

brain waves

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Over the Years



1961—First benefit



1981—PET Center



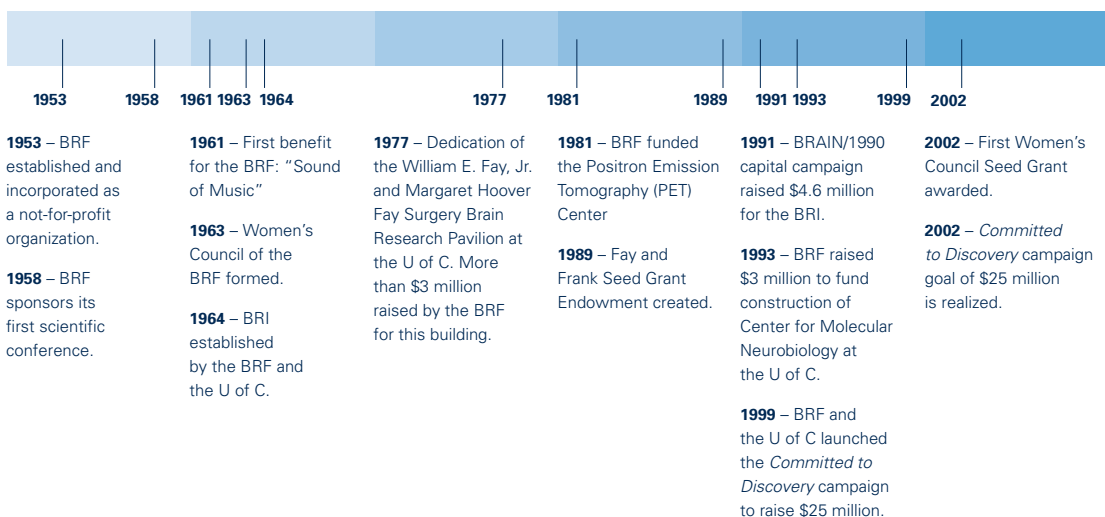
1999—Campaign kick-off

Golden Anniversary Approaching

For nearly half a century, the Brain Research Foundation has supported innovative neuroscience research. During that time, the Foundation has raised over \$22 million. These contributions have been used to recruit faculty to the University of Chicago, purchase critical equipment

and to fund research directly. These investments have facilitated many exciting scientific breakthroughs. As the Brain Research Foundation continues to support research through its fundraising efforts, many more breakthroughs are sure to follow.

Brain Research Foundation — Milestones



dear friends



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As the Brain Research Foundation approaches its fiftieth year, I am excited to be part of this organization. The Foundation is more dedicated than ever to funding brain research. Since our incorporation in 1953, we have raised over \$22 million for the advancement of the neurosciences.

Over the last four years, the Brain Research Foundation and the University of Chicago have been involved in the *Committed to Discovery* campaign. We are pleased to announce that the \$25 million goal has been realized. The Foundation has never before seen this level of commitment. We want to thank you for your generosity in helping to make this campaign a success. Join us in witnessing the scientific discoveries brought about through these fundraising efforts.

To help us accomplish our goals, we have been fortunate to be involved with outstanding physicians and scientists. We are grateful to Dr. Bryce Weir for his assistance to the Foundation. After ten successful years at the University of Chicago, Dr. Weir has retired

and moved back to his native Canada. Dr. James L. Madara has been appointed the Dean of the Division of Biological Sciences and the Pritzker School of Medicine. We are also grateful to Dr. Richard P. Kraig for his service as Interim Director of the Brain Research Institute. Dr. Richard G. Fessler, Chief of Neurosurgery, has been named the Institute's fourth Director. The Brain Research Foundation looks forward to continuing our work with these new leaders.

By the end of the year, the Brain Research Foundation will have a new home. The Foundation is moving to the Surgery Brain Research Pavilion at the University of Chicago. This move will foster an even closer relationship between the Brain Research Foundation and the Brain Research Institute. Exciting research will be right in our backyard. Visit and see for yourself!

Sincerely,

Terre A. Sharma, Ph.D.
Executive Director

Morris B. Goldman, M.D.

Psychiatry
Functional neuroarchitecture of prepulse inhibition

Melina E. Hale, Ph.D.

Organismal Biology and Anatomy
The roles of reticulospinal interneurons in model motor control circuits

Nicholas Hatsopoulos, Ph.D.

Organismal Biology and Anatomy
Encoding of action in primary motor and premotor cortical ensembles

Naoum Issa, M.D., Ph.D.

Neurobiology, Pharmacology and Physiology
The functional organization of visual cortex underlying high-acuity vision

Leslie M. Kay, Ph.D.

Psychology
Behavioral analysis of olfactory neuroanatomy

Kathleen J. Millen, Ph.D.

Genetics
In vitro analysis of cerebellar neuronal specification

Clifton W. Ragsdale, Ph.D.

Neurobiology, Pharmacology and Physiology
Molecular control of pineal gland development

Anthony T. Reder, M.D.

Neurology
Mechanism of low levels of interferon signaling in active multiple sclerosis

Deciphering the Brain

The need to understand this complex part of the central nervous system called the brain became the driving force behind the creation of the Brain Research Foundation. Since then, the Foundation's goal has been to support top researchers that would advance the understanding of how the brain functions. One way the Brain Research Foundation has accomplished that was through its Seed Grant Program. For over twenty years, the Foundation has funded and encouraged innovative research. Many times, this funding has allowed scientists to explore new ideas and compile preliminary data for outside grants.

In 2002, the Seed Grant Allocation Committee distributed \$350,000 amongst 14 fellows of the University of Chicago's Brain Research Institute. Dr. Kathleen Millen is one of these recipients.

Kathleen Millen, Ph.D., from the University of Chicago's Department of Human Genetics, is conducting research that may lead to diagnostic testing for a congenital brain malformation syndrome termed Dandy-Walker Malformation or DWM (see figures on page 3). Affected children have cognitive, motor and visual handicaps. Mental retardation and other developmental disabilities such as cerebral palsy and epilepsy are also common. Two out of ten thousand children every year are born with this often devastating birth defect, yet nothing is understood about the genetic basis of this abnormality and there is no understanding of what went wrong during brain development in these children.

The brain is made up of complex neural circuits. In order for these circuits to function properly, neurons must develop at the right time and connect to the right place. The regulation of neuronal development,

Axel J. Rosengart, M.D., Ph.D.

Neurology
Device development for intracranial multimodality ultrasound monitoring

Kamal Sharma, Ph.D

Neurobiology, Pharmacology and Physiology
Transgenic strategies to dissect spinal motor circuits

Ya-Ping Tang, M.D., Ph.D.

Psychiatry
Genetic studies of NMDA receptor function in the cerebellar-regulated cognitions

Avery Tung, M.D.

Anesthesia
Effect of lesions of the ventrolateral preoptic area on the relationship between sleep deprivation and anesthetic potency

Xiaoxi Zhuang, Ph.D.

Neurobiology, Pharmacology and Physiology
Motor habit and Tourette Syndrome-like behavior

Yimin Zou, Ph.D.

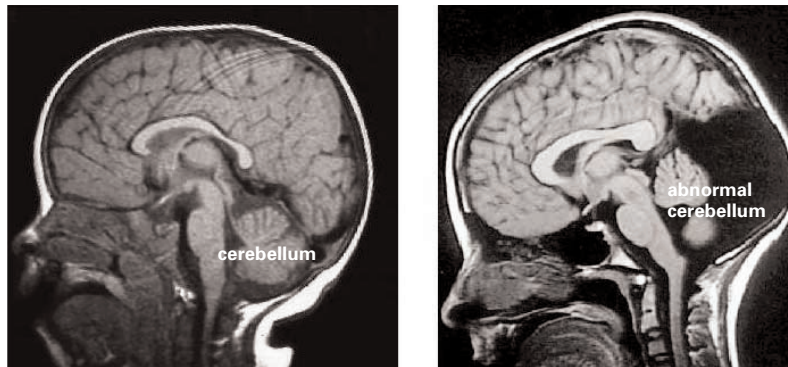
Neurobiology, Pharmacology and Physiology
Guidance of neuronal migration in vertebrate CNS development

First Women’s Council Seed Grant Recipient

Hayley Foo, Ph.D.

Neurobiology, Pharmacology and Physiology
Activity of brainstem pain modulatory neurons during sleep, ingestion, excretion and non-contact penile erection

MRI of Normal (left) and DWM (right) Subjects



Mice lacking *Lmx1a* function have a brain malformation similar to a congenital cerebellar malformation in humans called Dandy-Walker Malformation (DWM). This observation led Dr. Millen to hypothesize that disruption in dorsal cell regulation may trigger DWM. This assumption may be useful in uncovering genes that may cause DWM in humans.

or pattern formation, is under the control of a variety of genes. The challenge is to determine which genes control development for each type of neuron.

Dr. Millen has previously identified the function of a gene called, *Lmx1a*. This gene informs dorsal cells in the spinal cord and the brain how they should organize and therefore what they should become during development. Without this internal regulator telling the neurons what to do, brain abnormalities occur.

With the help of Dr. William B. Dobyns in the Department of Human Genetics, also at the University of Chicago, Dr. Millen set out to test this hypothesis in humans. They identified six unrelated children with DWM who have similar small deletions of chromosome 3. A graduate student in Dr. Millen’s lab, Ms. Inessa Grinberg, is trying to identify the important gene within the deletion that causes DWM in these children. If successful, this will be the first DWM gene identified and will lead to improved diagnostic and genetic testing which is currently unavailable for DWM patients and their families.

university news

New Dean of BSD



In July, Dr. James L. Madara assumed the responsibilities of the Dean of the Division of Biological Sciences and the Pritzker School of Medicine at the University of Chicago. Before coming to the University of Chicago, Dr. Madara was Chair of the Department of Pathology and Laboratory Medicine at Emory University Medical School in Atlanta, Georgia.



Dr. Madara is a well-respected scientist whose research has had great impact on gastroenterology and cell biology. His scientific discoveries have provided insights into mechanisms behind infectious intestinal diseases and inflammatory bowel disease.

The Foundation would like to welcome Dr. Madara to the University of Chicago and looks forward to working with him to promote neurosciences at the University.

Pictured above (top to bottom): James L. Madara, M.D. and Richard G. Fessler, M.D., Ph.D.

New BRI Director

The Brain Research Foundation is pleased to announce that Dr. Richard G. Fessler, Section Chief of Neurosurgery, has been named the fourth Director of the Brain Research Institute. Dr. Fessler recently came to the University from Rush Medical School in Chicago.

Dr. Fessler's illustrious career began right here in Chicago when he chose to pursue his M.D./Ph.D. at the University of Chicago. He graduated with honors and remained at the University for surgical and neurosurgical residency training.

Since his U of C days, Dr. Fessler has become an authority of surgical treatment of spine disorders. He has made significant contributions to the field of minimal invasive spinal surgery. His most publicized surgical technique involves spinal cord transplantation. In 1997, at the University of Florida, Dr. Fessler was the first surgeon in the United States to transplant embryonic nerve tissue into a human spinal cord.

This cutting edge research is what the Brain Research Foundation strives to support. Through the guidance of Dr. Fessler, the Foundation expects the Brain Research Institute to greatly advance neuroscience in the coming years.

"The Brain Research Foundation looks forward to moving its offices to the University of Chicago and working more directly with Drs. Madara and Fessler. This new location will bring our fundraising efforts closer to the exciting scientific discoveries we support."

—Thomas A. Reynolds III, President



*Pictured (left to right):
Jeffrey I. Frank, M.D. and
Bryce Weir, M.D.*

Women's Council Luncheon: Food for Thought

On May 22, 2002, the Women's Council of the Brain Research Foundation held their annual spring luncheon at Spiaggia. An internationally recognized leader in the field of neurointensive care and cerebrovascular neurology, Dr. Jeffrey I. Frank spoke to over 75 guests at the luncheon about how to recognize the signs of stroke and treat stroke as an emergency.

Following the seminar, Dr. Bryce Weir, University of Chicago Neurosurgeon and Interim Dean of the Biological Sciences Division was honored along with his wife Mary Lou, for their longtime support in the area of brain research.

Fall Program and Luncheon

On October 23, 2002 at Le Méridien on Michigan Avenue, the Women's Council will hold a fall program and luncheon. The guest speaker, Dr. Anthony Reder, is an associate professor in the Department of Neurology at the University of Chicago. Dr. Reder will be discussing research and treatment for multiple sclerosis.

Dr. Reder will begin speaking at 10:00 am and lunch will begin at noon. Tickets for this fall program and luncheon are \$65.00. To make a reservation for the event, call Lyra Hekmatpanah at (773) 684-5238.

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

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