

2015

Young Investigator Grant Program

ANNOUNCEMENT OF **YOUNG INVESTIGATOR** GRANTEES

SUMMARY OF 2015 YI GRANTS BY ILLNESS

Addiction	7
ADHD	7
Anxiety	16
ASD	15
Bipolar Disorder	2
Depression	43
Mental Illness	
General/Multiple	28
OCD	3
PTSD	11
Suicide prevention	3
Schizophrenia	50
Other	
Fragile X	1
Anorexia	3
Eating/Obesity	1
Borderline Personality Disorder	1

RESEARCH CATEGORIES

Basic Research	117
Next Generation	
Therapies	60
New Technologies	14

ABOUT THE YOUNG INVESTIGATOR GRANT PROGRAM

Initiated in 1987 the Young Investigator Grants help researchers launch careers in neuroscience and psychiatry and gather pilot data to apply for larger federal and university grants.

The Foundation's NARSAD Young Investigator Grant provides support for the most promising young scientists conducting neurobiological research. This program is intended to facilitate innovative research opportunities and supports basic science, as well as translational and/or clinical investigators. All research must be relevant to our understanding, treatment and prevention of serious brain and behavior disorders such as schizophrenia, mood disorders, anxiety disorders or child and adolescent mental illnesses.

HOW THE YOUNG INVESTIGATOR GRANT PROGRAM IS UNIQUE

- Research projects to be funded are selected by the best in the field: our world-renowned Scientific Council comprised of leading researchers across disciplines in brain and behavior research make all grant recommendations
- Only innovative, cutting-edge projects get funded
- Two-year awards up to \$70,000, or \$35,000 per year are provided 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 grants have proven to be catalytic—our survey shows they have led to subsequent grant funding on average 11–19 times the original grant amount

SINCE 1987

- Awarded 3,888 YI Grants
- More Than \$230 Million Funded
- Resulting In More Than \$2.3 Billion In Subsequent Research Funding

The Foundation is pleased to announce \$13 million in 191 new two-year grant awards to support the work of promising young scientists with innovative ideas in mental health research. The grants for 2015 address outstanding research questions across diagnostic categories, from schizophrenia and depression to anxiety, PTSD, autism spectrum disorder, and ADHD, among others. About 60 percent of the projects funded are basic research, the wellspring of innovation in brain research as in all sciences.

Covering a broad spectrum of mental illnesses, these NARSAD Young Investigator Grants function as catalysts to get new ideas off the ground that may not otherwise be supported. We are very grateful to all of our donors for making these important awards possible.

On the following pages you will find our 2015 Grantees and their area of research listed under these categories:

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

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

- About one-third of the 2015 grants fund projects that specifically aim to develop next-generation therapies.
- About 10 percent fund the development of new technologies that will power both basic research and new developments in the clinic.
- About 80 percent of grantees are from the United States. The remaining grantees come from 15 other nations including: Canada, Holland, Italy, Australia, Germany, Israel, Ireland, Spain, the UK, Argentina, Austria, Finland, Japan, South Korea and Switzerland.

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IN 2015

- 712 Applications
- 191 Grants Awarded
- \$13 Million Funded

seeks to establish significant interactions between the caffeine-CLOCK pathway using genetic sequencing and other molecular techniques to identify new candidate molecules to target in future treatments.

Liisa Hantsoo, Ph.D., of the University of Pennsylvania will investigate how hormonal changes associated with the menstrual cycle can affect stress and reactivity to arousing stimuli in women with premenstrual dysphoric disorder. She will also investigate how treatment with selective serotonin reuptake inhibitors (SSRIs) mitigates these effects.

Poornima A. Kumar, Ph.D., of McLean Hospital and Harvard University will investigate how major depression affects the brain's ability to learn about rewards and punishments. Reduced reward learning and increased punishment learning may contribute to many of the symptoms of depression, including depressed mood, inability to feel pleasure, inability to make decisions, and excessive guilt. Dr. Kumar will investigate the neurological basis for these learning deficits with molecular and functional imaging of two brain regions involved in reinforcement learning, the basal ganglia and the lateral habenula, in individuals with and without major depression.

Tara Anne LeGates, Ph.D., of the University of Maryland School of Medicine will investigate how stress alters brain circuitry and increases the risk of depression. Dr. LeGates hypothesizes that stress weakens connections in the brain's reward circuitry and that restoring these connections is a critical for effective antidepressant therapy. She will examine how connections between two regions of the brain, the hippocampus and the nucleus accumbens, change in response to chronic stress and whether antidepressant medications strengthen those connections.

Kathryn M. Lenz, Ph.D., of Ohio State University will explore the relationship between stress in early life, brain development, and the immune system. Early life stress can trigger robust activation of mast cells—immune cells that synthesize a variety of compounds that contribute to brain development and play a role in mood disorders, including serotonin, histamine, and inflammatory cytokines. Dr. Lenz will investigate whether mast cells mediate the impact of early-life stressors on later-life vulnerability to mood disorders by regulating the permeability of the blood brain barrier and thereby altering brain development.

Byungkook Lim, Ph.D., of the University of California, San Diego will investigate the neural circuits that mediate depression-like behaviors in mice following exposure to stress. Dr. Lim will examine the anatomy and function of circuits in the ventral pallidum, a major component of the brain's reward circuitry, and evaluate how these circuits are affected by the stress of repeated social defeat. This type of stress causes behavioral changes in rodents that resemble symptoms of major depressive disorder, including impaired social interaction, lack of motivation, helplessness, and

inability to feel pleasure. Understanding how stress changes the brain's neural circuits to produce these behavioral effects could help researchers develop better treatments and diagnostic tools for major depression.

Brittany Leigh Mason, Ph.D., of the University of Texas Southwestern Medical Center at Dallas, will compare how the presence of gut bacteria affects anxiety and depression. Many individuals with mood disorders show gastrointestinal and appetite disturbances. This study will examine the relationship between gut bacteria and mood across people showing only anxiety symptoms, only depression symptoms, and symptoms of both conditions. Blood samples will be collected to test for immune factors, which are regulated by bacteria. Initial results suggest that people with depression and anxiety symptoms show a unique pattern of gut bacteria.

Bradley Ress Miller, M.D., Ph.D., of Columbia University, will use an imaging study to test the role of serotonin in emotional behavior, with implications for anxiety and depression. Serotonin levels have long been theorized to contribute to major depression, which often occurs with symptoms of anxiety. Imaging the brains of mice, this project will use imaging to track the activity of neurons that produce serotonin during emotional behavior. The team will also selectively limit the activity of these neurons. Dr. Miller expects to show that serotonin neurons are necessary for healthy emotional behavior and that stress triggers depression and anxiety by changing these neurons' activity

Veronica Musante, Ph.D., of Yale University, will expand findings on dopamine transmission in brain in mechanisms implicated in major depressive disorder. Dopamine plays a major role in reward, motor and pleasure signaling and is emanates from the striatum. Dr. Musante and colleagues will study mice to investigate a particular version of a gene that affects dopamine pathways in the striatum. They hope their project will reveal the specific role of this gene, in particular its regulators and interactions, in driving major depressive disorder.

Sarah Ordaz, Ph.D., Stanford University, will assess how levels of a mother's warmth to her child may reduce depressive episodes among adolescent girls. Dr. Ordaz's team will interview girls ages 13 to 16 for their depressive symptoms and experiences of warmth from their mothers, supplementing this information with interviews of the mothers. Over a five-month period, they will continue to track depressive symptoms while also conducting imaging scans of the teenagers' brains. These methods will allow the team to gauge how maternal warmth can mitigate depression, and whether these effects stems from activity in brain regions involved in executive control, rumination and processing the relevance of stimuli. Understanding the biological mechanisms of maternal warmth as treatment may identify biomarkers for measuring this treatment's effects and also support its overall efficacy.



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Investing in Breakthroughs To Find a Cure

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.

OUR VISION:

To bring the joy of living to those affected by mental illness—those who are ill and their loved ones.

HOW WE DO IT:

100% of our donor contributions for research are invested in NARSAD Grants leading to innovative ideas in neuroscience and psychiatry to better understand what causes and how to effectively treat brain and behavior disorders. These disorders include depression, bipolar disorder, schizophrenia, autism, attention-deficit hyperactivity disorder, anxiety, borderline personality disorder, chemical dependency, obsessive-compulsive disorder and post-traumatic stress disorders.

OUR CREDENTIALS

For more than a quarter of a century, we have awarded more than \$340 million to fund more than 5,000 grants to more than 4,000 scientists around the world.

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