BRAIN& BEHAVIOR RESEARCH FOUNDATION

2017 ANNUAL REPORT

Awarding research grants to develop improved treatments, cures, and methods of prevention for mental illness.



Awarding NARSAD Grants

FROM DISCOVERY TO RECOVERY

Mission

The Brain & Behavior Research Foundation (BBRF) is committed to alleviating the suffering caused by mental illness by awarding grants that will lead to advances and breakthroughs in scientific research.

Vision

To dramatically improve the lives of those living with mental illness and ultimately enable them to live full, happy, and productive lives.

100% of all donor contributions for research are invested in grants that lead to discoveries in understanding the causes and improving treatments for brain and behavior disorders in children and adults including addiction, ADHD, anxiety, autism, bipolar disorder, borderline personality disorder, depression, eating disorders, OCD, PTSD, schizophrenia, and suicide prevention.

For 30 years we have awarded more than \$380 million, to more than 4,500 scientists carefully selected by our prestigious Scientific Council.

BBRF GRANTS SUPPORT THE MOST PROMISING IDEAS IN BRAIN RESEARCH.

We invest in:

Basic Research to understand what happens in the brain to cause mental illness

New Technologies

to advance or create new ways of studying and understanding the brain

Diagnostic Tools And Early Intervention

to recognize early signs of mental illness and begin treatment as early as possible

Next-Generation Therapies

to reduce symptoms of mental illness and ultimately prevent and cure brain and behavior disorders

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BY THE NUMBERS SINCE 1987

As of June 2018

AWARDED TO SCIENTISTS 6 6 6 6 6 6 6 6

GRANTS

5,500+

The breakdown of our grantees since 1987

4,282 Young Investigators

- 828 Independent Investigators
- 426 Distinguished Investigators

UNIVERSITIES & MEDICAL CENTERS

550

COUNTRIES, INCLUDING THE U.S.

35

175 ACTIVE SCIENTIFIC COUNCIL MEMBERS (AND 7 EMERITUS MEMBERS)

The all-volunteer Foundation Scientific Council is composed of leading experts across disciplines in brain & behavior research who review grant applications and recommend the most promising ideas to fund.

The group includes:

- 52 Members of the National Academy of Medicine
- 26 Chairs of Psychiatry & Neuroscience Departments
- 13 Members of the National Academy of Sciences
- 4 Recipients of the National Medal of Science
- 2 Former Directors of the National Institute of Mental Health and the Current Director
- 2 Nobel Prize Winners

Dear Brain & Behavior Research Foundation Supporters:

Since 1987, the Brain & Behavior Research Foundation has invested in the future. We support innovative brain and behavior research today which will lead to new treatments, cures, and methods of prevention. We are proud to present you with our 2017 Annual Report.

BBRF is Leading The World... In Charitable Funding of Research Grants for Mental Illness

The Brain & Behavior Research Foundation is the largest nongovernmental funder of mental health research grants in the world. With our operating expenses covered by separate foundation grants, **100 percent of every dollar donated** for research is invested in research grants.

Now, three decades since our inception, we have awarded more than:

- \$380 million, in more than 5,500 grants, to more than 4,500 researchers, from 550 institutions in 35 countries around the world.
- \$19 million in grants in 2017 divided between our 17 Distinguished Investigators, 80 Independent Investigators and 400 Young Investigators.

The Brain & Behavior Research Foundation's sustained commitment to research over the past 30 years and its plan for progress in the years ahead is empowered by a remarkable collaboration between our donors and the worldwide leaders in brain science.

BBRF is Advancing Recovery... Through Our Research Grants

Funding the most promising and cutting-edge research is at the core of our mission. Supporting young scientists' careers and keeping them in the field of neuroscience is vital to finding cures for mental illness. Communicating research results and sharing insights is also vitally important to our mission.

The pathway to the future of scientific research and discovery is a challenging and lengthy process, but we remain committed to funding "innovative and out of the box" ideas because it is this cutting-edge research that will eventually result in new treatments and cures for brain and behavior disorders.

BBRF is Accelerating Discovery... In Genetics, Molecular Biology, Brain Imaging, Early Interventions, and Rapid-Acting Medications

The achievements of our grantees are rooted in fostering a researcher's career in brain science.

A survey of our grantees revealed that Foundation grants increased a researcher's ability to secure additional grant support. BBRF grants result in subsequent funding (both federal and private) and the more than \$380 million in grants awarded to date has resulted in more than \$3.8 billion in additional brain research funding for these scientists.

A recent RAND Europe analysis of the global mental health research funding landscape found that we are the top non-governmental funder cited in published articles.

Results from the investigations funded by our grants continue to define the leading edge of all research in the mental health field and once again, this past year proved to be a year of advancement.

The research findings we report on pages 8-19 in this annual report would not be possible without the extraordinary volunteer effort and leadership of our Scientific Council. This prestigious group of scientists steers the Foundation's grants selection process. We are proud to report that 12 distinguished experts joined the Scientific Council this year, bringing our total number to 175. Our new members are highlighted on page 22.

BBRF is Informing the Public... About the Research Progress Which We Support in the Field of Mental Health

This past year the Foundation continued its longstanding commitment to public education with its annual International Mental Health Research Symposium (highlighted on page 46), which offered complimentary general admission to hear presentations from the Foundation's 2017 Outstanding Achievement Prizewinners and two exceptional Young Investigator Grantees, on topics ranging from schizophrenia and addiction to childhood interventions and the brain circuitry behind mood disorders. These presentations are available online.

The "Meet the Scientist" webinar series had more than 5,800

attendees from more than 52 countries register to watch the program and post event, the series received more than 22,000 views of the 2017 webinars on our YouTube channel. These public events combined with our private fundraising events, and our ongoing communications continually disseminate grantee research discoveries and share stories of hope and recovery. Information is available 24/7 on our redesigned and continuously updated website, bbrfoundation.org, and on our social media channels which include Facebook, Twitter, Instagram, LinkedIn and YouTube.

The Foundation's publication, Brain & Behavior Magazine, has a circulation of more than 19,000 and can also be found in the media section of our website under publications.

The Foundation produces the Emmy Award-nominated public television series *Healthy Minds* which aims to remove the stigma of mental illness, educate the public and offer a message of hope by shedding light on common psychiatric conditions through inspiring personal stories and experts sharing cutting edge information on research and treatment. The goal of *Healthy Minds* is to inspire conversations about mental illness, and provide understandable information and resources for viewers.

BBRF and the Future

We are excited about recent technological advances that have made possible experiments that would have seemed like science fiction 30 years ago. The Foundation is proud of the accomplishments of the scientists we fund and we are excited to focus on their promising paths of discovery. New donors, both large and small, have come forward to join us as our message spreads. Each year we are continually touched by the tributes and memorial gifts given by families who have lost loved ones to psychiatric illness.

We promise our donors that we will keep propelling forward. Our Scientific Council will continue to identify the most creative proposals for funding, helping to accelerate the pace of research and will focus on new approaches with the greatest potential for breakthroughs. In contributing to BBRF you are supporting both an impressive history of achievements that have advanced science and are paving the way forward to change what it means to live with a mental illness and open possibilities for more people to live full, happy, and productive lives. We thank you for your ongoing support to help us get closer to realizing this vision.

Sincerely,



Jeffrey Borenstein, M.D. President & CEO



Stephen A. Lieber Chair, Board of Directors



Herbert Pardes, M.D. President, Scientific Council

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2017 LEADING RESEARCH ACHIEVEMENTS BY FOUNDATION GRANTEES

"These research achievements were selected for highlight because of their significant contributions to our understanding of brain and behavior disorders as well as potential new treatments. This list illustrates some of the major research achievements by our grantees over the past year. We are proud to be able to say that our grants make critical differences in the careers of scientists and have helped support a broad range of the best ideas in brain research and that our grantees have taken substantial steps forward on the path to developing new treatments and finding cures for mental illness."

—Jeffrey Borenstein, M.D.

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Listed in order of publication





Next-Generation Therapies: Psychosis, Schizophrenia

Jimmy Choi, Psy.D. *The Institute of Living at Hartford Hospital, Connecticut*

2010 Young Investigator

Neurofeedback App Improves Early Cognitive Deficit in People with High Psychosis Risk

Problems with mental processing speed are common among people at high risk for psychosis, and are thought to be related to broader deficits in social functioning. In a new clinical trial, researchers enhanced participants' processing speed using a neurofeedback training program and saw improvements in social behaviors, they report in *Psychiatric Rehabilitation Journal*.

Processing speed is a measure of cognitive efficiency and it involves the ability to effortlessly perform routine cognitive tasks so as to free up processing capacity for other tasks. Low processing speed would reduce the ability to simultaneously handle multiple cognitive chores, such as processing social cues. This, researchers say, gives the impression that the person is a "step behind" in a social situation, and may ultimately lead to social isolation.

Teenagers and young adults at high risk for schizophrenia have been found to show processing speed impairments early on, before exhibiting any psychotic symptoms. In a randomized clinical trial with 62 people at high risk for psychosis, Jimmy Choi, Psy.D., of The Institute of Living at Hartford Hospital in Connecticut and a 2010 Young Investigator grantee, and his colleagues* tested the feasibility and outcome of improving processing speed through a personalized training program. The processing-speed training was done using a tablet-based program, in which the difficulty levels of training tasks are personalized. The program tracks participants' eyes and uses their pupillary responses to determine the difficulty of a task. The program then uses this information to adjust training parameters in real-time and change the cognitive load of the task. This results in a personalized and efficient training program. The results of the training showed that not only it is possible to improve processing speed, but that the effects remain up to at least two months. Moreover, improvement in processing speed was linked to better social functioning, as reported by the participants.

Addressing cognitive deficits in high-risk individuals early on could reduce functional decline later if they go on to develop full-blown psychosis. The results of this clinical trial suggest that targeting processing speed can be a promising approach to decreasing comorbidity and mitigating a risk factor for psychosis, the researchers say.

Journal: Psychiatric Rehabilitation Journal, February 15, 2017

*The research team also included Cheryl Corcoran, M.D., of Columbia University Medical Center and a Young Investigator grantee in 1999, 2002; Daniel C. Javitt, M.D., Ph.D., of Columbia University Medical Center, who is a 1990 Young Investigator grantee and 1995 Independent Investigator grantee, as well as a member of the Foundation's Scientific Council; and Godfrey D. Pearlson, M.D., of The Institute of Living at Hartford Hospital, who is a 2000 Distinguished Investigator Grantee and a member of the Scientific Council.



Basic Research: Bipolar Disorder, Suicide Prevention

Hilary P. Blumberg, M.D. Yale University School of Medicine

Foundation Scientific Council Member

2006 Klerman Prizewinner 2006 Independent Investigator 2002 Young Investigator

Brain Abnormalities Linked to Suicidal Behavior in Young People with Bipolar Disorder

A new study of adolescents and young adults with bipolar disorder has found structural and functional differences in the brains of those with the disorder who have attempted suicide and those who have not. It has been estimated that about half of people who have bipolar disorder make at least one suicide attempt in their lifetime. The differences uncovered in the study could help researchers identify young people who are at greatest risk.

Although people with bipolar disorder tend to start having suicidal thoughts in adolescence or young adulthood–when parts of the brain involved in emotional processing are still maturing–few studies have examined neural circuitry associated with suicidal behavior in individuals at this age.

In the new study, published January 31 in the *American Journal of Psychiatry*, researchers led by Hilary P. Blumberg, M.D., used several different types of magnetic resonance imaging (MRI) to study the brains of people with bipolar disorder between the ages of 14 and 25, comparing 26 individuals who had attempted suicide to 42 who had not. Dr. Blumberg is a 2002 Young Investigator, 2006 Independent Investigator, BBRF Scientific Council member and 2006 Klerman Prizewinner.

The team, which included 2008 and 2012 Young Investigator Fei Wang, Ph.D., and 2016 Young Investigator Jie Liu, Ph.D., found that among those who had attempted suicide, parts of the brain that regulate emotion and impulses were smaller in size and less active than they were in the other study participants. The white matter connecting those brain regions was also diminished in those who

had attempted suicide. Abnormalities in these brain regions have also been observed in adults with various psychiatric disorders who have attempted suicide.

Zeroing in on the neural systems that underlie suicidal behavior is critical for developing new strategies for prevention, the researchers say. Their findings could help researchers develop interventions that aim to prevent suicide by improving function of these disrupted brain circuits.

Journal: American Journal of Psychiatry, February 21, 2017



Diagnostic Tools & Early Intervention: Depression

Conor Liston, M.D. *Weill Cornell Medical College*

2016 Freedman Prize Honorable Mention 2013 Young Investigator

Discovery of Four Depression "Biotypes" Could Help Target Treatments

Tests for various substances in the blood are one example of the power of "biomarkers," measurable biological traits that tell doctors a patient either has or is at risk for a particular illness. While such tests so far have mostly eluded psychiatry, a large new brain-scan study identified four categories of biological activity, or "biotypes," of depression that may help doctors choose more effective treatments – just as a blood test might guide treatment of a cancer or heart disease.

When researchers used a machine learning program to divide over 450 depression patients into categories based on biomarkers in their brain activity patterns, they found four categories associated with distinct sets of clinical symptoms, according to their report in the journal *Nature Medicine*.

Strikingly, patients in one of these four categories were about three times more likely to respond to a noninvasive treatment known as transcranial magnetic stimulation (TMS) than patients in two of the other categories. TMS is a therapy in which magnetic fields stimulate specific regions of the brain, and has been particularly useful in cases of treatment-resistant depression.

Many of the scientists* on the team have received support from the BBRF during their careers. The lead investigator on the study, Conor Liston, M.D., is a 2013 Young Investigator grantee.

The team used functional magnetic resonance imaging (fMRI), a type of noninvasive brain scan that measures brain activity, to look for patterns in patients' brains while in the "resting state"—

the brain's state of activity when not engaged in a conscious task, like reading. They examined how 258 different brain areas interacted with one another while in the resting state, and these brain circuit-level differences revealed four biotypes of depression.

Brains of patients who had depressive anxiety tended to have fewer connections in the brain networks involved in responses to fear and negative emotional stimuli. Those with difficulty feeling pleasure, a condition called anhedonia, had more connections in networks that regulate reward processing and control over movement.

Noting that "biomarkers have already transformed the diagnosis and management of cancer, diabetes, heart disease and even pain syndromes," the researchers express hope that the biotypes they have identified will allow doctors to more specifically diagnose depression and determine the most effective treatment plan.

Journal: Nature Medicine, April 10, 2017

*Other BBRF grantees on the research team included: Scientific Council Member, 2015 Ruane Prizewinner BJ Casey, Ph.D.; 2010 Young Investigator Marc J. Dubin, M.D., Ph.D.; 2016 Young Investigator Amit Etkin, M.D., Ph.D.; 2012 and 2009 Young Investigator Jennifer Keller, Ph.D.; Scientific Council Member, 1995 Independent Investigator and 1991 Young Investigator Helen S. Mayberg, M.D.; 2016 Young Investigator Desmond Jay Oathes, Ph.D.; 2002 Distinguished Investigator and 1998 Independent Investigator Alvaro Pascual-Leone, M.D., Ph.D.; and Scientific Council Member, 2005 Falcone Prizewinner Alan F. Schatzberg, M.D.



André R. Brunoni, M.D., Ph.D. University of São Paulo, Brazil

2013 Young Investigator



Z. Jeff Daskalakis, M.D., Ph.D. Centre for Addiction and Mental Health, University of Toronto, Canada

Foundation Scientific Council Member

2008 Independent Investigator 2006, 2004 Young Investigator

Deep Transcranial Magnetic Stimulation (dTMS) Could Help Treat Bipolar Depression

Deep transcranial magnetic stimulation (dTMS), a non-invasive procedure that uses magnetic fields to stimulate brain cells, may be useful when added to medication to treat bipolar depression, according to a February 1 study published in the journal *Neuropsychopharmacology*.

If these new results are confirmed in further studies, dTMS could join the limited options available for treating bipolar depression, in which resistance to treatment is two times higher than in major (unipolar) depression. dTMS has already been shown to improve symptoms in patients with major depression.

The study of dTMS in bipolar depression was led by Dr. André R. Brunoni, of the University of São Paulo, Brazil, a 2013 Young Investigator, and included Z. Jeff Daskalakis, M.D., Ph.D., of the Centre for Addiction and Mental Health, University of Toronto, a recipient of 2004 and 2006 Young Investigator awards and a 2008 Independent Investigator award.

The study included 50 patients with bipolar depression who were also currently taking psychiatric medication for their condition. In 20 sessions held over four weeks, half of the patients received dTMS, which was delivered by an electrical coil inside a helmet worn by the participants. The other half of the patients received a "placebo" treatment; that is, all the conditions were the same as for the dTMS group, except that the placebo patients wore a helmet with a coil that did not generate magnetic fields but produced the same sounds and scalp sensations as the active coil. Forty-three patients completed the study. After four weeks, patients who received dTMS scored an average of 4.88 points better on a survey measuring depression symptoms than those who received the placebo treatment. (A three-point difference is considered to be a clinically meaningful difference, according to the National Institute of Clinical Excellence). Patients who received dTMS also showed a significant improvement in overall functioning after four weeks, compared to the placebo group. However, the differences between groups in depression symptoms and functioning had disappeared by eight weeks after the start of treatment, and there were no significant differences in remission rates between the groups.

Patients who received dTMS reported more scalp pain than those in the placebo group, but there were no other differences in treatment side effects. None of the patients developed mania symptoms after the treatment (a condition called treatment-emergent mania switch or TEMS), which can occur in dTMS treatment. The results suggest that dTMS could be an effective and well-tolerated "add-on" therapy for patients with bipolar depression already taking medication, the researchers conclude, noting that these patients may also benefit from a longer initial dTMS treatment program or maintenance treatments after the first treatment program.

The medical device company Brainsway provided financial support and the dTMS devices for the study.

Journal: Neuropsychopharmacology, April 26, 2017





Next-Generation Therapies: OCD

Carolyn I. Rodriguez, M.D., Ph.D. Stanford University School of Medicine

2017 Klerman Prize Honorable Mention 2014, 2009 Young Investigator



Helen Blair Simpson, M.D., Ph.D. Columbia University College of Physicians and Surgeons

2010 Independent Investigator 2005 Young Investigator

Early Test Shows: Experimental Drug May Have Potential to Relieve OCD Symptoms Quickly and with Few Side Effects

According to a new study, rapastinel, an experimental drug currently being evaluated for the treatment for major depression, may relieve the symptoms of obsessive-compulsive disorder (OCD) rapidly and with few side effects.

Results of the small proof-of-concept study, led by 2009 and 2014 Young Investigator Carolyn I. Rodriguez, M.D., Ph.D., at Stanford University School of Medicine, were reported December 1, 2016 in *The American Journal of Psychiatry*. Helen Blair Simpson, M.D., Ph.D., a 2005 Young Investigator and 2010 Independent Investigator at Columbia University College of Physicians and Surgeons, was also a member of the research team.

Rodriguez and her colleagues are investigating rapastinel because they previously found that some OCD patients receive rapid relief from their symptoms when treated with ketamine. Ketamine has long been used as an anesthetic, and in recent years researchers have found that it can also rapidly relieve symptoms of depression. However, the drug's side effects, which include a feeling of dissociation—a sense of detachment from one's self, or an "out-of-body" experience—are a challenge for broad clinical use in treating psychiatric disorders.

Hoping to find a treatment that reduces patients' obsessions and compulsions quickly without dissociative side effects, Rodriguez and her colleagues have turned to rapastinel. It, like ketamine, is a drug that modulates the action of NMDA receptors in the braindocking ports for the neurotransmitter glutamate and important in learning, memory and synaptic plasticity and thought to play a role in OCD. But rapastinel works differently than ketamine and has a lower risk of causing dissociative side effects, the researchers say.

Seven people with OCD participated in the team's initial clinical study. Each was given a single dose of rapastinel. The drug was well tolerated—no patient reported dissociative side effects—and within hours of treatment, the severity of patients' symptoms had declined significantly. The drug reduced the severity of patients' obsessions and compulsions, as well as symptoms of anxiety and depression, the researchers report.

While rapastinel's effects on OCD symptoms were rapid, they were not long-lasting. When the research team evaluated patients one week after treatment, symptoms were about as severe as they had been prior to treatment. The scientists say important next steps will be testing the effects of repeated dosing and working to develop related drugs that reduce OCD symptoms over a sustained period.

Journal: American Journal of Psychiatry, May 22, 2017



Next-Generation Therapies: Depression

Abraham A. Palmer, Ph.D. *University of California, San Diego*

2006, 2003 Young Investigator

Animal Studies Suggest a New Path to Fast-Acting Antidepressant

Animal research reported on March 21 in the journal *Molecular Psychiatry* has uncovered a drug development strategy that could lead to a new type of antidepressant medication. The study suggests that inhibiting an enzyme called GLO1 could have fast-acting antidepressant effects, relieving patients' symptoms in a matter of days. Existing antidepressant medications can take weeks or months to become fully effective, and do not help a considerable fraction of patients. Finding other, faster-acting alternatives is a high priority.

The study was led by Abraham A. Palmer, Ph.D., a 2003 and 2006 Young Investigator at the University of California, San Diego (UCSD). Dr. Palmer and his colleagues had previously discovered that inhibiting GLO1 can reduce anxiety-like behaviors in mice, and several studies have hinted that overactivity of GLO1 might also contribute to depression. So the team was curious whether inhibiting the enzyme might be an effective way to treat major depression.

The researchers* reduced the activity of GLO1 in mice, by genetic manipulation or by administering two different GLO1-inhibiting chemicals.

Then they evaluated the animals' behavior. They used several established tests to measure depression-like behavior in the animals, such as observing how hard they tried to escape difficult situations and how they coped with chronic mild stress. They performed the same tests with untreated mice and also with mice given the popular antidepressant medication fluoxetine (Prozac). Depression-like behaviors declined within five days of treatment for the animals in which GLO1 had been inhibited. Depression-like behaviors also declined in animals that were given Prozac, but for this group, it took two weeks for the antidepressant to take effect. The scientists say inhibiting GLO1 likely increases the level of a brain chemical called methylglyoxal, which influences neural signaling. They are now working with medicinal chemists to try to develop better GLO1-inhibiting compounds. These could give rise to a new, faster-acting treatment for depression, the team says. With further research, this may become a new strategy for treating depression.

Journal: Molecular Psychiatry, June 12, 2017

*Other BBRF grantees on the research team included: 2016 Independent Investigator, 2012 and 2007 Young Investigator Stephanie Dulawa, Ph.D.; and 2016 Young Investigator Marcia J. Ramaker, Ph.D.





New Technology: Autism, Schizophrenia

Sergiu P. Pasca, M.D. *Stanford University*

2017 Independent Investigator 2012 Young Investigator

New Technique Lets Researchers Watch Human Brain Circuits Begin to Wire-Up

Scientists have devised a new system that lets them watch human neurons grown in the lab find and form connections with their signaling partners, an essential process in developing human brains. The processing of "wiring up" is thought to go awry in a number of serious disorders, including autism, epilepsy and schizophrenia– but it's hard to study.

The new technique, published May 4 in *Nature*, focused on the connections formed by cells called interneurons. These neurons are key components of circuits in the brain's cerebral cortex. They spend months growing and migrating to their destinations during fetal development, and in the cortex play an indispensable inhibitory, or "braking," role in communication between neurons.

To make it possible to watch interneurons migrate and begin to wire up with other cells, researchers led by Sergiu P. Pasca, M.D., a 2012 Young Investigator and a 2017 Independent Investigator at Stanford University, developed a system to recreate those processes in a lab dish. Dr. Pasca and his team* first reprogrammed human skin cells to grow into tiny balls of tissue, or brain spheroids, made up of specific types of neurons. They grew spheroids of interneurons and spheroids of the excitatory neurons to which interneurons connect in the brain.

They then fused the two types of spheroids together and watched the cells interact. The interneurons migrated toward cells in the other spheroid, then changed their shape and began forming connections with the excitatory cells.

In an experiment in which the neuron spheroids were derived from cells donated by patients with Timothy syndrome, a genetic form of autism and epilepsy, interneurons did not migrate normally toward the excitatory cells. The cells did migrate properly, however, when they were treated with a drug that blocks a receptor located on the surface of neurons that channels calcium atoms.

Overactivity of these channels is associated with Timothy syndrome. The brain-region specific spheroid system will be a useful model for studying such developmental abnormalities and their role in psychiatric disorders, the scientists say, and to build other brain circuits in a dish.

Journal: Nature, July 18, 2017

*Other BBRF grantees on the research team included 1991 Young Investigator Joachim F. Hallmayer, M.D. 8.



Next-Generation Therapies: Depression, Suicide Prevention

Samuel Wilkinson, M.D. Yale University School of Medicine

2016 Young Investigator

Ketamine Rapidly Reduced Suicidal Thoughts in People with Depression

A single dose of ketamine, the anesthetic drug that has been found to have fast-acting antidepressant effects, can significantly reduce suicidal thoughts in patients with depression for up to a week, according to a new analysis.

The findings, published online October 3, 2017 in the *American Journal of Psychiatry*, come from data on 167 patients who participated in any of 10 previous studies on ketamine's effects. All of the patients studied received a single dose of the drug or a control drug, administered intravenously. This "meta-analysis"–a study of multiple other studies – suggests that the drug not only reduces patients' overall depression; it also appears to be particularly effective at countering suicidal thoughts.

Ketamine's use as an antidepressant is experimental. Scientists have discovered that low doses of the drug can relieve symptoms of depression within hours. Because ketamine is an old drug and is no longer protected by patent, it is unlikely to be tested in large clinical trials that are required for FDA approval. But researchers note that it can be particularly effective as a rapid antidepressant and can rapidly reduce suicidal thinking. Multiple research efforts are devoted to inventing a ketamine-like drug that has its antidepressant potency but lacks its side effects.

In the current study, researchers* led by 2016 Young Investigator Samuel T. Wilkinson, M.D., at Yale School of Medicine, collected and analyzed data from past studies with the goal of better understanding ketamine's acute effects on patients who are experiencing significant thoughts of suicide.

Participants in the 10 studies included in the new analysis had been diagnosed with a range of psychiatric conditions, including major depression and bipolar disorder. Dr. Wilkinson and his colleagues focused on those participants who reported suicidal thoughts at the time of their trial. They analyzed ketamine's effects upon both suicidal thoughts and scores on standard clinical depression scales, comparing patients' responses to the drug to those of patients in control groups who received either saline or the anesthetic midazolam as a placebo.

The team found that both suicidal thoughts and overall depression were relieved significantly by ketamine; more than half were free of suicidal thoughts within 24 hours of their treatment. These benefits persisted for up to a week—the latest time point considered in the analysis.

Overall, those whose depression diminished the most experienced the greatest reductions in suicidal thoughts, but the researchers found that ketamine's effects on suicidal ideation were significant even after controlling for changes in depression severity. This means the drug's effects on this critical aspect of depression may be partially independent from its effects on mood, they say. This will undoubtedly be the focus of future research.

Journal: American Journal of Psychiatry, October 10, 2017

*Other BBRF grantees on the research team included: 2013 and 2009 Young Investigator Michael H. Bloch, M.D., M.S.; 2015 Independent Investigator and 2002 Young Investigator Adriana Feder, M.D.; 2009 Independent Investigator, 2006 and 2001 Young Investigator Sanjay J. Mathew, M.D.; 2009 Young Investigator James W. Murrough, M.D., Ph.D.; 2014 Distinguished Investigator, 2007 Independent Investigator and a 2001 and 1999 Young Investigator Gerard Sanacora, M.D., Ph.D.; and 2011 Bipolar Mood Disorders Awardee, 2005 Independent Investigator and 1996 Young Investigator Carlos A. Zarate, Jr., M.D.





Next-Generation Therapies: Bipolar Disorder, Depression

Dorothy K.Y. Sit, M.D. Northwestern University

2013, 2002 Young Investigator



Katherine L. Wisner, M.D., M.S. *Northwestern University*

1998 Independent Investigator

Study Shows Exposure to Bright Light at Midday Reduces Depression in Patients with Bipolar Disorder

Light therapy can be an effective treatment for seasonal depression, but there has been concern that the treatment might induce mania in people with bipolar disorder. Participants in the new trial did not experience any manic episodes, despite daily exposure to bright light.

The study, published in the *American Journal of Psychiatry*, was led by 2013 and 2002 Young Investigator Dorothy K.Y. Sit, M.D., and 1998 Independent Investigator Katherine L. Wisner, M.D., M.S., both at Northwestern University.

Forty-six patients participated in the study. All had been diagnosed with bipolar disorder and were taking medication to manage the illness. At the time of the study, which for most participants began in the fall or winter, all patients were suffering from an episode of moderate depression.

Trial participants were randomly assigned to receive daily treatments of either bright white light or dim red light, with the red light serving as a placebo. Treatments were administered midday, beginning with 15 minutes of light exposure and increasing daily until treatments reached a duration of one hour. The light dose was similar to that used to treat seasonal affective disorder.

After six weeks of treatment, 68 percent of those who received bright light therapy experienced a remission of their depression. In contrast, only 22 percent of those in the placebo group achieved remission. In an earlier study involving some of the same patients, Dr. Sit and colleagues tested the effects of administering light therapy in the morning, and found that some patients responded with episodes of mania. Timing of light exposure may be critical for managing depression in patients with bipolar disorder, they say.

Journal: American Journal of Psychiatry, October 16, 2017



Next-Generation Therapies: Bipolar Disorder, Depression

Michael Howard Bloch, M.D., M.S. *Yale Child Study Center*

2013, 2009 Young Investigator

New Analysis Finds Behavioral Therapy Should Be Combined with Medication to Relieve Severe Anxiety in Children

Both therapy and anti-anxiety medications can help relieve the symptoms of anxiety in children and adolescents. According to new findings reported October 2 in the Journal of *Clinical Child & Adolescent Psychology*, however, children whose anxiety symptoms are severe likely need both.

The study, led by Michael H. Bloch, M.D., M.S., a 2013 and 2009 Young Investigator and Associate Professor in the Yale Child Study Center, and his Yale colleague Professor Wendy K. Silverman, Ph.D., is a more detailed analysis of a previously reported trial in which children and adolescents with anxiety disorders were randomly assigned to receive either cognitive behavioral therapy (CBT), the antidepressant medication sertraline (Zoloft), a combination of sertraline and CBT, or a placebo.

While behavioral therapy combined with medication was found to be most effective, the groups who received only CBT or sertraline also experienced an overall decline in anxiety symptoms after 12 weeks of treatment.

Based on those findings, which were reported in 2008, many doctors and parents have chosen behavioral therapy alone as a first-line treatment for childhood anxiety. After taking a closer look at the data, however, Dr. Bloch and colleagues, including 2017 Young Investigator Jerome H. Taylor, M.D., at the University of Pennsylvania and 2013 Young Investigator Eli R. Lebowitz, Ph.D., at Yale University, say patients with severe symptoms may be better off beginning with combination therapy. Of the 448 children and adolescents with generalized, social, or separation anxiety disorders who participated in the trial, 220 had symptoms that were considered severe. The team found that these patients achieved remission during the trial only if they received a combination of sertraline and CBT. For individuals with severe anxiety, remission rates following medication or behavioral therapy alone were similar to those of study participants who received a placebo.

The team also investigated factors that might make children more or less likely to respond to treatment. They found that anxiety was most resistant to treatment in children from lower socioeconomic backgrounds and in those who had been diagnosed with obsessive-compulsive disorder (OCD).

Journal: *Journal of Clinical Child & Adolescent Psychology*, November 14, 2017

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The Scientific Council guides the Foundation to fund creative and impactful research relevant to the whole spectrum of mental health.

We welcome our newest members.

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-Dr. Herbert Pardes



CARRIE E. BEARDEN, PH.D. received her Ph.D. in Clinical Psychology from the University of Pennsylvania and joined the UCLA faculty in 2003. Currently, she is a Professor (George and Joanne Miller Family Endowed Term Chair) at the Semel Institute for Neuroscience and Human Behavior, with a joint appointment in the Department of Psychology at UCLA. Dr. Bearden's research aims to understand neurobiological risk factors for the development of serious mental illness, using converging methods to study cognition and neuroanatomy in clinical high-risk samples (e.g., adolescents with early symptoms of psychosis), and in highly penetrant genetic subtypes of the illness. Her recent work focuses on translational approaches to understanding disrupted brain circuitry in developmental neuropsychiatric disorders, particularly in the context of unique genetic populations. She is the Director of the Staglin Music Festival Center for the Assessment and Prevention of Prodromal States (CAPPS), and is the UCLA Principal Investigator of the multi-site North American Prodromal Longitudinal Study (NAPLS) Consortium. She also co-directs a Neurobehavioral Genetics Training Grant at UCLA, serves on the DSM-V Revision Committee, and on the Editorial Boards of Biological Psychiatry, Neuropsychology and Schizophrenia Bulletin. Dr. Bearden has received numerous awards and honors, both for her research achievements and for teaching and mentorship.

"I am particularly honored to join the Scientific Council because the Foundation was essential for launching my career as an independent scientist. I am forever grateful for the opportunity that first Young Investigator grant gave me, and am excited to play a larger role in the society that had faith in me 'way back when."



ANTONELLO BONCI, M.D. joined the

National Institutes of Health (NIH) in 2010 as Scientific Director of the National Institute on Drug Abuse (NIDA). Dr. Bonci's laboratory was the first to demonstrate that drugs of abuse such as cocaine produce long-lasting modifications on the strength of the connections between neurons. This form of cellular memory is called long-term potentiation (LTP). This finding cast a new light on the phenomenon of drug addiction, which may represent a process of maladaptive learning and memory at the cellular level. In turn, this information helped explain why drug taking can often become such a long-lasting phenomenon. Subsequently, his work has used a combination of electrophysiology, optogenetic, molecular and behavioral procedures to keep on studying the basic cellular mechanisms and circuits underlying stress, reward and substance use disorders. His lab is currently developing an optogenetic-based treatment against cocaine use disorders, by using a non-invasive technique called transcranial magnetic stimulation.

"I'm honored to serve the Foundation because I've admired for many years the Foundation's extraordinary work and commitment toward helping scientists."



EDWARD THOMAS BULLMORE, MB, PH.D., FRCP, FRCPSYCH, FMEDSCI

trained in medicine at the University of Oxford and St. Bartholomew's Hospital, London; then in psychiatry at the Bethlem Royal & Maudsley Hospital, London. He moved to Cambridge as Professor of Psychiatry in 1999 and is currently Scientific Director of the Wolfson Brain Imaging Centre, and Head of the Department of Psychiatry, in the University. He is also an honorary Consultant Psychiatrist and Director of R&D in Cambridgeshire & Peterborough Foundation NHS Trust; and, since 2005, he has worked half-time for GlaxoSmithKline, currently focusing on immuno-psychiatry. He has published more than 500 scientific papers and his work on brain network science and brain imaging has been highly cited. He has been elected a Fellow of the Royal College of Physicians, the Royal College of Psychiatrists, and the Academy of Medical Sciences.

"I joined the Council because I believe in the mission of BBRF, and think BBRF does a great job in funding mental health research that is generally under-funded in proportion to the level of unmet clinical need. I was attracted to serve alongside the outstanding clinicians and scientists already on Council."

"The Foundation is a driving force in advancing the understanding of mental illness, and we are able to do that thanks to the generosity of our donors and the dedication of our Scientific Council members. Over the past 30 years, they have reviewed more than 25,000 grant applications."

 ²⁰⁰⁴ Distinguished Investigator

⁻Dr. Jeffrey Borenstein





TYRONE D. CANNON, PH.D. is the Clark L. Hull Professor of Psychology and Professor of Psychiatry at Yale University. Dr. Cannon earned his bachelor's degree at Dartmouth College (1985) and his doctoral degree at the University of Southern California (1990). He took his first academic appointment in the Department of Psychology at the University of Pennsylvania, where he advanced to Associate Professor. He joined the faculty at UCLA in 1999 as Professor of Psychology and Psychiatry and Biobehavioral Sciences, before moving to his current position at Yale in 2012. Dr. Cannon's research addresses the interplay between psychological-level phenomena and neurobiological mechanisms as they relate to disturbances of perception, belief, motivation, and emotional processing in people with mental illness, principally schizophrenia. A primary aim of his work is to identify mechanisms underlying the emergence of psychosis during adolescence and early adulthood and to develop effective intervention and prevention strategies targeting these mechanisms.

"I agreed to join the Scientific Council because I am committed to the field of psychiatric disorders and to the development and promotion of junior investigators, and the BBRF contributes substantially to these goals through its research awards programs."

- 2006 Distinguished Investigator
- 1997 Independent Investigator



FRCP(C) is a Professor of Psychiatry, Temerty Chair in Therapeutic Brain Intervention and Chief of the Mood and Anxiety Division at CAMH. The Temerty Centre uses magnetic brain stimulation to study the role of cortical inhibition, plasticity and connectivity as potential pathophysiological mechanisms in schizophrenia, depression and obsessive compulsive disorder. Dr. Daskalakis also conducts treatment studies using repetitive transcranial magnetic brain stimulation (rTMS), magnetic seizure therapy (MST) and electroconvulsive therapy (ECT) for resistant symptoms in these disorders. He has received several national and international awards and distinctions including the Samarthji Lal Award in Mental Health Research from the Graham Boeckh Foundation for the top mid-career neuropsychopharmacology researcher in Canada in 2013. He also holds or has held NIMH and CIHR peerreviewed funding and has also mentored numerous BBRF Young Investigator awardees. Finally, he has over 290 peerreviewed publications, books and book chapters and is an editorial board member for Biological Psychiatry and an Associate Editor for Clinical Neurophysiology.

- "The Brain & Behavior Research Foundation is one of the most coveted and valued awards for any investigator in the field of psychiatry and neuroscience. The Foundation's impact on our field is remarkable and as a previous award winner, there is no greater privilege than to be able to reciprocate the Foundation's generous support by serving on the Scientific Council with some of the greatest luminaries in our field."
- 2008 Independent Investigator
- 2006 & 2004 Young Investigator

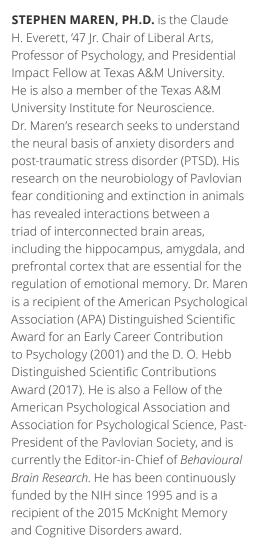


KELVIN LIM, M.D., holds the Drs. T. J. and Ella M. Arneson Land-Grant Chair in Human Behavior at the University of Minnesota where he is a Professor of Psychiatry and Vice Chair for Research. Dr. Lim began his undergraduate work at the Massachusetts Institute of Technology, completing his Bachelor and M.D. degrees at Johns Hopkins University. He completed a psychiatry residency and fellowship in neuroimaging at Stanford University where he also served on the faculty in the Department of Psychiatry. He joined the University of Minnesota in 2001.

"I am honored to join the Foundation's Scientific Council. The Foundation serves a critical role in launching new investigators and catalyzing new research ideas. I know this first hand; my first grant was a Young Investigator Award which was critical to launching my research career. I am delighted to be able to directly support the mission of the Foundation."

• 1999 & 1989 Young Investigator





"It is an honor to join the Foundation Scientific Council to help serve its mission to support the most promising research on the biological basis of mental disorders. I have no doubt that these efforts will go a long way to relieve the burden that mental illness levies on afflicted individuals, their families, and society at large."



VICTORIA RISBROUGH, PH.D. is a

Professor of Psychiatry at the University of California San Diego and Associate Director of Neuroscience for the Center of Excellence for Stress and Mental Health for Veterans Affairs. Her research is centered on translational mechanisms and treatments of anxiety and depression particularly trauma-related disorders. She leads a dual preclinical/clinical research program focusing on identifying mechanisms of risk and resilience to post-traumatic stress disorder, as well as development of new pharmacological treatments for these disorders. Her preclinical laboratory uses behavioral, pharmacological, genetic and molecular techniques to identify genetic and circuit mechanisms of enduring trauma responses. Her clinical work examines mechanisms underlying core disruptions of fear learning and inhibition in traumarelated disorders, as well as development of novel pharmacological treatments targeting these mechanisms. She is on the Scientific Council for the Anxiety and Depression Association of America, is a Member of the American College of Neuropharmacology and is Associate Editor of Neurobiology of Stress.

"Receiving a Young Investigator Award was a major catalyst for me to start my career in PTSD research, and has continued to be so for my trainees. The Foundation is a cornerstone for the neuropsychiatric discipline in nurturing the next generation of scientists that are developing innovative and transformative research programs. I am honored to give back to the foundation that gave me 'a leg up' and encouragement at a critical juncture of my career."

2006 Young Investigator



LAURA M. ROWLAND, PH.D. is an Associate Professor in the Maryland Psychiatric Research Center (MPRC), Department of Psychiatry at the University of Maryland, School of Medicine. She is the Director of the Chemical Imaging Core, housed within the Neuroimaging Research Program at the MPRC and the co-director of the MPRC post-doctoral training program. Supported by NIMH and BBRF, her research focuses on proton magnetic resonance spectroscopy studies of glutamatergic and GABAergic function and bioenergetic alterations in schizophrenia and related disorders. Her research program integrates these in vivo neurochemistry measures with functional paradigms, multimodal neuroimaging, and translational behavioral neuroscience to better understand perceptual and learning mechanisms, aging/illness course, and novel treatments in schizophrenia and related disorders. In addition to research and training, Dr. Rowland currently serves as co-director for the Young Investigator Program for the International Congress on Schizophrenia Research, Associate Editor for Schizophrenia Bulletin, and a member of an NIH study section.

²⁰¹⁷ Independent Investigator

^{• 2006} Young Investigator



VIKAAS SINGH SOHAL, M.D. studied applied mathematics at Harvard and Cambridge before completing his M.D. and Ph.D. degrees at Stanford. During his psychiatry residency at Stanford, he worked with Dr. Karl Deisseroth on some of the first experiments using optogenetics to study the function of brain circuits. In 2010, he started his laboratory at the University of California, San Francisco, which studies how circuits in the prefrontal cortex produce patterns of brain activity that contribute to normal cognition as well as symptoms of psychiatric disorders. Dr. Sohal is a board-certified psychiatrist and continues to see outpatients one half-day each week

"Finding cures for mental illness is incredibly important to me both personally and professionally. Having an opportunity to work with leaders in the field to identify the most promising new directions is an incredible opportunity for me to contribute to this enterprise and keep informed about the most cutting edge research. I have benefited from a Foundation grant in the past, and it played a critical role in helping my lab get off the ground. So, I now I look to helping this organization carry on this essential work."

2009 Young Investigator



FLORA VACCARINO, M.D., PH.D. is

the Harris Professor at the Child Study Center and Professor of Neuroscience at Yale University. She directs the Developmental Neurobiology Laboratory and the Program in Neurodevelopment and Regeneration at Yale University. Her lab uses animal models and human brain tissue to unravel the pathophysiology of neuropsychiatric disorders. She pioneered a "cortical organoid" model, where human brain organoids derived from induced pluripotent stem cells (iPSCs) grown in a tri-dimensional culture recapitulate the early development of the human telencephalon. Dr. Vaccarino participates in the PsychENCODE consortium, and her lab is mapping noncoding RNAs and functional DNA elements in human iPSCs, brain organoids and corresponding postmortem fetal human brain specimens. She is part of the Brain Somatic Mosaicism Network, a NIMH-sponsored consortium that studies somatic genomic variation in neurodevelopmental disorders. Dr. Vaccarino is a member of the Kavli Institute for Neuroscience at Yale and Fellow of the American Association for the Advancement of Science.

"I have been helped by the Foundation in the crucial transition between training and independence. I would like to contribute to the continued effort of the Foundation to help meritorious scientists studying the biological basis of neuropsychiatric disorders in their career trajectory."

- 2011 Distinguished Investigator
- 2003 & 2000 Independent Investigator
- 1994 & 1990 Young Investigator



JEREMY VEENSTRA-VANDERWEELE,

M.D. is the Mortimer D. Sackler, MD, Professor, and Director of the Division of Child and Adolescent Psychiatry at Columbia University and the New York State Psychiatric Institute. He is a child and adolescent psychiatrist who uses molecular and translational neuroscience research tools in the pursuit of new treatments for autism spectrum disorder and pediatric obsessive compulsive disorder. His molecular laboratory focuses on the serotonin transporter and neuronal glutamate transporter in genetic mouse models with abnormal social or compulsive-like behavior. His translational research program at the NewYork-Presbyterian Hospital Center for Autism and the Developing Brain studies potential treatments for autism spectrum disorder and related genetic syndromes. Dr. Veenstra-VanderWeele's work has been recognized with a number of awards, including the Blanche Ittelson Award for Research in Child and Adolescent Psychiatry from the American Psychiatric Association.

"I am excited to join the Scientific Council because the Foundation supports early investigators who are often pursuing the first project that is truly their own idea, including support that I was fortunate to have early in my career. This support is critical to launching the next generation of researchers who will tackle the challenging problem of how changes in brain development and function lead to mental illness. This unique niche protects junior investigators during this time when we are in an ongoing funding crisis for scientific research in general and for mental health research (and treatment) in particular."

²⁰¹⁰ Young Investigator

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Bequests and other planned gifts have a profound and lasting impact on the field of research. Your support enables scientists to pursue new, pioneering ideas to answer important questions or help identify new potentially gamechanging targets for treatment in brain and behavior research.

100% of every dollar donated for research is invested in our research grants. Our operating expenses are covered by separate foundation grants.



Dr. Jeffrey Borenstein hosts the monthly "Meet the Scientist" webinar series where leading brain and behavior researchers discuss their current work on the latest in new technologies, early intervention strategies, and next-generation therapies for mental illness. Each hour-long webinar includes time for researchers to answer questions posed by the online participants.

These popular complimentary webinars offer the general public access to some of the world's top scientists who present their cutting-edge research that could lead to breakthroughs to alleviate the suffering caused by mental illness. The 2017 season of webinars received more than 22,000 post event views on YouTube. Episodes in the 2017 series are:

January 10

Bipolar Disorder: Course and (Possible) Mechanism

Fritz A. Henn, M.D., Ph.D.

Icahn School of Medicine at Mount Sinai Scientific Council Member 2014 Colvin Prizewinner for Outstanding Achievement in Mood Disorders Research

February 14

Prefrontal Cortical Circuits in Schizophrenia: Molecular Vulnerabilities, and Clues for Treatments

Amy F.T. Arnsten, Ph.D.

Yale University School of Medicine Scientific Council Member 2015 Goldman-Rakic Prizewinner for Cognitive Neuroscience 2008 Distinguished Investigator 1998 Independent Investigator

March 14

Prevention of Depression Michael Berk, Ph.D., MBBCH, MMED, FF(Psych)SA, FRANCZP

Deakin University School of Medicine 2015 Colvin Prizewinner for Outstanding Achievement in Mood Disorders Research

April 11

Metabolomics and Psychiatric Disease: NextGen Frontiers in Pathophysiology & Treatment

Lisa A. Pan, M.D.

University of Pittsburgh School of Medicine 2012 Young Investigator

May 9

Borderline Personality Disorder: Diagnosis, Course, and Treatment D. Bradford Reich, M.D.

McLean Hospital 2012 Young Investigator

June 13

Toward Rapid-Acting Treatments for OCD

Carolyn Rodriguez, M.D., Ph.D.

Stanford University, School of Medicine 2017 Klerman Prize for Exceptional Clinical Research–Honorable Mention 2014, 2009 Young Investigator

July 11

The Microbiome and Mental Health Christopher Lowry, Ph.D.

University of Colorado, Boulder 2010, 2007 Young Investigator

August 8 Searching for the Seeds of Psychosis Dolores Malaspina, M.D., M.S., MSPH

NYU Langone Medical Center 2007 Distinguished Investigator 2001 Independent Investigator 1995, 1993 Young Investigator

September 12

Finding and Fixing Broken Brain Circuits in Depression

Conor Liston, M.D., Ph.D.

Weill Cornell Medical College 2016 Freedman Prize for Exceptional Basic Research–Honorable Mention 2013 Young Investigator

October 10

Psychosocial Interventions for Maternal Depression: Impact on School Age Children Holly A. Swartz, M.D. University of Pittsburgh 2006 Young Investigator

November 14

Research Updates: Improving Functioning in Schizophrenia Stephen R. Marder, M.D.

University of California, Los Angeles 2016 Lieber Prizewinner for Outstanding Achievement in Schizophrenia Research 2011 Distinguished Investigator

December 12

Robert Lowell: Courage, Genius, and Bipolar Disorder Kay Redfield Jamison, Ph.D.

Johns Hopkins University School of Medicine / Johns Hopkins Hospital 2010 Productive Lives Award 2000 Falcone Prize for Outstanding Achievement in Mood Disorders Research

Connecting on Social Media

The Brain & Behavior Research Foundation maintains a strong social media presence in order to communicate and engage with all of our constituents and group members.





You Tube

400+

YOUTUBE VIDEOS 348K+ VIDEO VIEWS 668K+ MINUTES WATCHED



Getting the Word Out: Brain & Behavior Research Foundation In the News

January 11, 2017 **HEALTH DAY** 'Stress Ball' in Your Brain May Be Key to Heart Risks

February 15, 2017 **SELF** *Ricki Lake's Ex-Husband Died After Struggling With Bipolar Disorder*

May 1, 2017 **THE NEW YORK TIMES** Helping Children Cope with a Parent's Death–Letter to the Editor

May 9, 2017 **SCIENTIFIC AMERICAN** A Shot Against Post-Traumatic Stress Disorder

June 20, 2017 **US NEWS AND WORLD REPORT** *How to Help Someone Else Who Has Depression*

June 26, 2017 FOX NEWS HEALTH PTSD: What Is It and How to Spot It?

November 2017 INSIDE PHILANTHROPY "Proof of Concept." How this Funder Backs Young Researchers on Mental Health

December 10, 2017 **THE HILL** *We Need to Do More Than Just Talk About Mental Illness*

December 20, 1017 **WIRED** *The Best Places to Donate for Last Minute Science Gifts*

2017 RESEARCH GRANTS

SINCE 1987, THE FOUNDATION HAS AWARDED MORE THAN \$380 MILLION TO FUND MORE THAN 5,500 GRANTS TO MORE THAN 4,500 LEADING SCIENTISTS AROUND THE WORLD.

Our Grants support a broad range of the best ideas in brain research. Funding is focused on four priority areas to better understand and treat mental illness, aiming toward prevention and ultimately cures:

BASIC RESEARCH

To understand what happens in the brain to cause mental illness.

NEW TECHNOLOGIES

To advance or create new ways of studying and understanding the brain.

DIAGNOSTIC TOOLS/EARLY INTERVENTION

To recognize early signs of mental illness and treat as early as possible.

NEXT GENERATION THERAPIES

To reduce symptoms of mental illness and retrain the brain.

DISTINGUISHED INVESTIGATOR GRANTS

- Initiated in 1988.
- Enable outstanding scientists to pursue new, cutting edge ideas with the greatest potential for breakthroughs.
- \$100,000 for one year.
- More than \$41 million funded.

INDEPENDENT INVESTIGATOR GRANTS

- Initiated in 1995.
 - Support mid-career scientists during the critical period between initiation of research and receipt of sustained funding.
- Up to \$100,000 for two years.
- More than \$81 million funded.

YOUNG INVESTIGATOR GRANTS

- Initiated in 1987.
- Help researchers launch careers in neuroscience and psychiatry and gather pilot data to apply for larger federal and university grants.
- Up to \$70,000 for two years.
- More than \$257 million funded.

BBRF Grant recipients have gone on to receive more than \$3.8 billion in additional research funding in next stage NIMH and NIH grants.

No other organization outside of the federal government has funded the number of mental health research grants that the Foundation has—or been responsible for more breakthroughs in the field.

An independent measure of the success of our grants is a 2016 RAND Europe analysis of the global mental health research funding landscape over the previous five years. This report found that we are the top non-government mental health research funder mentioned in published articles.

Distinguished Investigators

140 Applications | 17 Grants Approved | \$1.7 Million Awarded

The Distinguished Investigator Grants provide support for experienced investigators (full professor or equivalent) conducting neurobiological and behavioral research. Oneyear grants of \$100,000 each are provided for established scientists pursuing particularly innovative project ideas.

Distinguished Investigator Grants fund talented, established scientists with a record of outstanding research accomplishments. These research projects might provide new approaches to understanding or treating severe mental illness. If successful, the grants could result in later funding from other sources. These grants are among the most competitive in mental health research and demonstrate the power of investigator-initiated research for bringing out new and creative ideas.

"As funds for research from the National Institutes of Health have declined by 20 percent over the past decade, the Foundation's Distinguished Investigator program has become extraordinarily important for the field and its potential to help severe mental illness. This year's Distinguished Investigators use a remarkable range of methodologies to sharpen current treatments and define potential new targets, including previously unstudied or understudied neuroregulators, interactions and circuits, using newer and more precise methods and improved psychosocial approaches. We were impressed by the variety of new approaches, which could prove helpful or even transformative, and would supported by this seed capital. These include studies focusing on the immune system; looking at pre-birth events and stressors of all types; and examining large important databases for new clues."



JACK D. BARCHAS, M.D. Chair, Distinguished Investigator Selection Committee

Founding Member of the Foundation's Scientific Council

Chair and Barklie McKee Henry Professor of Psychiatry *Weill Cornell Medical College*

Psychiatrist-in-Chief Weill Cornell Medical Center, NewYork-Presbyterian Hospital and Payne Whitney Clinic "The uncertainty surrounding future prospects for government funding reinforces the need to support the important work of these scientists, whose research will help us better understand, prevent, diagnose and treat psychiatric illnesses. The generosity of our donors makes these awards possible, and we are grateful to the members of our Scientific Council, who volunteer their time to select the most impactful research."

-Dr. Jeffrey Borenstein

Independent Investigators

304 Applications | 40 Grants Approved | \$3.9 Million Awarded

"This year's Independent Investigators will explore many new and exciting potential approaches to the therapeutics of serious mental disorders, and a better understanding of their molecular and neuro-biological underpinnings, providing additional new targets for treatment."

-Dr. Robert Post

Ground-breaking scientists already proven in their field receive the Independent Investigator Grant. These scientists seek to produce experimental results that will put them in a position to initiate major research programs. This support comes at the critical middle period in the investigators' careers – the phase between the initiation of research and the receipt of sustained funding. With proven success as highly productive scientists, they seek to make clinically relevant advances in the study and treatment of a range of brain and behavior disorders.

Independent Investigator Grants provide each scientist with \$50,000 per year for up to two years to support their work during the critical period between the start of the research and the receipt of sustained funding.

This year's 40 Independent Investigator grantees represent an exciting group of basic and clinical proposals which should make major contributions to the better understanding and treatment of serious psychiatric illness. 304 grants were reviewed by 60 members of the Scientific Council.



ROBERT M. POST, M.D., PH.D. Chair, Independent Investigator Selection Committee

Foundation Scientific Council Member

Head, Bipolar Collaborative Network Professor of Psychiatry *George Washington School of Medicine*

Young Investigators

864 Applications | 196 Grants Approved | \$13.6 Million Awarded

BBRF Young Investigator Grants cover a broad spectrum of mental illnesses and serve as catalysts for additional funding, providing researchers with "proof of concept" for their work. The Foundation awarded a total of \$13.6 million to its 2017 Young Investigators, strengthening its investment in the most promising ideas to lead advancements in understanding and treating brain and behavior disorders.

Young Investigator Grants provide each scientist with \$35,000 per year for two years totaling \$70,000 to enable promising investigators to either extend research fellowship training or begin careers as independent research faculty. Every Young Investigator gets support and guidance from a scientific mentor designated by the Scientific Council.

"The Young Investigator program represents the intersection of cutting-edge brain and behavior research and innovation. The grants enable outstanding scientists to pursue bold new ideas to answer important questions or help identify potentially game-changing targets for treatment. The awards function as seed funding for new directions which would otherwise be highly unlikely."

—Herbert Pardes, M.D. President of the Scientific Council



JUDY M. FORD, PH.D. Co-Chair of the Young Investigator Grant Selection Committee

Professor, Department of Psychiatry University of California, San Francisco 2003 Independent Investigator Foundation Scientific Council Member

"These grants to young investigators are the mother's milk for launching a career in research. They come at a time when these young researchers are starting their own programs of research, and they need both the recognition and funding that these YI awards provide. The applicants, and their proposals this past year [2017], were outstanding. It was often difficult to choose the best of the best."



SUZANNE N. HABER, PH.D. Co-Chair of the Young Investigator Grant Selection Committee

Professor, Department of Pharmacology and Physiology University of Rochester School of Medicine and Dentistry

2011 Distinguished Investigator

Foundation Scientific Council Member

"This year we had an especially outstanding group of Young Investigator applicants. It's exciting to be able to help these young stars reach their goals."

2017 GRANTS BY ILLNESS

ADDICTION

BRIAN A. ANDERSON, PH.D. *Texas A&M University* Young Investigator Grant Basic Research

KASIA MARIA BIESZCZAD, PH.D. *Rutgers University* Young Investigator Grant Basic Research

SHAUNNA L. CLARK, PH.D. *Virginia Commonwealth University* Young Investigator Grant Basic Research

LINDSAY MITCHELL DE BIASE, PH.D. National Institute on Drug Abuse (NIDA/NIH) Young Investigator Grant Basic Research

TRISTEN KIMIKO INAGAKI, PH.D. University of Pittsburgh Young Investigator Grant Next-Generation Therapies

JEE HYUN KIM, PH.D. Florey Neuroscience Institutes, University of Melbourne, Australia Young Investigator Grant Basic Research

DREW DONOVAN KIRALY, M.D., PH.D. *Icahn School of Medicine at Mount Sinai* Young Investigator Grant Basic Research

XIAOFAN LI, PH.D. *Icahn School of Medicine at Mount Sinai* Young Investigator Grant Basic Research **TIFFANY LOVE, PH.D.** *University of Utah* Young Investigator Grant Basic Research

KATE MCDONNELL-DOWLING, PH.D. *Tufts University* Young Investigator Grant Basic Research

ELIZABETH GENEVIEVE MIETLICKI-BAASE, PH.D.

State University of New York (SUNY), University of Buffalo Young Investigator Grant Basic Research

HYUNG WOOK NAM, PH.D. Louisiana State University Health Sciences Center Young Investigator Grant Diagnostic Tools/Early Intervention

JAMES MARK OTIS, PH.D. University of North Carolina at Chapel Hill Young Investigator Grant Basic Research

MICHAEL P. SADDORIS, PH.D. University of Colorado, Boulder Young Investigator Grant Basic Research

FAIR MACLAREN VASSOLER, PH.D.

Tufts University Young Investigator Grant Next-Generation Therapies

LEORA YENIKOFF, PH.D.

City University of New York, College of Staten Island Young Investigator Grant Basic Research PANOS ZANOS, PH.D.

University of Maryland, Baltimore Young Investigator Grant Next-Generation Therapies

ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD)

MICHELLE MARIE DOWNES, PH.D. University College Dublin, Ireland Young Investigator Grant Diagnostic Tools/Early Intervention

CLAUDIA AMORIM LOPES, PH.D.

Harvard Medical School Young Investigator Grant New Technologies

SARAH ELIZABETH MEDLAND, PH.D.

QIMR Berghofer Medical Research Institute, Australia Independent Investigator Grant Basic Research

TIMOTHY SPELLMAN, PH.D.

Weill Cornell Medical College Young Investigator Grant Basic Research

ANXIETY

GAURAV BEDSE, PH.D.

Vanderbilt University Medical Center Young Investigator Grant Next-Generation Therapies

KEVIN THOMAS BEIER, PH.D.

Stanford University Young Investigator Grant Basic Research

LAURA BEVILACQUA, M.D., PH.D.

Icahn School of Medicine at Mount Sinai Young Investigator Grant Next-Generation Therapies

NADEEKA NIRUPAMA DISSANAYAKA, PH.D.

University of Queensland, Australia Young Investigator Grant Next-Generation Therapies

ORIEL FELDMANHALL, PH.D.

Brown University Young Investigator Grant Basic Research

KATHRYN M. HARPER, PH.D.

University of North Carolina at Chapel Hill Young Investigator Grant Basic Research

JENNIFER ANN HONEYCUTT, PH.D.

Northeastern University Young Investigator Grant Basic Research

ZHENG JIANG, PH.D.

Johns Hopkins University Young Investigator Grant Basic Research

ANTONIA N. KACZKURKIN, PH.D.

University of Pennsylvania Young Investigator Grant Diagnostic Tools/Early Intervention

JOHANNES KOHL, PH.D.

Harvard University Young Investigator Grant Basic Research

INDIRA MENDEZ-DAVID, PH.D.

Université Paris-Sud 11, France Young Investigator Grant Basic Research

JUDITH K. MORGAN, PH.D.

University of Pittsburgh Young Investigator Grant Basic Research

MICHELLE PELCOVITZ, PH.D.

Weill Cornell Medical College Young Investigator Grant Next-Generation Therapies **JOANNA SPENCER-SEGAL, M.D., PH.D.** *University of Michigan* Young Investigator Grant Basic Research

CHAD MICHAEL SYLVESTER, M.D., PH.D. *Washington University* Young Investigator Grant Basic Research

AUTISM / AUTISM SPECTRUM DISORDER (ASD)

KONSTANTINOS AMPATZIS, PH.D. *Karolinska Institute*, Sweden Young Investigator Grant Basic Research

ADRIAAN JOHANNES BOENDER, PH.D. *Emory University*

Young Investigator Grant Basic Research

LUKE BURY, PH.D.

Case Western Reserve University Young Investigator Grant New Technologies

CHRISTINA GROSS, PH.D.

Cincinnati Children's Hospital Medical Center, University of Cincinnati Independent Investigator Grant Basic Research

DHANANJAY HUILGOL, PH.D.

Cold Spring Harbor Laboratory Young Investigator Grant Basic Research

ARKADY KHOUTORSKY, PH.D.

McGill University, Canada Young Investigator Grant Basic Research

HUI-CHEN LU, PH.D.

George Washington University Young Investigator Grant Basic Research

GRAINNE M. MCALONAN, M.B.B.S., PH.D.

Institute of Psychiatry/King's College London, UK-England Independent Investigator Grant Next-Generation Therapies

TERUNAGA NAKAGAWA, M.D., PH.D.

Vanderbilt University Independent Investigator Grant Basic Research

ANNABELLA PIGNATARO, PH.D.

IRCCS Fondazione Santa Lucia, Italy Young Investigator Grant Basic Research

RANDALL JEFFREY PLATT, PH.D.

University of Zurich Brain Research Institute, Switzerland Young Investigator Grant Basic Research

NATHANIEL SNYDER, PH.D., M.P.H.

A.J. Drexel Autism Institute Young Investigator Grant Basic Research

JASON J. YI, PH.D.

Washington University School of Medicine Young Investigator Grant Basic Research

EUNICE Y. YUEN, PH.D. *Yale University* Young Investigator Grant Basic Research

BIPOLAR DISORDER

CYNTHIA V. CALKIN, M.D. *Dalhousie University*, Canada Independent Investigator Grant Basic Research

STEFANO COMAI, PH.D.

San Raffaele Vita-Salute University, Italy Young Investigator Grant Next-Generation Therapies

DANIEL HOCHBAUM, PH.D.

Harvard University Young Investigator Grant Basic Research

LIPING HOU, PH.D.

National Institute of Environmental Health Sciences Young Investigator Grant Basic Research KOKO ISHIZUKA, M.D., PH.D. Johns Hopkins University Independent Investigator Grant Basic Research

PO-HSIU KUO, PH.D. *National Taiwan University*, Taiwan Independent Investigator Grant Basic Research

BRADLEY JOHN MACINTOSH, PH.D.

Sunnybrook Health Sciences Centre, University of Toronto, Canada Independent Investigator Grant Diagnostic Tools/Early Intervention

CHRISTIAN GEORG SCHUETZ, M.D., PH.D., M.P.H.

University of British Columbia, Canada Independent Investigator Grant Next-Generation Therapies

BORDERLINE PERSONALITY DISORDER

KEITH BUSH, PH.D.

University of Arkansas for Medical Sciences Young Investigator Grant New Technologies

DEPRESSION

FLORENT BARTHAS, PH.D. *Yale University* Young Investigator Grant Basic Research

ALEXANDRE BONNIN, PH.D.

University of Southern California Independent Investigator Grant Basic Research

TJEERD WILLEM BOONSTRA, PH.D.

University of New South Wales, Australia Young Investigator Grant Next-Generation Therapies

PATRICIA A. BRENNAN, PH.D.

Emory University Distinguished Investigator Diagnostic Tools/Early Intervention **JULIA BRILL, PH.D.** Johns Hopkins University Young Investigator Grant Basic Research

DAVID BULKIN, PH.D. *Cornell University* Young Investigator Grant Basic Research

LAUREN M. BYLSMA, PH.D. University of Pittsburgh Young Investigator Grant Basic Research

MAITHE ARRUDA CARVALHO, PH.D.

University of Toronto, Canada Young Investigator Grant Basic Research

BASAR CENIK, M.D., PH.D.

University of Texas Southwestern Medical Center at Dallas Young Investigator Grant Diagnostic Tools/Early Intervention

GLORIA CHOI, PH.D.

Massachusetts Institute of Technology Independent Investigator Grant Basic Research

ALEXANDRA ELYSE D'AGOSTINO, PH.D.

Stony Brook University School of Medicine Young Investigator Grant Next-Generation Therapies

ROBERT DANTZER, DVM, PH.D.

University of Texas MD Anderson Cancer Center Distinguished Investigator Basic Research

ELENA GOETZ DAVIS, PH.D.

Stanford University Young Investigator Grant Diagnostic Tools/Early Intervention

ZHI-DE DENG, PH.D.

National Institute of Environmental Health Sciences (NIEHS/NIH) Young Investigator Grant Next-Generation Therapies **GABRIEL S. DICHTER, PH.D.** University of North Carolina at Chapel Hill Independent Investigator Grant Basic Research

SAM EMAMINEJAD, PH.D. University of California, Los Angeles Young Investigator Grant Diagnostic Tools/Early Intervention

LORNA ALICE FARRELLY, PH.D. Icahn School of Medicine at Mount Sinai Young Investigator Grant Basic Research

TRACY LEE GILMAN, PH.D.

University of Texas Health Science Center at San Antonio Young Investigator Grant Basic Research

RONALD GERARDO GARCIA GOMEZ, M.D., PH.D.

Brigham and Women's Hospital and Harvard University Young Investigator Grant Next-Generation Therapies

STEPHANIE MARIE GORKA, PH.D.

University of Illinois at Chicago Young Investigator Grant Diagnostic Tools/Early Intervention

ELSELINE HOEKZEMA, PH.D.

Leiden University, Netherlands Young Investigator Grant Diagnostic Tools/Early Intervention

RAQUEL INIESTA, PH.D.

King's College London, UK Young Investigator Grant Diagnostic Tools/Early Intervention

ORNA ISSLER, PH.D.

Icahn School of Medicine at Mount Sinai Young Investigator Grant Basic Research

KRISTEN C. JACOBSON, PH.D.

University of Chicago Independent Investigator Grant Basic Research CHUNG SUB KIM, PH.D.

University of Texas at Austin Young Investigator Grant Basic Research

PILYOUNG KIM, PH.D. University of Denver Independent Investigator Grant Basic Research

DAPHNE JENNIFER KORCZAK, M.D., MSC University of Toronto, Canada

Young Investigator Grant Basic Research

BENOIT LABONTÉ, PH.D. *Laval University,* Canada Young Investigator Grant Basic Research

JACOPO LAMANNA, PH.D. San Raffaele Vita-Salute University, Italy Young Investigator Grant Basic Research

MATTHEW S. MILAK, M.D. Columbia University Independent Investigator Grant Next-Generation Therapies

ANDREW H. MILLER, M.D. Emory University Distinguished Investigator Diagnostic Tools/Early Intervention

JOSE A. MORON-CONCEPCION, PH.D. Washington University Independent Investigator Grant Basic Research

TALIA NEWCOMBE LERNER, PH.D. Northwestern University Young Investigator Grant Basic Research

THOMAS M. OLINO, PH.D. *Temple University* Independent Investigator Grant Basic Research **CARMINE MARIA PARIANTE, M.D., PH.D.** *King's College London*, UK Distinguished Investigator Basic Research

DIEGO A. PIZZAGALLI, PH.D. *McLean Hospital* and *Harvard University* Distinguished Investigator Basic Research

FLORIAN PLATTNER, PH.D. University of Texas Southwestern Medical Center at Dallas Young Investigator Grant Basic Research

CHRISTOPHE PROULX, PH.D. *Laval University*, Canada Young Investigator Grant Basic Research

THOMAS L. RODEBAUGH, PH.D. *Washington University* Independent Investigator Grant Diagnostic Tools/Early Intervention

FRANCISCO ROMO-NAVA, PH.D. *University of Cincinnati* Young Investigator Grant Next-Generation Therapies

JOHN PATRICK RYAN, PH.D. *University of Pittsburgh* Young Investigator Grant Basic Research

SURJO RAPHAEL SOEKADAR, M.D. *University of Tubingen*, Germany Young Investigator Grant Next-Generation Therapies

JONATHAN P. STANGE, PH.D. University of Illinois at Chicago Young Investigator Grant Diagnostic Tools/Early Intervention

HANNA MARIA VAN LOO, M.D., PH.D. *University of Groningen*, Netherlands Young Investigator Grant Diagnostic Tools/Early Intervention **CRYSTAL VERGARA-LOPEZ, PH.D.** *The Miriam Hospital, Brown University* Young Investigator Grant Basic Research

VERONIKA VILGIS, PH.D. *University of California, Davis* Young Investigator Grant Basic Research

EATING DISORDER

CYNTHIA MARIE BULIK, PH.D. University of North Carolina at Chapel Hill Distinguished Investigator Basic Research

JASON MATTHEW LAVENDER, PH.D. *University of California, San Diego* Young Investigator Grant Basic Research

MENTAL ILLNESS-GENERAL

MEGAN CROW, PH.D. *Cold Spring Harbor Laboratory* Young Investigator Grant Basic Research

STEVEN WILLEM FLAVELL, PH.D. *Massachusetts Institute of Technology* Young Investigator Grant Basic Research

JULIJANA GJORGJIEVA, PH.D.

Max-Planck Institute of Brain Research, Germany Young Investigator Grant Basic Research

ELIZABETH J. GLOVER, PH.D. *Medical University of South Carolina* Young Investigator Grant Basic Research

ADAM JOHN HARRINGTON, PH.D.

Medical University of South Carolina Young Investigator Grant Basic Research

KOICHI HASHIKAWA, PH.D.

New York University School of Medicine Young Investigator Grant Basic Research **BRYAN M. HOOKS, PH.D.** *University of Pittsburgh* Young Investigator Grant Basic Research

ELIZABETH DIANA KIRBY, PH.D. *Ohio State University* Young Investigator Grant Basic Research

LEE LOVEJOY, M.D., PH.D. *Columbia University* Young Investigator Grant Basic Research

MIKAEL LARS LUNDQVIST, PH.D. *Massachusetts Institute of Technology* Young Investigator Grant Basic Research

THOMAS HATTON MCCOY, M.D. *Massachusetts General Hospital/ Harvard University* Young Investigator Grant Diagnostic Tools/Early Intervention

ANDREA MELE, PH.D. *Universita' di Roma La Sapienza*, Italy Independent Investigator Grant Basic Research

ERIC MATTHEW MORROW, M.D., PH.D. Brown University Independent Investigator Grant Basic Research

FRANCESCA MARIA PIA NOTARANGELO, PH.D. University of Maryland, Baltimore Young Investigator Grant Basic Research

MARCO ONORATI, PH.D. University of Italy, Pisa, Italy Young Investigator Grant Basic Research

IRVING MICHAEL RETI, M.B.B.S. Johns Hopkins University Independent Investigator Grant Next-Generation Therapies **MARTIN SCHAIN, PH.D.** *Columbia University* Young Investigator Grant New Technologies

ELLIOT H. SMITH, PH.D. *Columbia University* Young Investigator Grant Basic Research

RYAN T. STRACHAN, PH.D. University of North Carolina at Chapel Hill Young Investigator Grant Next-Generation Therapies

RODRIGO SUAREZ, PH.D. *University of Queensland*, Australia Young Investigator Grant Basic Research

ELSA SUBERBIELLE, D.V.M, PH.D. *INSERM*, France Young Investigator Grant Basic Research

CINZIA VICIDOMINI, PH.D. *Massachusetts General Hospital, Harvard University* Young Investigator Grant Basic Research

KAREN L. WHITEMAN, PH.D., MSW Dartmouth Medical School, Dartmouth College Young Investigator Grant Next-Generation Therapies

ANDREA YOUNG, PH.D. Johns Hopkins University Young Investigator Grant Diagnostic Tools/Early Intervention

MENTAL ILLNESS-MULTIPLE DISORDERS

BRENT WILLIAM ASRICAN, PH.D. University of North Carolina at Chapel Hill Young Investigator Grant

Young Investigator Grant Basic Research

ELISABETH B. BINDER, M.D., PH.D. *Max-Planck Institute of Psychiatry,* Germany Distinguished Investigator Basic Research **STEVE DAVIDSON, PH.D.** *University of Cincinnati* Young Investigator Grant Basic Research

ANNEGRET LEA FALKNER, PH.D. *New York University* Young Investigator Grant Basic Research

VINCENZO ALESSANDRO GENNARINO, PH.D.

Baylor College of Medicine Young Investigator Grant Basic Research

LAURA GERMINE, PH.D. McLean Hospital/Harvard University Young Investigator Grant Basic Research

OLIVIER GSCHWEND, PH.D. *New York University* Young Investigator Grant Basic Research

SARAH M. HAIGH, PH.D. University of Pittsburgh Young Investigator Grant Basic Research

KEREN HAROUSH, PH.D. *Stanford University* Young Investigator Grant Basic Research

MATTHEW CARL HEARING, PH.D. Marquette University Young Investigator Grant Basic Research

SARAH RACHEL HEILBRONNER, PH.D. University of Rochester Young Investigator Grant Basic Research

LAURA MARIANNE HUCKINS, PH.D. *Icahn School of Medicine at Mount Sinai* Young Investigator Grant Basic Research

SOONJO HWANG, M.D. *University of Nebraska Medical Center* Young Investigator Grant Next-Generation Therapies LUKE WILLIAMSON HYDE, PH.D.

University of Michigan Young Investigator Grant Basic Research

EMILY G. JACOBS, PH.D. *University of California, Santa Barbara* Young Investigator Grant Basic Research

SUN-HONG KIM, PH.D. Johns Hopkins University Young Investigator Grant Basic Research

EMMA EILEEN MARY KNOWLES, PH.D. *Yale University* Young Investigator Grant Diagnostic Tools/Early Intervention

DAVID R. KOPALA-SIBLEY, PH.D. Stony Brook University School of Medicine Young Investigator Grant Diagnostic Tools/Early Intervention

ROMAIN LIGNEUL, PH.D. *Fundação Champalimaud*, Portugal Young Investigator Grant Basic Research

QING-SONG LIU, PH.D. National Institutes of Health Young Investigator Grant Basic Research

CRISTINA MARQUEZ, PH.D. Instituto de Neurociencias de Alicante, Universidad Miguel Hernandez, Spain Young Investigator Grant Basic Research

NATALIE MATOSIN, PH.D. Max-Planck Institute of Psychiatry, Germany Young Investigator Grant Basic Research

CHRISTIAN MEISEL, M.D., PH.D. National Institute of Mental Health Young Investigator Grant Diagnostic Tools/Early Intervention

JUAN MENA-SEGOVIA, M.D.,PH.D. *Rutgers University* Young Investigator Grant Basic Research NATHAN OKERLUND, PH.D. University of Utah Young Investigator Grant Basic Research

CARLOS J. A. B. PANTOJA, M.D., PH.D. *Max Planck Institute of Neurobiology,* Germany Young Investigator Grant Basic Research

KRISTEN ELIZABETH PLEIL, PH.D. *Weill Cornell Medical College* Young Investigator Grant Basic Research

GIOVANNI PROVENZANO, PH.D. *University of Trento,* Italy Young Investigator Grant Basic Research

CANDACE MARIE RAIO, PH.D. *New York University* Young Investigator Grant Basic Research

PATRICK ELDREDGE ROTHWELL, PH.D. *University of Minnesota* Young Investigator Grant Next-Generation Therapies

ATSUSHI SAITO, M.D., PH.D. *Johns Hopkins University* Young Investigator Grant Basic Research

CODY A. SICILIANO, PH.D. *Massachusetts Institute of Technology* Young Investigator Grant Basic Research

TANYA SIPPY, M.D., PH.D. *New York University* Young Investigator Grant Basic Research

KATHARINE RACHEL SMITH, PH.D.

University of Colorado, Denver Young Investigator Grant Basic Research

MARTA ELAINE SODEN, PH.D. *University of Washington* Young Investigator Grant Basic Research JAMES FITZHUGH STURGILL, PH.D.

Cold Spring Harbor Laboratory Young Investigator Grant Basic Research

LOURDES FAÑANÁS SAURA, M.D., PH.D.

University of Barcelona, Spain Distinguished Investigator Diagnostic Tools/Early Intervention

STEVEN A. SIEGELBAUM, PH.D. *Columbia University* Distinguished Investigator Basic Research

ZHIBING TAN, M.D., PH.D. *Augusta VA Medical Center, Georgia Health Sciences University* Young Investigator Grant Basic Research

JEROME H. TAYLOR, M.D. *Yale University* Young Investigator Grant Next-Generation Therapies

PAUL MATTHEW THOMPSON, PH.D. *University of Southern California* Distinguished Investigator Basic Research

JILLIAN LEE WIGGINS, PH.D. San Diego State University Young Investigator Grant Diagnostic Tools/Early Intervention

RALF DIETER WIMMER, PH.D. *New York University* Young Investigator Grant Basic Research

SUSAN K. WOOD, PH.D. University of South Carolina Young Investigator Grant Basic Research

OBSESSIVE-COMPULSIVE DISORDER (OCD)

THOMAS V. FERNANDEZ, M.D.

Connecticut Mental Health Center, Yale University Young Investigator Grant Basic Research **ODED KLAVIR, PH.D.** *University of Haifa*, Israel Young Investigator Grant Basic Research

PSYCHOSIS

CLAUDIA M. HAASE, PH.D. Northwestern University Young Investigator Grant Basic Research

MANREENA KAUR, PH.D. Monash University, Australia Young Investigator Grant Next-Generation Therapies

DEEPAK KUMAR SARPAL, M.D. *University of Pittsburgh* Young Investigator Grant Basic Research

GISELA SUGRANYES, M.D., PH.D. Institut D'investigacions Biomèdiques August Pi I Sunyer, Spain Young Investigator Grant Basic Research

LAURI TUOMINEN, M.D., PH.D. Massachusetts General Hospital, Harvard University Young Investigator Grant Basic Research

POST-TRAUMATIC STRESS DISORDER (PTSD)

ROEE ADMON, PH.D. *University of Haifa*, Israel Young Investigator Grant Basic Research

TIMOTHY WILLIAM BREDY, PH.D. University of Queensland, Australia Independent Investigator Grant

Basic Research

Emory University Distinguished Investigator Next-Generation Therapies **JENNIFER R. FANNING, PH.D.** *University of Chicago* Young Investigator Grant Basic Research

DAMION GRASSO, PH.D. University of Connecticut and Hartford Hospital Young Investigator Grant Basic Research

BENJAMIN FRIEDRICH GREWE, PH.D. Brain Research Institute of the University of Zurich, Switzerland Young Investigator Grant Basic Research

KATHERINA HAUNER, PH.D. Northwestern University Young Investigator Grant Next-Generation Therapies

LIAT HELPMAN, PH.D. *Tel Aviv Sourasky Medical Center, Tel Aviv University*, Israel Young Investigator Grant Basic Research

THU HUYNH, PH.D. *Weill Cornell Medical College* Young Investigator Grant Basic Research

JONATHAN LEVY, PH.D. Interdisciplinary Center, Herzliya (IDC), Israel Young Investigator Grant Basic Research

STEPHEN MAREN, PH.D. *Texas A&M University* Distinguished Investigator Basic Research

PIA-KELSEY O'NEILL, PH.D. *Columbia University* Young Investigator Grant Basic Research

ABHA KARKI RAJBHANDARI, PH.D. *University of California, Los Angeles* Young Investigator Grant Basic Research **KERRY J. RESSLER, M.D., PH.D.** *McLean Hospital and Harvard University* Distinguished Investigator Basic Research

PRERANA SHRESTHA, PH.D. *New York University* Young Investigator Grant Basic Research

BENJAMIN SUAREZ-JIMENEZ, PH.D.

Research Foundation for Mental Hygiene, Inc./ NYSPI, Columbia University Young Investigator Grant New Technologies

JENNIFER BROOKE TREWEEK, PH.D. *California Institute of Technology* Young Investigator Grant

Basic Research

SCHIZOPHRENIA

TRACY ANN BARBOUR, M.D. *Massachusetts General Hospital* Young Investigator Grant Basic Research

MERA SUN BARR, PH.D. *Centre for Addiction and Mental Health at the University of Toronto*, Canada Young Investigator Grant Diagnostic Tools/Early Intervention

CLARE L. BEASLEY, PH.D. *University of British Columbia*, Canada Independent Investigator Grant Diagnostic Tools/Early Intervention

HADAR BEN-YOAV, PH.D. Ben-Gurion University of the Negev, Israel Young Investigator Grant New Technologies

JAMES ANDREW BOURNE, PH.D. Monash University, Australia Independent Investigator Grant Basic Research

MADDALENA DELMA CAIATI, M.D., PH.D. Harvard University Young Investigator Grant Basic Research **SARAH E. CANETTA, PH.D.** *Columbia University* Young Investigator Grant

Basic Research

MOLLY ERICKSON, PH.D. *Rutgers University* Young Investigator Grant Next-Generation Therapies

MAR FATJO-VILAS, PH.D. FIDMAG Research Foundation, Spain Young Investigator Grant Basic Research

KATIE FERGUSON, PH.D. *Yale University* Young Investigator Grant Basic Research

TOM P. FRANKEN, M.D., PH.D. Salk Institute for Biological Studies Young Investigator Grant Basic Research

JOSEPH A. GOGOS, M.D., PH.D. *Columbia University* Distinguished Investigator Basic Research

ALESSANDRO GOZZI, PH.D. Italian Institute of Technology, Italy Independent Investigator Grant Basic Research

CHRISTOPHER MARTIN HAMMELL, PH.D.

Cold Spring Harbor Laboratory Independent Investigator Grant Basic Research

EILIS HANNON, PH.D.

University of Exeter, U.K. Young Investigator Grant Basic Research

SAMI HASSAN, PH.D.

Columbia University Young Investigator Grant Basic Research **COLIN SHAUN HAWCO, PH.D.** *Centre for Addiction and Mental Health, University of Toronto,* Canada Young Investigator Grant Basic Research

GABRIEL E. HOFFMAN, PH.D. *Icahn School of Medicine at Mount Sinai* Young Investigator Grant Basic Research

LIANG-TIEN HSIEH, PH.D. *University of California, Davis Medical Center* Young Investigator Grant Basic Research

SIMONA KELLER, PH.D. University of Naples Federico II, Italy Young Investigator Grant Basic Research

JERILLYN S. KENT, PH.D. *University of Minnesota* Young Investigator Grant Basic Research

TAKASHI KITAMURA, PH.D. University of Texas Southwestern Medical Center at Dallas Young Investigator Grant Basic Research

ELLEN EUN-OK LEE, M.D. *University of California, San Diego* Young Investigator Grant

ROBERT T. MALISON, M.D.

Basic Research

Yale University School of Medicine/ Yale University Distinguished Investigator Basic Research

SIMON MCCARTHY-JONES, PH.D.

Trinity College, Dublin, Ireland Independent Investigator Grant Next-Generation Therapies

ODED MEIRON, PH.D.

Sarah Herzog Memorial Hospital, Hebrew University, Israel Independent Investigator Grant Next-Generation Therapies **VIJAY ANAND MITTAL, PH.D.** *Northwestern University* Independent Investigator Grant Next-Generation Therapies

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2017 FOUNDATION EVENTS

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International Awards Dinner

New York, October 27, 2017

The Foundation celebrated its 30th Annual International Awards Dinner at The Pierre. The evening included the presentation of the Pardes Humanitarian Prize in Mental Health and the awarding of the Foundation's Outstanding Achievement Awards to nine exceptional scientists for their significant contributions to the advancement of our understanding of schizophrenia, mood disorders, child and adolescent psychiatry and cognitive neuroscience.

PARDES HUMANITARIAN PRIZE IN MENTAL HEALTH

The Pardes Humanitarian Prize in Mental Health was established in 2014 and is awarded annually to recognize individuals or organizations that are making a profound and lasting impact in advancing the understanding of mental health and improving the lives of people suffering from mental illness.

Honoree:

Doctors Without Borders/Médecins Sans Frontières (MSF)

The 2017 Pardes Humanitarian Prize in Mental Health was awarded to the international medical humanitarian organization Doctors Without Borders/Médecins Sans Frontières (MSF), for its visionary and pioneering work providing urgent and often neglected mental health care to people facing crises across the globe.

Honorary Tribute: Constance E. Lieber

For her extraordinary and enduring legacy of generosity, brilliance and compassion, which has inspired others to improve the lives of people suffereing from mental illness.

LIEBER PRIZE FOR OUTSTANDING ACHIEVEMENT IN SCHIZOPHRENIA RESEARCH John M. Davis, M.D. University of Illinois at Chicago

MALTZ PRIZE FOR INNOVATIVE & PROMISING SCHIZOPHRENIA RESEARCH Deanna L. Kelly, Pharm.D., BCPP

University of Maryland School of Medicine

COLVIN PRIZE FOR OUTSTANDING ACHIEVEMENT IN MOOD DISORDERS RESEARCH Hilary P. Blumberg, M.D.

Yale School of Medicine

Tadafumi Kato, M.D., Ph.D. *RIKEN Brain Science Institute*, Japan

Mary L. Phillips, M.D., M.D. (Cantab) University of Pittsburgh, Western Psychiatric Institute and Clinic

RUANE PRIZE FOR OUTSTANDING ACHIEVEMENT IN CHILD AND ADOLESCENT PSYCHIATRIC RESEARCH Nathan A. Fox, Ph.D. The University of Maryland, College Park

Charles A. Nelson III, Ph.D. Harvard Medical School & Boston's Children's Hospital

Charles H. Zeanah, Jr., M.D. *Tulane University School of Medicine*

GOLDMAN-RAKIC PRIZE FOR OUTSTANDING ACHIEVEMENT IN COGNITIVE NEUROSCIENCE Trevor W. Robbins, Ph.D. University of Cambridge, UK



Dr. Jeffrey Borenstein, Stephen Lieber, Dr. Herbert Pardes, and Jason Cone, Executive Director MSF



Dr. Herbert Pardes and Dr. Max Gomez



Dr. Charles Zeanah, Jr., Dr. Jeffrey Borenstein, Dr. Charles Nelson, III and Dr. Nathan Fox





Dr. Jeffrey Borenstein and Dr. Deanna Kelly



Dr. Norman Sartorius and Dr. William Carpenter

International Mental Health Research Symposium

New York, October 27, 2017

The 29th International Mental Health Research Symposium featured a keynote presentation by Dr. Herbert Pardes, the President of the Foundation's Scientific Council. The day also included scientific presentations by the eight 2017 Outstanding Achievement Prizewinners and two exceptionally promising Young Investigator Grantees and was held at The Kaufman Music Center.

Presentations Included:

Keynote Speaker: ARE THERE BREAKTHROUGH OPPORTUNITIES FOR MENTAL HEALTH? Herbert Pardes, M.D.

THE PREVENTION OF RELAPSE WITH MEDICATION: A STATISTICAL PERSPECTIVE John M. Davis, M.D.

TOWARD PERSONALIZED MEDICINE IN SCHIZOPHRENIA: CLINICAL TRIALS TARGETING SPECIFIC BIOMARKERS AND PATIENT POPULATIONS Deanna L. Kelly, Pharm.D., BCPP THE BRAIN CIRCUITRY OF BIPOLAR DISORDER: A VIEW FROM BRAIN SCANNING RESEARCH Hilary P. Blumberg, M.D.

MECHANISMS OF MOOD DISORDER IN THE HUMAN BRAIN: NEURAL TARGETS FOR NEW TREATMENTS Mary L. Phillips, M.D., M.D. (Cantab)

RECOVERY FROM SEVERE PSYCHOSOCIAL DEPRIVATION Nathan A. Fox, Ph.D. Charles A. Nelson III, Ph.D. Charles H. Zeanah, Jr., M.D.

ADDICTION AS BRAIN DISORDER OF SELF-CONTROL Trevor W. Robbins, Ph.D.

HARNESSING THE MICROBIOTA-GUT-BRAIN AXIS DURING PREGNANCY TO IMPROVE MOTHER AND CHILD'S HEALTH Mary C. Kimmel, M.D.

BRAIN DEVELOPMENT AND THE IMMUNE SYSTEM: THE BASIC SCIENCE OF STRESS Anna V. Molofsky, M.D., Ph.D.



Dr. Robert Hirschfeld



Dr. Hilary Blumberg



Dr. Mary Phillips





Dr. Herbert Pardes

Dr. Trevor Robbins



Dr. Deanna Kelly



Dr. Charles Zeanah, Jr., Dr. Charles Nelson, III and Dr. Nathan Fox



Dr. John Davis



Dr. Mary Kimmel



Dr. Anna Molofsky

2017 INTERNATIONAL MENTAL HEALTH RESEARCH SYMPOSIUM

Klerman & Freedman Awards Dinner

New York, July 28, 2017

This very special evening celebrated the 30th anniversary of the Brain & Behavior Research Foundation and honored the members of our Scientific Council for their service.

Six Young Investigator Grantees were honored for their outstanding contributions to mental health research at The Metropolitan Club in New York City. These researchers were chosen by a committee of the Foundation's Scientific Council for their exceptional BBRF grant projects in terms of insight and potential new approaches to the treatment of mental illness.

Each investigator has demonstrated exceptional promise in the pursuit of deeper understanding of the human brain to ultimately result in cures through research.

KLERMAN PRIZEWINNER

Jennifer C. Felger, Ph.D. of Emory University School of Medicine for her work on "The Neurocircuitry of Inflammation-Induced Anhedonia in Depression."

HONORABLE MENTIONS

Danai Dima, Ph.D., of City, University of London and Kings College London for her grant research project, "An Integrative Genomics and Imaging Approach to Identify Resilient Mechanisms for Bipolar Disorder."

Carolyn Rodriguez, M.D., Ph.D. of Stanford University for her grant project, "Pilot Study of the NMDAR Modulator

Rapastinel (formerly GLYX-13) in Obsessive-Compulsive Disorder."

FREEDMAN PRIZEWINNER

Ilana B. Witten, Ph.D., of Princeton University for her work on "Dopamine, Working Memory, and Schizophrenia: Dissecting Spatiotemporal Dynamics."

HONORABLE MENTIONS Marcelo de Oliveira Dietrich,

M.D., Ph.D., of the Yale School of Medicine for his grant project titled "Interplay Between Sustained Activation of AgRP Neurons and Dopamine Signaling in the Etiology of Anorexia Nervosa."

Elise B. Robinson, Sc.D., M.P.H.,

of the Harvard T.H. Chan School of Public Health for her grant project, "Genotype to Phenotype Association in Autism Spectrum Disorders."

KLERMAN & FREEDMAN AWARDS DINNER



Klerman Prizewinner Dr. Jennifer Felger and Dr. Herbert Pardes



Dr. Myrna Weissman and Dr. Anissa-Abi Dargham



Dr. Herbert Pardes and Freedman Prizewinner Dr. Ilana Witten



Dr. Carolyn Rodriguez, Klerman Prize Honorable Mention and Dr. Herbert Pardes



Dr. Danai Dima, Klerman Prize Honorable Mention and Dr. Herbert Pardes



Dr. Marcelo de Oliveira Dietrich, Freedman Prize Honorable Mention and Dr. Herbert Pardes



Dr. Eric Kandel and Dr. Solomon Snyder



Dr. Amy Arnsten, Dr. Helen Mayberg, and Dr. Daniel Weinberger

Women Breaking the Silence About Mental Illness Luncheon

New York, April 15, 2017

Our third Women's Luncheon featured Ellen Levine as our moderator who led a wide-ranging conversation with pioneering mental health researchers Dolores Malaspina, M.D. (schizophrenia) and Myrna Weissman, Ph.D. (mood and anxiety disorders) before a sold-out audience of 300 at the Metropolitan Club in Manhattan. The event, co-chaired by board members Suzanne Golden, Carole Mallement and Barbara Streicker, raised more than \$250,000.

Our Women's Luncheon is designed to pay tribute to those women (often the primary caregivers) who are willing to speak candidly and personally about mental illness and how they inspire others to speak out against the stigma surrounding brain and behavior disorders.

Moderator

Ellen Levine, Editor and Innovator, Hearst Magazines

Speakers

Dolores Malaspina, M.D., M.S., MSPH

Director, Psychosis Program Icahn School of Medicine at Mount Sinai

Myrna Weissman, Ph.D.

Diane Goldman Kemper Family Professor of Epidemiology in Psychiatry *Columbia University College of Physicians & Surgeons*





Dr. Dolores Malaspina, Dr. Myrna Weissman and Ellen Levine



Dr. Jeffrey Borenstein, Barbara Streicker, Dr. Myrna Weissman, Ellen Levine, Carole Mallement, Dr. Dolores Malaspina and Suzanne Golden

BECOME A RESEARCH PARTNER



Barbara Toll, Research Partner

UNITING DONORS WITH SCIENTISTS

"My brother first exhibited symptoms of schizophrenia in 1960 at age 17. When we were able to support psychiatric research as a family, we found the Brain & Behavior Research Foundation. I became a Research Partner because the satisfaction of enabling a Young Investigator's work to unlock the pathways to understanding the sources of psychiatric illness is incredibly satisfying. Now I support three Young Investigators each year. My brother knew that whatever science discovered, it would be too late for him, but he wanted to know that others could avoid the illness that had ruined his life. I donate to honor his wish."

-Barbara Toll, Foundation Board Member

BENEFITS OF BECOMING A RESEARCH PARTNER

- Personally select & sponsor a scientist conducting research that is important to you and your family
- Receive annual scientific updates and progress
 reports
- Interact one-on-one with your scientist partner through email, phone or a laboratory visit

Please contact us at 800-829-8289

Email researchpartner@bbrfoundation.org. Visit bbrfoundation.org/researchpartner.

WHY GIVE TO THE BRAIN & BEHAVIOR RESEARCH FOUNDATION

WHEN YOU SUPPORT THE BRAIN & BEHAVIOR RESEARCH FOUNDATION YOU ARE:

- Impacting the future and moving the needle forward in the search for better treatments and cures for mental illness.
- Driving commitment forward to change and to increase the understanding of mental illness.
- Keeping the pipeline of scientific research flourishing with sustained momentum in the field.

BBRF donors know that scientific progress has been made, but much more work is needed to help alleviate the suffering caused by mental illness.

Thanks to our generous donors, the Brain & Behavior Research Foundation will continue to fund the development of new treatments, cures and methods of prevention for these devastating conditions. Please know that your support has an impact.

"The John and Polly Sparks Foundation strives to advance mental health by helping individuals and families who face challenges, improving the quality of care and supporting research. We are very fortunate to have as our research partner the Brain and Behavior Research Foundation. It is wonderful to know that 100% of our contributions support cutting edge research selected by world renowned scientists."

—Richard Hallock, Distribution Committee of the John and Polly Sparks Foundation, BBRF Donor "When my brother and I decided to donate to what was then NARSAD, he said 'I know that research probably won't find anything in time to help me, but it could help someone else'. I have never forgotten that I am involved in the Brain & Behavior Research Foundation for my brother, and to alleviate future suffering for both patients and families."

- -Barbara Toll, BBRF Board Member
- "I am consistently impressed and amazed how BBRF has advanced the intersection between world-class science and the world of those whose lives are touched by serious mental illness. For those who are afflicted with mental illness and those who support the cause for progress towards a cure, I salute this wonderful organization."

-Don Boardman, BBRF Board Member

"I chose to fundraise for BBRF because the research that is conducted covers so many illnesses that either you or someone close to you has been afflicted withand 100% of donation goes towards research. Nothing can compare to what individuals go through on a daily basis battling different illnesses but training for something so grueling as an ironman triathlon and preparing yourself for a 14 hour day is not easy. Knowing that I was trying to help raise money and thinking of all the people that really suffer pushed me further."

—Darren DelPriore, Team Up for Research Fundraiser, Montvale, NJ

DONORS

Thank You

The generous support of our donors is what allows us to celebrate 30 years of remarkable research achievements. We're honored by the trust you, our donors, have placed in the Brain & Behavior Research Foundation to fund the development of new treatments, cures, and methods of prevention to help alleviate the suffering caused by mental illness.

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A loved one Richard (Hil) Hilstad Lee Abbott Anthony F. Abbruzzino John (Jed) Bryden Abrams Marc D. Abrams Elizabeth Adams-Addorio Carlo A. Adan Clay Adler David Airth Nicholas R. Albers Tony Albert Connor Allard Janice M. Allison Trafford Allpass Tom Allread Ernie Alonzo Nadia M. Al-Tabaa Helen E. Amatangelo Eric E. Ammann Vincent S. Amoroso, Jr. Carole L. Anderson Debra L. Anderson L. Ronald Anderson Philip D. Anderson Robert (Robbie) C. Anderson III Silas E. Anderson, Jr. **Reece Andrews** Christopher Andrusz David G. Angelini Carl C. (Chris) Angell Lucille Aroosian Jeffrey Q. Ast Nancy Atwood Lynn D. Avery Christopher J. Awn John J. Awn, Jr. Julius Axelrod, Ph.D. Mitchell Badler Reginald T. Bahlinger Gina M. Bailey Jeffrey Bailey Gregory T. Bak Anna Balek Scott Balgemann

Dr. Tim G. Baliven Marianne Banerjee Robert P. Banghart Samuel C. Banks David Barazani Barbara Erin E. Bardwell Dorothy G. Barraclough Terrence Barraclough Scott R. Bartlett Tom Bartus Eliot M. Basalone Brian A. Bass Orca F. Bass Albert Bassano Abigail Bassett Nicholas (Nick) D. Battis Mary Battle Dr. Michael Bauer Kelly Bazuaye Meredith W. Beck Ann Beckett-Herring Lawrence H. Bell, Jr. Stephen H. Bell William D. Belter Chester C. Bennington (Linkin Park) **Blake Bergers** Jonathan Berlin Vincent Beronia David S. Berry Gaylord L. Berry Kurt Bertram Barbara Berzin-Rasmussen Karla Bester Brian A. Bezonsky Deepak Bhasin C.J. Biancalana Ken Biddle Jack Bigelow Stephen J. Binder Birgitta Brad Bishop Michael J. Bishop Shaun Biss Margie Bivin Dr. Morton Black Andrew Blackton Henry J. Blas Constance A. Blazy Nicole Blecher Heather A Bleick Greer Burrows Blitch Ray M. Blum Marcia R. Bobal Charles F. Bodden, Sr.

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Joe E. Steakley Ronald Stedelin Mary Steele Mike Steichen Brandon T. Steimel Barbara Steinfeld Lyla Stern Madalyn K. Sterrett Stevie Kathryn Stitz Evelyn Stoddard-Crane Peter Stojsavljevic William Stone Amy M. Strahan Brian L. Stringer Mary J. Strub-Caulkins Hans Struth Kenneth E. Stutzman Michael D. Sugarman Alex (Chip) G. Sulik, Jr. Carol L. Sullivan Steven C. Sutton Dorothy E. Suver T.C. Swafford Patricia Swanjord Jeffrey G. Sweeney Joshua J. Sweeney Andrew Taddy Katrina Tagget Betty R. Tarantola Cindy L. Taylor Wiley E. Taylor Bruce G. Taymor Gerald P. Tchir Thalia A. Tellez Thomas D. Thacher II Kelsey M. Thomas Camilla (Cammie) L. Thompson Maria C. Thompson Barbara Thompson-Brindle Ainsley R. Thornhill Patrick Tierney Nick Tindall Kiwa Toomer Steven M. Toro Filippo V. Toscano Leanne Townsend Mario A. Tozzi, Jr. Frances S. Trager Morris Trager Jacqueline (Jackie) S. Trantham Samuel P. Trice Susan Trochesset-Havran Clarence (Bud) Trombly **Richard Trommer**

Jeffrey S. Trott Christian Truong Donald Trybula Michael Tuhy Lucy Turcotte Sussie Tyrrell Robert D. Uhl Richard L. Underwood Anthony W. Vagnoni Gerald Van de Bruinhorst Stephanie L. Van Gundy Steven Van Lew Charles Varkoly Christopher C. Vella Benjamin B. Vendeland Keith A. Vinskofski The 32 lives of those Hokies lost at Virginia Tech on 4/16/2007 Kurt A. Vogt Dean Voukelatos Alexa (Lexie) L. Wach Quartense E. Wade William F. Wagner, Jr. Barry M. Walden Don Walsh Justin Z. Wang Eric R. Ward Betsy A. Watkins Morton Wax Stephanie Wayment Leone H. (Wisneski) Weber Mary Weber Imaam Wehab Daniel Weiss James C. Welbourne Darren Welch Catherine Welford-Delva Michael Welsh Thomas J. Wendt Timothy R. Wentz Susan L. Wessman Michael Westforth Heidi A. Westhoven Robert Wetzel Phyllis Wheatley-Cameron Matthew W. Wheeler Austin R. White Harry Whiteman Sir Aaron Marcus Whitfield Eamonn D. Wholley John A. Wiederkehr II Carol Wiedower-Walls Michael G. Wieman Zack Wiener Cathy (Chick) S. Wiggins McCulloch Bowers

Brent Willard Gregory S. Williams Robin Williams Sylvia Williams Margaret Wills Richard K. Wilson Holiday P. Wilson-Camhi Betty J. Winberg David Winter Douglas Wistner Terrance D. Witherill Cheryl E. Wolfe Theresa L. Wolff Farrell J. Wolfson John M. Wolverton Ivan Wood Evan Woods Laura Wren-Polansky David Wussler Matthew Yaghoobian Sally Yates Diane L. Young Shervin Zahedi Peter W. Zartman Jack Zaugg Maria Zeier Claire Zeleznik Barry L. Zimmerman Richard M. Zirlen Luis E. Zuritaa

TEAM UP FOR RESEARCH

\$25,000+

7TH ANNUAL LET THE SUN SHINE RUN/WALK Kathy & Kurt Robbins Cold Spring, MN

HIKE FOR MENTAL HEALTH Leo Walker & Tom Kennedy Houston, TX

\$10,000+

CHRISSY'S WISH Linda & Mario Rossi *Dix Hills, NY*

HORIZON GROUP PROPERTIES Gary Skoien & Connie Dyer

Rosemont, IL

MICHAEL MATTOON GOLF OUTING Kathleen Mattoon

Gilberts, IL

TEAM DANIEL: RUNNING FOR RECOVERY FROM MENTAL ILLNESS

Drs. Ann & Robert Laitman Armonk, NY & Port Washington, NY

\$5,000+

2ND ANNUAL TIMMY SPADA MEMORIAL GOLF CLASSIC Myke Furhman Sherman, CT

ANDRE'S KILIMANJARO ASCENT Andre Stapleton Brooklyn, NY

BEN'S MEMORIAL MILE Paul Silver Downers Grove, IL FIGHTING MENTAL ILLNESS IRONMAN TRIATHLON Darren Del Priore Montvale, NI

NAMI - EASTSIDE SUPPORT GROUP

Dr. Tom B. Coles Gross Pointe Woods, MI

RUN FOR RESEARCH Lindsey Rappleyea *Bear, DE*

VIRTUAL STRIDES Mark Petrillo Melbourne, FL

ZELDA'S BREATH Zelda Williams Internet Campaign

\$1,000+

AGORAPHOBIC TRAVELLER/ STORIES FOR GOOD Isabelle Marantz Haydenville, MA

COLLIN'S HALF-MARATHON FOR THE BRAIN Collin Dimler Stone Ridge, NY

DAVE GREEN MEMORIAL GOLF CLASSIC John Hagerty Glen Dale, MD

DRUM AGAINST DEPRESSION Kevin M. Lois Corpus Christi, TX

HERMAN, CHARITY FAIR County of Santa Clara Warrant San Jose, CA IN MEMORY OF CHESTER BENNINGTON - LINKIN PARK Melissa Wilke Düsseldorf, Germany

MAKEANEFFORT: 2017 NYC MARATHON John Marangiello Morganville, NJ

NOA TALMOR'S BAT MITZVAH Talmor Family San Jose, CA

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TWITCH TV FUNDRAISING Gibi Asmr Internet Campaign

\$500+

2017 ANGELL OPEN TENNIS TOURNAMENT Chip Angell Brooklin, ME

DELILAH ELLENBERG FIGHTS FOR A CURE Delilah Ellenberg Little Neck, NY **EVERYDAY HERO**

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HAIWEN AND BOB Haiwen Chen Baltimore, MD

HEADSTRONG CLUB Mira Costa High School Manhattan Beach, CA

HIKE HAPPY: 2,190 MILES FOR MENTAL HEALTH Lynsey Abrams Eldersburg, MD

HR NETWORKING DINNER Martin Fretwell Lakewood, CO

HUMBLE BUNDLE, INC. San Francisco, CA

LULAROE FUNDRAISER Erin Adams *San Clemente, CA*

NOSTALGIA CRITIC Doug Walker Internet Campaign

THE ORDER OF ST. BENEDICT OF NEW JERSEY Delbarton School Morristown, NJ

ZASLAV WEDDING Ashley and Jordan Zaslav New York, NY

2017 FINANCIAL SUMMARY

We are pleased to report on the financial position and results of the Brain & Behavior Research Foundation for 2017. With great thanks and appreciation, we acknowledge the outstanding commitment of Foundation leadership, dedicated staff, volunteers and our donors that allow the Foundation to perform its vital work. We are grateful to the Foundation Scientific Council, our distinguished research leaders covering virtually every major discipline within brain and behavior science, who volunteer their expertise to select and recommend the most promising projects to fund.

In 2017, contributions remained strong and bequests continued to provide major support for which we are truly thankful to all of our supporters for their generosity. We would like to again acknowledge the extraordinary bequest from the late Oliver D. Colvin, Jr. that continues to impact the work of the Foundation. Together, all these donations further the Foundation's mission to alleviate the suffering caused by mental illness by awarding grants that will lead to advances and breakthroughs in scientific research.

With another strong year of results, we continue to move forward with our aim of accelerating research accomplishments to help those living with mental illness to live full and productive lives. During 2017, the Foundation awarded additional NARSAD Grants to bring the total investment in mental health research to more than \$380 million since inception.

We remain very appreciative and thankful for the generosity of the two family foundations who have underwritten, once again, the Foundation's fundraising and administration expenses. This allows for contributions targeted for research to go directly to funding NARSAD Grants. The financial report shown herein has been summarized from our 2017 audited financial statements. The Foundation's complete audited financial statements and our most recent IRS Form 990 are available online at bbrfoundation.org or contact our office at 800.829.8289 for copies of the material.

Combined Statement of Financial Position

	DECEMBER 31, 2017
ASSETS	
Cash and cash equivalents	\$4,634,731
Investments, at fair value	21,240,187
Contributions receivable	855,135
Pledges receivable, net	2,480,769
Prepaid expenses and other assets	40,433
Assets held in charitable remainder trusts	1,466,530
Fixed assets, net	13,933
Security deposits	77,110
	\$30,808,828

LIABILITIES AND NET ASSETS		
Liabilities		
Accounts payable and accrued expenses		\$102,346
Grants payable		20,280,242
Accrued compensation		80,869
Annuities payable		802,586
Charitable gift annuities payable		263,234
	Total Liabilities	21,529,277
Net Assets		
Unrestricted		4,366,051
Permanently restricted		4,913,500
	Total Net Assets	9,279,551
		\$30,808,828

Combined Statement of Activities

		YEAR ENDED
SUPPORT AND REVENUE		DECEMBER 31, 2017
		±12 740 005
Contributions		\$13,748,895
Special events, net		372,252
Contribution of services		1,918,998
Bequests		2,617,803
Net realized and unrealized gains on investments		2,807,211
Net appreciation of assets held in charitable remainder trusts		155,988
Dividend and interest income		540,212
	Total Support and Revenue	22,161,359

EXPENSES		
Program Services		
Research grants and awards		16,340,921
Scientific advancement		2,294,603
Program support		2,877,594
	Total Program Services	21,513,118
Supporting Services		
Fundraising*		924,171
Administration*		1,700,884
	Total Supporting Services	2,625,055
	Total Expenses	24,138,173
Change in Net Assets		(1,976,814)
Net Assets, beginning of year		11,256,365
	Net Assets, end of year	\$9,279,551

*All fundraising and administration expenses are funded by specially designated grants.



747 Third Avenue, 33rd Floor, New York, NY 10017 646.681.4888 | 800.829.8289 info@bbrfoundation.org bbrfoundation.org

Investing in Breakthroughs to Find a Cure

100% of every dollar donated for research is invested in our research grants. Our operating expenses are covered by separate foundation grants.

Our Mission:

The Brain & Behavior Research Foundation is committed to alleviating the suffering caused by mental illness by awarding grants that will lead to advances and breakthroughs in scientific research.

How We Do It:

The Foundation funds the most innovative ideas in neuroscience and psychiatry to better understand the causes and develop new ways to treat brain and behavior disorders. These disorders include addiction, ADHD, anxiety, autism, bipolar disorder, borderline personality disorder, depression, eating disorders, OCD, PTSD, schizophrenia, and suicide prevention.

Our Credentials:

Since 1987, we have awarded more than \$380 million to fund more than 5,500 grants to more than 4,500 scientists around the world.

Our Vision:

To dramatically improve the lives of those with mental illness and ultimately enable people to live full, happy, and productive lives.



BBRF's four-star rating from Charity Navigator, the most well-respected nonprofit rating organization, provides our donors with confidence that their funds are being used appropriately. BBRF's four-star rating means that we adhere to best practices including accountability and transparency. Our stellar track record for donor stewardship ensures that every dollar donated for research goes directly to research.