

Discover!

news from the Brain Research Foundation

Autism Spectrum Disorders Update: New Study Shows Prevalence Much Greater Than Suspected

A Brain Research Foundation funded research project indicated the prevalence for autism spectrum disorders (ASD) to be nearly three times previous estimates. This ground breaking study conducted in Korea over five years indicated a prevalence estimate for ASD to be 2.64% of the population, compared to less than 1% in previous studies.

This research was conducted by a multinational group of scientists, led by BRF Investigators Young Shin Kim, M.D., Ph.D., M.P.H., and Bennett L. Leventhal, M.D. The results were recently published online in the *American Journal of Psychiatry*.

According to the National Institute of Mental Health, children with ASD demonstrate deficits in social interaction, verbal and nonverbal communication, and repetitive behaviors or interests. In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe.

This study is important because there has been concern about reports over the past four decades indicating that ASD prevalence is increasing. Some have been concerned about new causes of the disorder in the environment, however the researchers suggest that a variety of factors contribute to the growing prevalence.

The BRF-funded study was unique in that it attempted to screen all 55,000 children between the ages of 7 and 12 in a Korean community. This group included those previously identified to have special needs as well as all children

“Dr. Kim and our team expect the prevalence of autism spectrum disorders in the United States and in other countries will be in the range of 2 to 3 percent,” said Dr. Leventhal, a study leader who also serves on the BRF Board. “It is likely that there are many children in our schools who have an autism spectrum disorder that have not been identified and are not being provided treatments that can improve their functioning.”

The study researchers emphasized that autism is a global public health concern affecting all world areas.

“These dramatic results underscore how much we still have to learn about ASD and so many other neurological disorders and the great need to increase research, especially early stage research,” said Terre A. Constantine, Ph.D., BRF Executive Director. “Dr. Kim and her entire team are to be commended but the work to understand this disorder and so many others is just beginning.”

The ASD study was primarily funded by a BRF grant with additional support from the Institute for Ethnographic Research and Autism Speaks.

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with no history of problems attending regular education classes. It is noteworthy that the children previously identified as having ASD constituted 0.7% of the community and a remarkable 1.9% of the children were in regular classes without any prior diagnosis or treatment.



**BRAIN RESEARCH
FOUNDATION**

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Dear Friends,

Since its beginning in 1953, the Brain Research Foundation has been devoted to funding neuroscience research. The founders envisioned an organization in which private support would fund novel science to help us better understand the brain and nervous system. As you'll see in this issue of *Discover!*, this conviction is stronger than ever.

In this issue, we chronicle one example of the impact we have made through funding that has brought to light unexpected findings about the prevalence of autism. We also feature our 2011 seed grant awardees and highlight the work of one recipient, Dr. Jamie Roitman, whose innovative research may lead to

an understanding of the effect of adolescent alcohol consumption on decision-making in adults. And the Foundation is poised to increase research funding in 2012, investing in projects by distinguished scientists to give exciting ideas the opportunity to grow.

You may have read of a recent national initiative—*One Mind for Research*—intended to bolster neuroscience research funding and strengthen the information pipeline between private and public entities. We certainly echo these needs and know our founders would be excited to see that their vision is now being affirmed in such a broad forum.

Our hope is that the exposure generated by this initiative will in fact encourage the support of individuals, community foundations, and corporations to contribute to BRF research programs. The U.S. falls behind other countries in research funding and as a nation we cannot depend upon government support alone to help individuals and families struggling with neurological disorders.

Our donors have been years ahead in realizing the important role they play in advancing neuroscience. The Brain Research Foundation has invested more than \$1.2 million in research this year to advance scientific discovery. Annual contributions and planned gifts, such as that of Mary and Brad Smart, described in this issue, fortify the Foundation's position.

We thank you for partnering with us and invite you to expand your generosity so that we may continue this important work.

Sincerely,

A handwritten signature in black ink that reads "Terre A. Constantine". The signature is fluid and cursive, written on a white background.

Terre A. Constantine, Ph.D.
Executive Director

Foundation Forward

Estate Gift: Our Way to Keep Giving

By Mary H. Smart, Brain Research Foundation Trustee

The hope of cures for brain-related illnesses has been of interest to my husband Brad and me for many reasons. Brad has a Ph.D. in psychology, and as a speech pathologist, I also worked with autistic and delayed language children. But our interest is also very personal as one of our siblings was treated for bipolar disorder and schizophrenia before ultimately committing suicide. So, we have witnessed the complexity and mysteries of how the mind works and felt the sadness and despair of not always being able to help. Almost everyone we know has some family member or close friend who has suffered from neurologic disorders—Alzheimer’s disease, epilepsy, schizophrenia, Parkinson’s disease, or other neurological challenges impacted by the BRF’s investment in research.

“Almost everyone we know has some family member or close friend who has suffered from neurologic disorders.”

As a volunteer working with a mental health organization in the 1980s, I became aware of the Brain Research Foundation and Brad and I have been involved ever since. The mission of the Foundation to support cutting-edge neuroscience is important. But our ongoing financial support is due to BRF’s record of

achievement—research which will lead to novel treatments for and prevention of neurological disorders. We are also impressed with the BRF’s educational programs for researchers and the general public. The fact that the Brain Research Foundation provides research funding to the best and brightest neuroscientists in greater Chicago, and now throughout the U.S., is unique and fantastic. We are excited to share this information with everyone in our lives.

Meeting brilliant research grant recipients and learning of their accomplishments has been inspiring to us, and many times we’ve felt that the least we can do is leave part of our estate to the BRF. Our continuing financial support and planned giving gives us comfort that in a small way we might contribute to future breakthroughs.



Brad and Mary Smart

To join Mary and Brad Smart in making a planned gift to the Brain Research Foundation, contact us at 312.759.5150 or let us know how to contact you on the enclosed envelope. Estate gifts are one type of planned gift. The BRF recommends you involve your financial advisor or attorney in determining the best vehicle to fulfill your wishes.



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.

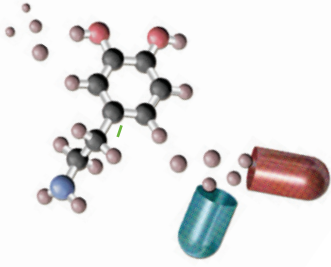
Direct Gifts Contributions are accepted in the form of cash, check, credit card, and stock.

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.



BRF Lab Notes

New Record for Seed Grant Allocation in 2011

The Brain Research Foundation allocated its largest amount to date for seed grant support in early May when 18 research projects were funded. A total of \$720,000 was awarded at \$40,000 per seed grant.

The BRF's Scientific Review Committee recommended funding projects from four Illinois universities. Two of the projects were renewals to continue promising projects begun in 2010.

Over a recent three-year period, initial project data from Brain Research Foundation seed grants totaling \$1.4 million generated more than **\$18 million** in further funding.

Seed grants provide initial funding for innovative research projects that lack data necessary to apply for larger sources of federal or organizational support. In light of NIH funding dropping by one-third in the last 10 years, the importance of these types of non-profit programs has increased. Another impact is the tightening of pharmaceutical industry support of neuroscience research due to the large investment of money and time to develop new drugs.

Questions posed in seed grant projects would often go unanswered due to a lack of funding if it were not for the investment of our donors in the BRF mission. A study by the BRF is uncovering some major successes of past award recipients as a result of these grants which have been funded since 1981. Over a recent three-year period, more than \$18 million was received by past BRF award recipients utilizing project data from BRF seed grants totaling \$1.4 million.

"We realize that not every project results in additional funding," said Terre A. Constantine, BRF's Executive Director. "But the scientific expertise and financial resources that the BRF brings to grant making results in the funding of projects with both high potential and great importance to brain research."



Jamie Roitman, Ph.D.

Focus on a 2011 Seed Grant Project

Does teenage alcohol use influence our behavior as adults?

Jamie Roitman, Ph.D., Assistant Professor of Psychology at the University of Illinois at Chicago (UIC), is interested in understanding the neural mechanisms that underlie decision-making. Failure to engage in appropriate decision-making can adversely impact our finances and health, and is broadly implicated in many disorders—such as gambling, drug addiction, smoking, overeating, and affective disorders.

Dr. Roitman was recently awarded a 2011 seed grant by the Brain Research Foundation to study how increased alcohol consumption in adolescence may have long term

effects on risk-taking and decision-making abilities in adulthood. The idea behind the proposal has been something that Roitman has thought about for several years but until she received BRF funding she did not have the means to pursue this research project.

With her \$40,000 seed grant, Dr. Roitman is employing a post-doctoral fellow in her lab to measure how consumption of alcohol by rodents during the critical development period of adolescence alters adult patterns of activity in two key areas of the brain—the orbitofrontal cortex, which is involved in evaluating risk to guide decisions, and the nucleus accumbens, which is important for processing rewards and goal-directed behavior.

"Adolescence is a time in our lives when the front part of our brain is going through structural changes," said Dr. Roitman. "In the project funded by the BRF, I'm looking at the neural circuitry that continues to lead to what most would agree are poor decisions in adulthood even after the excessive alcohol consumption is no longer prevalent. I'm hoping this can lead to a better understanding of why we continue to jump at immediate rewards rather than look at the long-term outcomes of our actions once we are adults."

With the data collected in this project, Dr. Roitman said she plans to apply for a grant with the National Institute on Alcohol Abuse and Alcoholism to broaden her study on the topic.

2011 Seed Grant Recipients

Ravi Allada, M.D.

Department of Neurobiology and Physiology
Northwestern University

Circadian clocks and neurodegeneration

Agnieszka Ardel, M.D., Ph.D.

Department of Neurology
The University of Chicago

Could HuR, a regulator of growth factor mRNAs, improve outcome after ischemic stroke?
Women's Council Seed Grant Awardee

Thomas Bozza, Ph.D.

Department of Neurobiology and Physiology
Northwestern University

Analysis of trace amine-associated receptor cluster deletion mice

Anjen Chenn, M.D., Ph.D.

Department of Pathology
Northwestern University

N-cadherin regulation of the adult neural stem cell niche

Yuanyi Feng, M.D., Ph.D.

Department of Neurology
Northwestern University

Molecular genetic analysis of filamin functions in cerebral cortical development

Jay Gottfried, M.D., Ph.D.

Department of Neurology
Northwestern University

Perceptual coding of natural odors in the human brain

Christian Hansel, Ph.D.

Department of Neurobiology
The University of Chicago

Is there a cerebellar component of autism? A study using the 'chromosome 7 duplicated' (Dup) mouse model

Orly Lazarov, Ph.D.

Department of Anatomy and Cell Biology
University of Illinois at Chicago

Regulation of neural stem cells by amyloid precursor protein metabolites in the adult brain

Gianmaria Maccaferri, M.D., Ph.D.

Department of Physiology
Northwestern University

Cell type-specific alterations in a genetic animal model of Rett syndrome

Michela Marinelli, Ph.D.

Department of Cellular and Molecular Pharmacology
Rosalind Franklin University

Habenular modulation of dopamine neurons and its relevance for cocaine addiction

James Mastrianni, M.D., Ph.D.

Department of Neurology
The University of Chicago

Treatment of genetic prion disease by mutation-selective RNAi

Gerardo Morfini, Ph.D.

Department of Anatomy and Cell Biology
University of Illinois at Chicago

Effects of mutant huntingtin on cytoplasmic dynein phosphorylation and function

Peter Penzes, Ph.D.

Department of Physiology
Northwestern University

Validation of synaptic targets in autism spectrum disorders

Indira Raman, Ph.D.

Department of Neurobiology and Physiology
Northwestern University

Sensorimotor processing in the zebrafish cerebellum

Jamie Roitman, Ph.D.

Department of Psychology
University of Illinois at Chicago

Effect of adolescent alcohol consumption on risk-preference and neural encoding of risky rewards

Gordon Shepherd, M.D., Ph.D.

Department of Physiology
Northwestern University

Cortical mechanisms in a mouse model of amyotrophic lateral sclerosis

Geoffrey Swanson, Ph.D.

Department of Molecular Pharmacology and Biological Chemistry
Northwestern University

Galectin modulation of excitatory transmission

Jack Waters, Ph.D.

Department of Physiology
Northwestern University

Nicotinic modulation of the excitability of neocortical pyramidal neurons

2011 Scientific Review Committee

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The University of Chicago

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University of Illinois at Chicago

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Department of Organismal Biology and Anatomy
The University of Chicago

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Department of Neurology
Northwestern University

Jeffrey H. Kordower, Ph.D.

Department of Neurobiology
Rush University Medical Center

A. Kimberley McAllister, Ph.D.

Center for Neuroscience
UC Davis

D. James Surmeier, Ph.D.

Department of Physiology
Northwestern University

BRF After Hours

New BRF Friends Welcomed at Sox Game

Friends and family members of the BRF Associate Board gathered at the White Sox game on Tuesday, May 17, when the Chicago team hosted the Texas Rangers. Associate Board members sold 500 tickets for the game and the White Sox triumphed with a 4-3 win over the Rangers, making it a

very successful evening for the Foundation.

The top ticket seller for the game was BRF Board Member **Kathy Thompson** who serves as a liaison to the Associate Board, followed closely by Associate Board Members **Matthew Claeys**,

John Nicholson, and **Julie Schultz**.

The Associate Board hosts several educational and fundraising events each year to raise awareness about the importance of supporting neuroscience research.



Pictured above, left, are Vail Bayly, Graham Bayly, Isabella Claeys, Brianne Claeys, Matt Claeys, and Tyler Claeys.

Pictured above, right, are Kevin Canavan, Will Culloton, Jack Sullivan and Nick Thompson.

Left, Sox fans enjoying the game.





From left, Kathleen Fahy, Natalie Sullivan, Katie Canavan, Maddie Thompson, Betsy Sheridan

Associate Board News

The BRF Associate Board consists of young professionals dedicated to supporting the mission of the Brain Research Foundation through awareness and educational activities. In the past year, the Associate Board raised more than \$57,000 through its fundraising events and introduced the Foundation to their guests at these events.

The BRF Associate Board Welcomes Two New Members



Liza Dorsey's grandfather, Clint Frank, was one of the BRF's lay founders in the 1950s. Liza hopes to

increase awareness about the Foundation in the New York area. A registered nurse with a perinatal specialty, Dorsey is particularly interested in fetal brain development in utero.



Ryan A. Cordier is a senior analyst with Golub Capital in Chicago. He is interested in promoting awareness

of neurological diseases—such as ADHD, dyslexia, depression and anxiety—that challenge the educational development of children and adolescents.

The Bank of America Chicago Marathon will be held on October 9, 2011. Through the Associate Board, the Brain Research Foundation is listed as a charity to benefit from participating runners. While the BRF will not have a team in the race this year, runners can direct their family and friends to the BRF website to sponsor them.

Upcoming Associate Board Event

Rockin' on the River
August 19, 2011 6:00 p.m

Riverwalk Terrace & Cafe
401 N. Michigan Avenue,

An evening reception featuring live music, drinks, food and friends of the BRF.

To purchase tickets online go to www.theBRF.org/Pages/Events.





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Funding News

Distinguished Researcher Grants to be Introduced in 2012

In an ongoing effort to help fill neuroscience research funding gaps, the BRF will offer two \$150,000 grants in 2012. The grants will provide two years of support at \$75,000 per year to help underwrite the cost of creative research by established researchers (those having received at least one major government grant).

The intent of these new awards is to fund extremely cutting-edge projects not eligible for large government grants given their innovative premises. It is expected that these investigations will yield high impact findings that will result in major grants and/or significant publications in leading journals.

The research projects would be linked to the wide array of neurological disorders that the BRF hopes to help better understand, including ADHD, autism, Parkinson's disease, Alzheimer's disease, epilepsy, schizophrenia, mood disorders, ALS, and many others.

"We continue to look for ways that the Foundation can play the most meaningful role in advancing science," said Peter Eschenbach, BRF Trustee and Research Committee Co-chair. "Few funding sources exist for neuroscientists with new ideas lacking data to support their hypotheses. We look forward to these projects resulting in advancements to understanding the brain."

The application process will follow the current seed grant program process with letters of intent being submitted first, followed by invitations for full applications.



BRF's 2011 Annual Discovery
Dinner will take place on
November 1, 2011 at the Four
Seasons Hotel Chicago. Please
plan to join us.