be extremely successful. Accomplishments in research tend to take a great deal of time. But just since receiving their grants, our 2011 recipients have made great advancements. To date, they have published seven articles in peer-reviewed scientific journals with three more submitted and waiting review. The data generated from these various seed grants has been incorporated into seven grant proposals to continue the work the BRF started. And based on the research we funded, 2011 awardee Dr. Peter Penzes received

a \$3 million grant from the National Institutes of Health. [More about his ground-breaking work can be found at the top of page 5.]

Additionally, we were proud to hear about a major discovery made by a past seed grant recipient. Twenty years ago the Brain Research Foundation funded Dr. Kári Stefánsson's early research. Since then he has been advancing science one gene at a time. A recent *New York Times* article highlighted his latest work. Stefánsson and his colleagues reported online in the top-tier journal *Nature* that they discovered a rare gene mutation that protects people against Alzheimer's disease.

The visionary work we do is in large part because of the passion of people like William E. Fay, Jr. In June, I had the privilege to visit him at his home in Florida. A founding member of the BRF, Bill is 95 years young. He swims everyday and plays bridge three times a week. We talked about why he became involved with the BRF over 50 years ago ["The Story of Lisa" appears on the opposite page] and how proud he is of what we are accomplishing.

These accomplishments can only happen with your support. As you read this newsletter, please be reminded of how important you are in contributing to the advancement of this critical research. We thank you for your continued support.

Sincerely,



Terre A. Constantine, Ph.D.
Executive Director

With your help, the Brain Research Foundation continues to grow, bringing us steps closer to unravelling the mysteries of the brain. We thank you for your support and encourage you to help us spread the word about the important work we're doing.

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.

For more information call the BRF at 312.759.5150 or visit us at www.theBRF.org.

A Founder's Passion

The Story of Lisa—from William E. Fay, Jr., BRF Founding Member and Chairman Emeritus

“To me and my wife Marg, as an infant our youngest, Lisa, was the healthiest of all of our children. For the first 10 months, she was beautiful, bright and responsive. But in October 1958 that all changed. Marg and I noticed little spasms in Lisa’s arms—involuntary movements—we were both concerned. We took her to our pediatrician, a wonderful man named Dr. Sauer, who identified them as “infantile spasms,” a mild form of epilepsy. He told us the prognosis was not severe and with medication the condition would end. But as time passed, Lisa’s condition worsened.

We sought every avenue of help. We were prepared to take her anywhere, but all roads led to Dr. Frederic Gibbs, a neurologist at the University of Illinois at Chicago. Gibbs was known as the “father of electroencephalography” which is the recording of brain activity. Gibbs tested Lisa and the results were dismal. The diagnosis was hypsarrhythmia. Every seizure caused brain damage. We were devastated and were willing to try anything to help our little girl.

A doctor from Belgium, Dr. Lucien Sorel, was trying a new therapy that was having some success—intramuscular injections of a hormone secreted by the pituitary gland called adrenocorticotrophic hormone (ACTH). We all were excited and brought Dr. Sorel to Chicago to find out the details. After his visit, a program was created at the University of Illinois College of Medicine in Chicago to administer ACTH to children diagnosed with hypsarrhythmia.

The results were dramatic. One third of the children were cured in a matter of weeks. Another third showed definite improvement. The last third showed little or no improvement. Unfortunately, Lisa was in this last group. We shared the excitement of the doctors in the overall success of the program, but privately, we were devastated by Lisa’s lack of progress.

All roads led to Dr. Frederic Gibbs, a neurologist at the University of Illinois at Chicago.

Lisa’s seizures became worse; she had 20 to 30 a day. Her eyes would roll back and she would simply slump down slowly on her haunches. It would be over shortly and she was back on her feet. But the cumulative impact affected her mental development. She lost her ability to speak. Her eyes seemed dark and her smiles infrequent. This went on between the ages of one and five. We tried everything and sought answers everywhere.

When Lisa was about four, the seizures increased in a serious way. Instead of slumping during seizures, she would become rigid and fall like a log in any direction. Now she needed protection, especially for her head and face. Marg tried several types of helmets but they were uncomfortable, so she made one out of sponge that helped. Lisa spent much of her time in her bedroom, where all the furniture was padded and the risk low.

When she was five, we woke up one morning to find that she had fallen and suffered contusions on her head and face. She looked like she



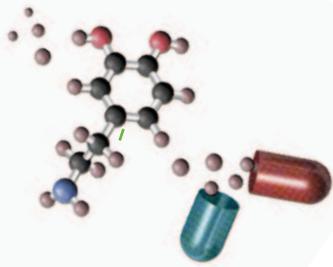
Bill Fay is a founding member of the Brain Research Foundation. Earlier this year, Terre Constantine (pictured, right) visited him in his Florida home and discussed with him Lisa’s story and his unwavering commitment to and support of the BRF.

was in a fight with a heavyweight. Obviously things were not going well. The strain was beginning to be too much for the family. The unspoken question was “how long can we carry on like this without serious effects on the family?”

This time we took her Illinois Research Hospital in Chicago where Dr. Gibbs could watch her closely. When Lisa was healed and ready to come home, Dr. Gibbs proposed trying one more thing—intravenous injection of ACTH, rather than intramuscular. This had never been done before. We thought about it and decided it had to be tried.

They started the injections on a Friday and continued on Saturday and Sunday. Her seizures ended! Her life truly began that day. She started to talk again. We built a support system for Lisa, consisting of specialized schooling. She even took piano lessons. When Lisa was 13 or 14 she asked why she couldn’t go away to school like her siblings. We found an outstanding place for her called the Bancroft School in Haddonfield, New Jersey. She has been there ever since, living a very happy and productive life. She began to rebuild—overcoming great odds—and over the decades has become one of the most wonderful human beings we know. ”

During this time of struggle for Lisa, Bill and Marg devoted a great deal of time building the Brain Research Foundation, a dream of Dr. Frederic Gibbs. Bill and his family supported this new endeavor and enlisted other business leaders to do the same. Bill’s leadership was critical in transforming the BRF into one of the country’s oldest and most active organizations supporting brain research. To read “The Story of Lisa” in its entirety and other personal stories, please visit our website at www.theBRF.org, click on “Personal Stories” under “Our Mission” dropdown.



BRF Lab Notes

Three Distinguished Researchers Join Our Scientific Review Committee



Judy L. Cameron, Ph.D.

The Brain Research Foundation Scientific Review Committee (SRC) is made up of highly-regarded researchers in the field of neuroscience. The Committee lends its scientific expertise when reviewing the numerous research proposals submitted to the BRF. It is the SRC that evaluates these proposals and provides recommendations for funding by the Foundation. We are pleased to introduce three new members of the Committee.

Judy L. Cameron, Ph.D., University of Pittsburgh

Judy Cameron, Ph.D. is a professor of psychiatry at the University of Pittsburgh. Dr. Cameron is a renowned researcher of stress and resilience, and has devoted her career to understanding how everyday life experiences, including stress exposure and changes in diet and exercise affect brain function. Her research examines how an individual's genetic predisposition interacts with exposure to different life events to lead to differences in the incidence of stress-related disease processes including the mental health problems of anxiety and depression, reproductive dysfunction and immune problems. She has tracked the developmental course of monkeys to determine what makes some individuals sensitive to the detrimental health effects of life stresses and others resilient to those adverse consequences.

This work has profound implications for the development of prevention and early intervention programs for human physical and mental health. A major figure in the field of behavioral neuroscience, she continues to lead research that may one day enable clinicians to identify which individuals are most vulnerable to stress-sensitive diseases.



John L. R. Rubenstein, M.D., Ph.D.

John L. R. Rubenstein, M.D., Ph.D., University of California San Francisco

John Rubenstein, M.D., Ph.D. is a professor of psychiatry at the University of California San Francisco. He also serves as a Nina Ireland Distinguished Professor in Child Psychiatry at the Nina Ireland Laboratory of Developmental Neurobiology. His research focuses on the regulatory genes that orchestrate development of the forebrain.

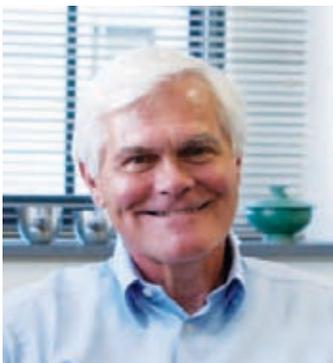
In the mammalian embryo, the forebrain is the portion of the neural tube where primitive cells are organized to form the cerebral cortex, the basal ganglia and other components of the adult brain—the structures of the human brain most involved in key functions such as speech, language, cognition and fine motor skills.

Rubenstein's lab has demonstrated the role of specific genes in regulating neuronal specification, differentiation, migration and axon growth during embryonic development and on through adult life. His work may help to explain some of the mechanisms underlying human neurodevelopmental disorders such as autism.

John F. Disterhoft, Ph.D., Northwestern University

John Disterhoft, Ph.D. is the Magerstadt Memorial Research Professor of Physiology at Northwestern University. Dr. Disterhoft studies the neurobiology of associative learning in the mammalian brain at the molecular, cellular and systems levels using both in vivo and in vitro techniques. His laboratory focuses on characterizing how neurons store new information during associative learning. An important component of his research program is identifying mechanisms for altered learning in aging. He uses a combination of behavioral, biophysical and molecular biological approaches to address these questions.

Although most of his experiments are done with animals, he also studies learning in humans using behavioral and imaging techniques. Disterhoft's laboratory is in a unique position to translate the findings from animal research to humans to better understand learning in the young and aging brain.



John F. Disterhoft, Ph.D.

2011 BRF Seed Grant Leads to \$3 Million in NIH Funding



Peter Penzes, Ph.D.

Exactly why autism occurs in one child and not another is unknown to scientists, although scientific evidence suggests that autism may be caused by a malfunction of the connections, or synapses, between brain cells.

Peter Penzes, Ph.D., an associate professor of physiology at Northwestern University, determined that Epac2, mutations of which have been genetically associated with autism, is involved in synapse development and remodeling in nerve cells.

Dr. Penzes used his \$40,000 2011 BRF seed grant to further characterize the role of this molecule in autism spectrum disorders. His experiments yielded two important findings: Epac2 plays a role in the cellular mechanisms relevant for neuron connectivity; and Epac2-deficient mice exhibit robust deficits in social

The data generated from Dr. Penzes' BRF Seed Grant was instrumental in obtaining a 5-year, \$3 million grant from the National Institutes of Health. Penzes' project will elucidate the mechanisms behind abnormal synaptic connectivity in schizophrenia.

interactions. This illustrates a link between synapse development and socio-cognitive deficits.

Insights gained from Dr. Penzes' research help scientists understand the electrical connections in brain cells that may be disrupted in autism cases. Understanding biological mechanisms that trigger autism can lead to the identification of potential targets for therapy – not only for autism but for other disorders that have defects in synaptic connectivity such as mental retardation, fragile-X syndrome, Down syndrome and schizophrenia.

2012 Seed Grant Recipients

Dane Chetkovich, M.D., Ph.D.
*Department of Neurology,
Northwestern University*

Novel HCN channel inhibitors for treatment of depression
Area of research: Depression

David Freedman, Ph.D.
*Department of Neurobiology,
The University of Chicago*

Cortical circuit mechanisms for visual categorization and category learning
Area of research: Learning and memory

Yong-Chao Ma, Ph.D.
*Department of Pediatrics,
Northwestern University/Children's
Hospital Research Center*

Regulation of dopaminergic neuron fate specification by neurogenin 2
Area of research: Parkinson's disease

Agnella Matic, Ph.D.
*Department of Otolaryngology,
Northwestern University*

Characterization of infrared neural stimulation in the retina
Area of research: Age-related macular degeneration (AMD)

Leslie Osborne, Ph.D.
*Department of Neurobiology,
The University of Chicago*

Neural mechanisms of efficient coding in the primate visual cortex
Area of research: Visual processing

Raphael Pinaud, Ph.D.
*Department of Neurobiology,
Northwestern University*

Modulation of visual cortical processing by brain-generated estrogen
Area of research: Hormonal effects on neurons

Murali Prakriya, Ph.D.
*Department of Molecular
Pharmacology and
Biological Chemistry,
Northwestern University*

CRAC channel function and calcium dynamics in neural stem cells.
Area of research: Neural stem cells

Mitchell Roitman, Ph.D.
*Department of Psychology,
University of Illinois at Chicago*

Optogenetic induction of phasic pauses in dopamine signaling in awake, behaving rats
Area of research: Depression and drug addiction

Geoffrey Swanson, Ph.D.
*Department of Molecular
Pharmacology and
Biological Chemistry,
Northwestern University*

Galectin modulation of excitatory transmission and neuronal function
Area of research: Neuronal activity

Kuei Tseng, M.D., Ph.D.
*Department of Cellular and
Molecular Pharmacology,
Rosalind Franklin University*

CB1 cannabinoid receptor activation during adolescence impairs maturation of prefrontal GABAergic circuits
Area of research: Schizophrenia

Scientific Review Committee

Sangram S. Sisodia, Ph.D.
SRC Chair
*Department of Neurobiology,
The University of Chicago*

Scott T. Brady, Ph.D.
*Department of Anatomy and
Cell Biology,
University of Illinois at Chicago*

Judy L. Cameron, Ph.D.
*Department of Psychiatry,
University of Pittsburgh*

John F. Disterhoft, Ph.D.
*Department of Physiology,
Northwestern University*

Jeffrey H. Kordower, Ph.D.
*Department of Neurological
Sciences, Neurosurgery,
Rush University Medical Center*

A. Kimberley McAllister, Ph.D.
*Center for Neuroscience,
University of California Davis*

John L.R. Rubenstein, M.D., Ph.D.
*Department of Psychiatry,
University of California San Francisco*

Matthew W. State, M.D., Ph.D.
*Department of Psychiatry,
Yale University*

BRF Associate Board News

BRF Associate Board

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The Associate Board of the Brain Research Foundation is a group of young professionals committed to making a positive difference in the lives of children with brain disorders by helping to fund cutting-edge neuroscience research and educational programs. The Associate Board hosts several educational and fundraising events each year to raise awareness about the importance of supporting neuroscience research.

BRF Associate Board Funds a Fay/Frank Seed Grant Project

The Associate Board of the BRF is utilizing the proceeds from its events to fund worthy neuroscience research. Its goal is to support science that would benefit children afflicted with neurological disorders.

The Associate Board is funding Dr. Freedman's research because of the potential impact it can have on the lives of children with neurological disorders.

The annual Fay/Frank Seed Grant Program is the ideal vehicle to accomplish this goal. With an investment of \$40,000, the Associate Board will be supporting Dr. David Freedman's Fay/Frank Seed Grant project titled, "Cortical circuit mechanisms for visual categorization and category learning." Dr. Freedman will use the grant to explore the causes of

autism, attention deficit disorder, schizophrenia and other brain-related disorders. Dr. Freedman's research will help guide the next generation of treatments for



David Freedman, Ph.D.

these brain-based diseases and disorders by developing a detailed understanding of the brain mechanisms that underlie learning, memory and recognition.

Dr. Freedman's work was first determined of high merit by the Brain Research Foundation's Scientific Review Committee, a national group of well-respected neuroscientists that evaluates each grant proposal to determine the most promising new research projects in the field of neuroscience. The Committee selects those projects that will likely lead to extramural funding from the National Institutes of Health or other outside funding sources. The Associate Board of the BRF then selected Dr. Freedman's work because of the potential impact it can have on the lives of children with neurological disorders.

The Associate Board is actively planning its next event—Rockin' on the River—to help sponsor a 2013 seed grant. Learn more about the event on page 7.



BRF Associate Board hosts 5th Annual White Sox Event

On Tuesday, May 22, BRF Associate Board, family and friends enjoyed a wonderful evening at U.S. Cellular Field where the White Sox hosted the Minnesota Twins. Associate Board members sold a record breaking 600 tickets for the game. Although the Sox did not win that night they did win the other two games in the series against the Twins which started a nine game winning streak.

The top ticket seller for the game was Associate Board Chair Jennifer Falconer, followed closely by Associate Board Member John Nicholson.

Thanks to everyone who came out in support of the BRF Associate Board! Tickets sell out early so be on the lookout for details on how to get yours for 2013.



Running for the BRF: Ragnar Relay Chicago

Associate Board Chair Jennifer Falconer formed a relay team to support the Brain Research Foundation on a 200 mile run from Madison, Wisconsin to Chicago, Illinois. On June 8-9, 2012 this group of athletic individuals ran to support neuroscience research and educational programs.

Ragnar is an overnight running relay race. Over two days and one night, teams, consisting of 6-12 individuals, run across 200 miles of the country's most scenic terrain.

Jennifer and her teammates raised over \$2,500 for the BRF! We want to thank Jennifer for taking the initiative and thinking of a new way to support us. We encourage others to follow her lead and find other opportunities to fundraise for the Foundation.

Mark Your Calendar: 3rd Annual Rockin' on the River

On Thursday, September 13, 2012, the Associate Board will host its 3rd Annual Rockin' on the River event. It's a fun evening reception for an excellent cause. Drinks and dancing right on the Chicago River is the perfect summer setting. We hope everyone will come out and join us to support the Foundation.

In 2011, the event was attended by over 200 people and raised over \$70,000 for neuroscience research. This year we anticipate a turnout of 300 people and hope to raise even more money to support the mission of the BRF.

We hope you can join us for cocktails, hors d'oeuvres, music performed by One Night Band, and a raffle and silent auction.

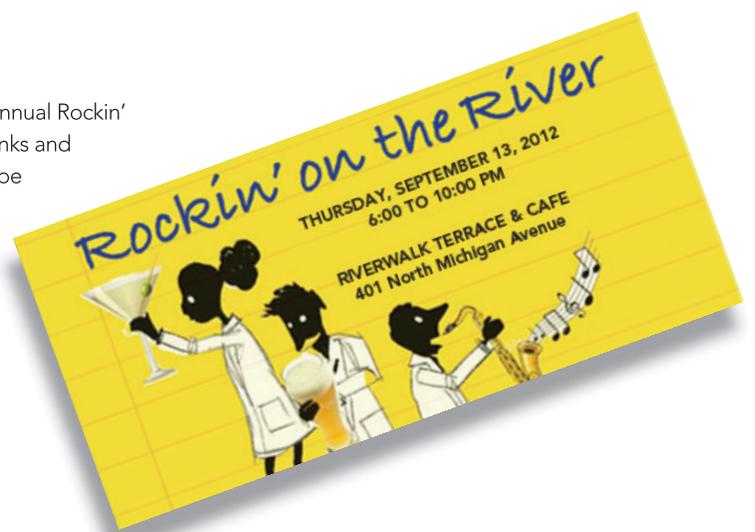
When Thursday, September 13, 2012 @ 6 pm-10 pm

Where 401 N. Michigan Ave., Riverwalk Terrace and Café

Tickets \$75 each—visit our website theBRF.org to purchase tickets

More Info Call the BRF office with questions (312.759.5150), or join the event on the BRF's Facebook page and post your comments.

All proceeds from ticket sales, raffle and silent auction will benefit the Brain Research Foundation





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2012 Discovery Dinner

save the date

October 29, 2012
Brain Research Foundation's
Annual Discovery Dinner

Four Seasons Hotel Chicago
120 East Delaware Place
6:00pm Reception 7:00pm Dinner

october 29

The 2012 BRF Discovery Dinner will be held at the Four Seasons Hotel in Chicago on October 29. The benefit will be co-chaired by Suzanne M. Kopp-Moskow and Michael Moskow, and John and Martha Mabie. On that evening, the Brain Research Foundation will honor Michael Ferro, Founder and Chief Executive Officer of Merrick Ventures, LLC, with the 2012 Frederic A. Gibbs Discovery Award. The 2011 award was presented to Aon Corporation for their philanthropic commitment to the community. Aon Corporation President and Chief Executive Officer, Greg Case, will present the award to Mr. Ferro this year.

The Frederic A. Gibbs Discovery Award recognizes individuals, organizations, or companies for their dedication to advancing neuroscience through education, research and philanthropy. Dr. Gibbs was a neurologist who helped found the Brain Research Foundation in 1953. He was a pioneer on the use of electroencephalography (EEG) for the diagnosis and treatment of epilepsy.

For more information, please call the office at 312.759.5150. All proceeds from the event will be used to fund BRF research and educational programs focused on neurological disorders.