

The 2021 Klerman & Freedman Awards

AUGUST 2021



BRAIN &
BEHAVIOR
RESEARCH FOUNDATION

Awarding **NARSAD** Grants

The Brain & Behavior Research Foundation is pleased to honor and recognize the extraordinary work of six outstanding young researchers with our annual Klerman & Freedman Prizes for exceptional clinical and basic research in mental illness. The Klerman and Freedman prizes recognize innovative thinking and remarkable talent across the field of neuropsychiatry.

The prizewinners are selected by committees of the Foundation's distinguished Scientific Council. Led by Dr. Herbert Pardes, this group of 180 prominent mental health researchers rigorously evaluates every grant application, identifying the most promising, high-quality science. The Council carefully selects those with the greatest potential for significant breakthroughs. Recognition for scientists early in their career helps them go on to receive further funding and is a precursor to further accomplishments.

These six prizewinners have previously received awards through the BBRF Young Investigator Grant program, which supports early-career scientists as they gather pilot data and "proof of concept" for their innovative clinical and basic research. Our Young Investigator grants provide the seed funding young researchers need to pursue their hypotheses, concepts, and strategies that our Scientific Council believes have the greatest chance of advancing the field.

We applaud these researchers for their exceptional work, and we thank our generous donors for their support of brain and behavior research to fund scientists working to produce better treatments, cures, and methods of prevention for mental illness.

Together we will dramatically improve the lives of those living with mental illness and enable more people to live full, happy, and productive lives.



Sincerely,

A handwritten signature in black ink that reads "Jeff Borenstein". The signature is fluid and cursive, written over a light grey rectangular background.

Jeffrey Borenstein, M.D.
President & CEO

ANNUAL KLERMAN PRIZE FOR EXCEPTIONAL CLINICAL RESEARCH

Nicholas L. Balderston, Ph.D.

*University of Pennsylvania
Center for Neuromodulation in Depression and Stress*

HONORABLE MENTIONS

Hengyi Cao, Ph.D.

*Feinstein Institutes for Medical Research, Northwell Health
West China Hospital*

Nolan R. Williams, M.D.

Stanford University

ANNUAL FREEDMAN PRIZE FOR EXCEPTIONAL BASIC RESEARCH

Meaghan Creed, Ph.D.

*Washington University in St. Louis
Washington University Pain Center*

HONORABLE MENTIONS

Denise Cai, Ph.D.

Icahn School of Medicine at Mount Sinai

Tomasz J. Nowakowski, Ph.D.

The University of California, San Francisco

About the Prizes

The Klerman & Freedman Prizes pay tribute to Drs. Gerald L. Klerman and Daniel X. Freedman, whose legacies as researchers, teachers, physicians and administrators have indelibly influenced neuropsychiatry. Their outstanding contributions to the field of brain and behavior research continue to inspire scientists who knew them, as well as those who are just entering the field.

KLERMAN Prizewinners

- 1995** Dr. Rajiv Tandon
- 1996** Dr. Hans C. Brieter
- 1997** Dr. Schahram Akbarian
- 1998** Dr. Michael Maes
- 1999** Dr. Andrew L. Stoll
- 2000** Dr. Susan K. Schultz
- 2001** Dr. Cameron S. Carter
Dr. Josephy R. Hibbeln
Dr. Sarah H. Lisanby
Dr. Perry F. Renshaw
- 2002** Dr. E. Sherwood Brown
Dr. John W. Newcomer
- 2003** Dr. Ramin Mojtabai
- 2004** Dr. Helen Link Egger
Dr. Joan L. Luby
- 2005** Dr. Melissa P. DelBello
- 2006** Dr. Hilary P. Blumberg
- 2007** Dr. Beng-Choon Ho
- 2008** Dr. Gabriel Alejandro
de Erausquin
- 2009** Dr. Alina Suris
- 2010** Dr. Daniel P. Dickstein
Dr. Mani N. Pavuluri
- 2011** Dr. Chadi Calarge
- 2012** Dr. Jess G. Fiedorowicz
- 2013** Dr. James McPartland
- 2014** Dr. Denis Jabaudon
- 2015** Dr. Alan Anticevic
- 2016** Dr. Katie McLaughlin
- 2017** Dr. Jennifer C. Felger
- 2018** Dr. Albert R. Powers III
- 2019** Dr. Nolan R. Williams
- 2020** Dr. Ellen Lee

KLERMAN Honorable Mentions

- 1995** Dr. Elizabeth D. Abercrombie
Dr. Kim T. Mueser
Dr. Jose V. Pardo
- 1996** Dr. Steven E. Arnold
Dr. Helen S. Mayberg
- 1997** Dr. Andrew J. Francis
Dr. Katharine A. Phillips
- 1998** Dr. Cameron S. Carter
Dr. Mark R. Serper
- 1999** Dr. Shitij Kapur
Dr. Brian F. O'Donnell
- 2000** Dr. Mark S. George
Dr. Sohee Park
- 2002** Dr. Stephan Heckers
Dr. Anissa Abi Dargham
Dr. Jeffrey H. Meyer
Dr. Yvette I. Sheline
- 2003** Dr. Catherine Monk
Dr. Gerard Sanacora
- 2005** Dr. Anne L. Glowinski
Dr. Gerard Sanacora
- 2006** Dr. Stephan Eliez
Dr. Jordan W. Smoller
- 2007** Dr. Yuval Y. Neria
Dr. Carolyn M. Salafia
- 2011** Dr. Brian M. D'Onofrio
Dr. Jennifer S. Silk
- 2012** Dr. Johanne Renaud
Dr. Manpreet Kaur Singh
- 2013** Dr. Daniel Mueller
Dr. Andrea Danese
- 2014** Dr. Mazen A. Kheirbek
Dr. Bo Li
- 2015** Dr. Chadi Abdallah
Dr. Carrie J. McAdams
- 2016** Dr. Erin C. Dunn
Dr. Avram Holmes
- 2017** Dr. Danai Dima
Dr. Carolyn Rodriguez
- 2018** Dr. Timothy Y. Mariano
- 2019** Dr. Bo Cao
Dr. Sarah A. O. Gray
- 2020** Dr. Soonjo Hwang
Dr. Hadar Ben-Yoav

KLERMAN PRIZE

The Klerman Prize, established in 1994 by Myrna M. Weissman, Ph.D., in memory of her late husband, Gerald L. Klerman, M.D., honors exceptional clinical research by a BBRF Young Investigator Grantee. A distinguished psychiatric researcher and mentor at the National Institute of Mental Health (NIMH), Dr. Klerman pioneered studies of psychotropic medications and developed and tested interpersonal psychotherapy. Dr. Weissman serves on the BBRF Scientific Council.

KLERMAN PRIZE SELECTION COMMITTEE

Responsible for selecting the Klerman Prizewinners, the following BBRF Scientific Council Members make up the Selection Committee:

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Cornell University*

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*State University of New York,
Downstate*

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Ph.D.**

*University of Texas Medical Branch
at Galveston*

2021 KLERMAN PRIZEWINNER

FOR EXCEPTIONAL CLINICAL RESEARCH



Nicholas L. Balderston, Ph.D.
*University of Pennsylvania
Center for Neuromodulation in
Depression and Stress*

2018 BBRF Young Investigator

Nicholas Balderston's lab uses experimental design, psychophysiology, neuroimaging, and neuromodulation to explore the mechanisms that mediate the expression and regulation of anxiety. His work focuses on two primary objectives. The first is to model specific symptoms of anxiety in healthy individuals, and target these symptoms with cutting-edge noninvasive neuromodulation techniques. The second is to develop and conduct randomized-controlled clinical trials in patients with anxiety, using treatment protocols developed in healthy volunteers. This approach is designed to translate the scientific knowledge gained from healthy-volunteer studies to real-world treatments capable of improving the lives of people with anxiety disorders.

The ultimate aim of his research is to provide the foundation for novel neuromodulatory treatments for individuals suffering from severe anxiety.

“Winning the Klerman Prize is an incredible honor, and a reminder of the importance of the work to be done. More broadly, receiving support from BBRF has been instrumental in launching my career as an independent investigator and has facilitated my ability to push toward translating my basic scientific findings into potential new treatments for people with anxiety disorders.”

2021 KLERMAN PRIZE

HONORABLE MENTION



Hengyi Cao, Ph.D.

Feinstein Institutes for Medical Research, Northwell Health West China Hospital

2018 BBRF Young Investigator

The research of Hengyi Cao is focused on the investigation of neural mechanisms underlying the pathogenesis of psychotic disorders such as schizophrenia. His lab combines imaging techniques such as functional magnetic resonance imaging (fMRI), genetic analysis, and behavioral assessments to study how psychosis-related risk factors alter the structural and functional organizations of the human brain, and how these alterations lead to behavioral abnormalities observed in the clinic.

The aim of these studies is to develop early prediction, early intervention, and treatment of these disorders. To date, Dr. Cao's research has been conducted primarily in populations at clinical and/or genetic risks for psychosis, in first-episode patients, and in patients with long-term illness. This work has led to the discovery that altered connections between the cerebellum, thalamus, and systems in the cerebral cortex are a potential neural trait associated with psychosis. Such change may predict future development of psychosis before illness onset and be present across the entire course of the disorder.

“Winning the Klerman Honorable Mention is absolutely a great honor to me. I am thrilled and grateful that my work is recognized and appreciated by the psychiatric community, which strongly encourages me to proceed with my research to promote the understanding of psychotic disorders. The BBRF grant also offers me, for the first time, as an independent principal investigator to conduct a new project, and helps me transit smoothly from a postdoctoral trainee to research faculty.”

2021 KLERMAN PRIZE

HONORABLE MENTION



Nolan R. Williams, M.D.

Stanford University

Director, Brain Stimulation Lab

Director, Interventional Psychiatry

Clinical Research

2016 & 2018 BBRF Young Investigator

Nolan R. Williams has a broad background in clinical neuroscience and is board-certified in general neurology, general psychiatry, as well as in behavioral neurology and neuropsychiatry. In addition, he has specific training and clinical expertise in the development of brain stimulation methodologies under Mark S. George, M.D. Themes of Dr. Williams' work include examining the use of spaced learning theory in the application of neurostimulation techniques; development and mechanistic understanding of rapid-acting antidepressants; and identifying objective biomarkers that predict neuromodulation responses in treatment-resistant neuropsychiatric conditions.

Results from his studies have gained widespread attention, most notably findings of a team he led demonstrating a novel protocol called SAINT for delivery of non-invasive brain stimulation to individuals with refractory depression. In that preliminary study, 90% of participants experienced a remission of depression symptoms after only 5 days of treatment. Those results have led to larger studies which seek to replicate the results.

“Receiving the Honorable Mention for the Klerman Award is an extraordinary honor. BBRF has been tremendously important for my career. My two BBRF grants launched my lab and facilitated the data that has ultimately resulted in two current NIMH grants. I could not be where I am without BBRF.”

FREEDMAN Prizewinners

- 1998 Dr. Yukiko Goto
- 1999 Dr. Stewart A. Anderson
- 2000 Dr. Edwin G. Abel
- 2001 Dr. Kelsey C. Martin
- 2002 Dr. Jon R. Backstrom
- 2003 Dr. Jose A. Esteban
- 2004 Dr. Luca Santarelli
- 2005 Dr. Lisa M. Monteggia
- 2006 Dr. Michael D. Ehlers
- 2007 Dr. Thomas A. Blanpied
- 2008 Dr. Evelyn K. Lambe
- 2009 Dr. Kerry J. Ressler
- 2010 Dr. David A. Baker
- 2011 Dr. Alexandre Bonnin
- 2012 Dr. Zhiping Pang
- 2013 Dr. Garret Stuber
- 2014 Dr. Theodore D. Satterthwaite
- 2015 Dr. Michael M. Halassa
- 2016 Dr. Kay Tye
- 2017 Dr. Ilana Witten
- 2018 Dr. Byungkook Lim
- 2019 Dr. Anna Victoria Molofsky
- 2020 Dr. Cody A. Siciliano

FREEDMAN Honorable Mentions

- 1998 Dr. Eric E. Turner
Dr. Elizabeth Van Bockstaele
- 1999 Dr. Emmanuel N. Pothos
Dr. Laurence H. Tecott
- 2000 Dr. Wayne Drevets
Dr. Bernice E. Morrow
- 2001 Dr. Michael J. Caterina
Dr. Aurelio A. Galli
- 2002 Dr. Michael W. Quick
Dr. Fu-Ming Zhou
- 2003 Dr. William A. Carlezon
Dr. Gleb P. Shumyatsky
- 2004 Dr. Michael D. Ehlers
Dr. Sheena Ann Josselyn
- 2005 Dr. Steven A. Thomas
Dr. Fang Liu
- 2006 Dr. Stewart A. Anderson
Dr. Gabriella D' Arcangelo
Dr. Karoly Mirnics
- 2007 Dr. Fang Liu
Dr. Luca Santarelli
- 2008 Dr. M. Margarita Behrens
Dr. Akira Sawa
- 2009 Dr. Jean-Martin Beaulieu
Dr. Colleen Ann McClung
- 2010 Dr. Vincent P. Ferrera
Dr. Benjamin Philpot
- 2011 Dr. Alberto Bacci
Dr. Andrew A. Pieper
- 2012 Dr. Marie Carlen
Dr. Genevieve Konopka
- 2013 Dr. Carmen Andreescu
Dr. David Foster
Dr. Hiroki Taniguchi
- 2014 Dr. Elena Ivleva
Dr. Aristotle N. Voineskos
- 2015 Dr. Kristen J. Brennand
Dr. Nandakumar Narayanan
- 2016 Dr. Conor Liston
Dr. Margaret Cho
- 2017 Dr. Marcelo de Oliveira Dietrich
Dr. Elise B. Robinson
- 2018 Dr. Christina Gremel
Dr. Ueli Rutishauser
- 2019 Dr. Erin S. Calipari
Dr. Dorothy Schafer
- 2020 Dr. Kevin Beier
Dr. Lorna A. Farrelly

FREEDMAN PRIZE

The Freedman Prize honors the late Daniel X. Freedman, M.D., a pioneer in biological psychiatry and psychopharmacology and a founding member of the Brain & Behavior Research Foundation Scientific Council. It is awarded to a BBRF Young Investigator Grantee for exceptional basic research.

FREEDMAN PRIZE SELECTION COMMITTEE

Responsible for selecting the Freedman Prizewinners, the following BBRF Scientific Council Members make up the Selection Committee:

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Medical University of South Carolina

Husseini K. Manji, M.D., FRCPC
*Johnson & Johnson PRD
Visiting Professor, Duke University*

Eric J. Nestler, M.D., Ph.D.
Icahn School of Medicine at Mount Sinai

Marina Picciotto, Ph.D.
*Yale University
Yale School of Medicine*

Bryan Roth, M.D., Ph.D.
University of North Carolina at Chapel Hill

2021 FREEDMAN PRIZEWINNER FOR EXCEPTIONAL BASIC RESEARCH



Meaghan Creed, Ph.D.

*Washington University Pain Center,
Department of Anesthesiology
Washington University in St. Louis*

2018 BBRF Young Investigator

Meaghan Creed seeks to optimize neuromodulation therapies for disorders of reward processing, specifically for affective symptoms of chronic pain and substance use disorders. Deep brain stimulation (DBS) is a surgical therapy whereby current is passed through electrodes implanted into specific brain nuclei. While the indications for DBS are expanding, the mechanisms by which DBS induces its effects in the context of affective symptoms are not well understood at the cellular, synaptic or circuit levels, making it difficult to optimize.

Dr. Creed's lab seeks to leverage insight from optogenetic circuit-dissection studies to understand how basal ganglia circuit function is altered by the comorbid experience of chronic pain and addictive substances, and then to apply cell-type specific pharmacology and electrophysiology to design neuromodulation protocols to alter circuit function and normalize symptoms of impaired reward processing.

"It's an honor and incredibly humbling to be selected for this award, particularly from this impressive cohort of BBRF Young Investigators. Support from my BBRF grant has allowed our lab to reach out in a completely new technical direction. It's my goal to help develop neuromodulation protocols to increase treatment options for patients and to develop an improved understanding of the neurobiology underlying specific symptoms, which may help predict and optimize patient responses to different therapeutic strategies."

2021 FREEDMAN PRIZE HONORABLE MENTION



Denise Cai, Ph.D.

*Icahn School of Medicine at
Mount Sinai*

2018 BBRF Young Investigator

The goal of Denise Cai's lab is to understand how the brain organizes and integrates different experiences so that it can efficiently "file" and "cross-reference" information, which is critical for daily life. The team combines cutting-edge techniques to gain critical insights into how memories are initially processed, stored, and retrieved, and how these processes may be altered by trauma or aging. The lab also develops and disseminates open-source neuroimaging tools for the broader neuroscience community.

Results of the lab's research to date suggest that after a fearful experience, the brain searches for related events to link to the trauma. This process of linking bad outcomes to their predictors is critical for survival. However, memory-linking may become maladaptive when trauma memories become overly linked with unrelated events, potentially in PTSD. It is Dr. Cai's conviction that having mechanistic insight into how memories can be linked and separated across time will be critical for developing targeted interventions of memory disorders, such as PTSD.

"I am deeply grateful to receive this honor. Many thanks to BBRF for recognizing the interdisciplinary approaches and collaborative efforts of our team. The BBRF grant was critical in supporting us in exploring high-risk, high-reward ideas. It gave us freedom and flexibility to develop novel technology to access new insights about how the brain integrates traumatic events with recent events to make predictions about the future."

2021 FREEDMAN PRIZE

HONORABLE MENTION



**Tomasz J. Nowakowski,
Ph.D.**

*The University of California,
San Francisco*

2018 BBRF Young Investigator

Tomasz Nowakowski's research is beginning to unravel how genes involved in mental health disorders are expressed across the many cell types of the developing human brain. In particular, his most recent work highlights a role of neural progenitor cells in the differentiation of cerebral cortical areas during development, and a novel role for developmental pathways implicated in autism, schizophrenia, and depression, in the early stages of brain development.

This research has involved identifying the molecular features distinguishing human radial glia, which act as neural stem cells. Through a series of studies, he has uncovered molecular definitions of cell types in the developing human brain, and revealed new distinctions among excitatory neurons located in cerebral cortical areas.

Insights from the lab's current research also has the potential to better inform how simple environmental factors, including dietary supplements, could and should be carefully controlled during pregnancy in order to support the development of healthy brain networks that are resilient to genetic anomalies.

"The Freedman Prize Honorable Mention represents an important milestone in my career, as it recognizes the first research project successfully initiated in my laboratory. It is a great distinction not only for me, but also for the trainees in my lab who made it possible. Thanks to the discretionary nature of the funding provided in my BBRF grant, I was able to pursue high-risk research which would perhaps not have been possible otherwise."

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- 2** Former Directors of the National Institute of Mental Health and the current Director
- 1** Nobel Prize Winner

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