Summer 2026

Discover

News from Brain Research Foundation

Platinum Transparency 2026 Candid.

Brain Research Foundation is among the fewer than 1% of U.S.-based non-profit organizations that have been recognized with Candid's Platinum Seal of Transparency. This distinction indicates that Brain Research Foundation shares clear and important information with the public about our goals, strategies, capabilities, achievements and progress indicators that highlight the difference the Foundation makes in the world.

Dear Friends,

Thank you for making this fiscal year another remarkable year for Brain Research Foundation. As we move into our 73rd year of supporting innovative neuroscience research, I would like to reflect on some of the wonderful things that we have accomplished.

This year our donors were especially wonderful to the Foundation. Our annual Discovery Dinner held in November 2025 was extremely successful, raising over $900,000! Because of this achievement, it enabled us to support even more pioneering research.

In May, we were thrilled to welcome our Scientific Review Committee to Chicago for our annual Seed Grant Review meeting. At dinner the evening before the review meeting, we celebrated our SRC who diligently review all the interesting research proposals to find the most innovative projects for BRF to support. **We were able to fund two additional Seed Grants. This brought the total 2026 BRF Seed Grants awarded to 17, which is the highest number in our history.**

We continue to invest in the most promising research across the country to advance the understanding of the brain. This newsletter features an article about Dr. Junyue Cao from Rockefeller University. Dr. Cao was awarded a 2025 BRF Seed Grant, in partnership with the Dementia Society of America, to study how calorie restriction combats age-related brain disorders like Alzheimer's disease. As you read about his research, you will see that he has made amazing progress in a short amount of time. And he is only halfway through his two-year grant. We look forward learning even more as BRF helps Dr. Cao accelerate new therapies to improve brain function as people age.

An engaged board of trustees is extremely important for a nonprofit's vitality. Our Board has enabled BRF to support innovative neuroscience for over 70 years. We are pleased to welcome our latest BRF Trustees, Elisabeth Glick and Mark Noffke. I look forward to working with them both to help promote BRF and raise awareness of the groundbreaking research we fund.

We are proud of the revolutionary work we accomplish, and grateful for the partnerships that make it happen. I thank you for being part of the BRF community. **You have my promise that we will continue to support research projects that succeed in opening future opportunities for research, collaboration and scientific advancement.**

Sincerely,

Terre A. Constantine, Ph.D.
Executive Director and CEO

BRF Introduces Two New Trustees

Brain Research Foundation is proud to announce the appointment of its newest members to the Board of Trustees. These accomplished leaders join the Foundation at a pivotal moment as we accelerate our mission to fund groundbreaking neurological research and unlock the mysteries of the human brain.

The newly appointed trustees include **Elisabeth A. Glick**, Director of Compliance at Cook County Sheriff's Office and **Mark V. Noffke, C.P.A**, Executive Director of the Sue Ling Gin Foundation. "I am thrilled to welcome these visionary leaders to our board," said Scott P. Serota, Chairman of the Board. "Their diverse expertise in their professional lives, community advocacy, and passion for our mission will be invaluable. I look forward to working closely with them to elevate our philanthropic impact and national awareness. We are fortunate to have their talents and leadership guiding us into our next chapter of discovery."

Elisabeth Abraham Glick is an attorney and currently serves as a Director of Compliance at the Cook County Sheriff's Office. Prior to this role, she served as an Assistant General Counsel. Having worked in the criminal justice sector, mental health continues to be an area of interest to her.

Elisabeth holds a Bachelor of Arts in Psychology with a minor in Communication Theory and Rhetoric from the University of Missouri - St. Louis. She went on to obtain her Juris Doctor degree from the University of Illinois College of Law. She lives in Chicago with her husband, Jonathan and their two daughters.

Mark V. Noffke, C.P.A. has an extensive background in all aspects of corporate finance and accounting. Mr. Noffke has been a Chief Financial Officer within several industries with entities that range from $25 million to a billion dollars in revenue, including both private and publicly traded companies.

Mr. Noffke is currently the Executive Director of the Sue Ling Gin Foundation Trust and President of New Management LTD, the owner of three properties within the West Loop of Chicago. Previously, Mr. Noffke was the Chief Financial Officer of Sue Gin's an inflight catering company, Flying Food Fare, Inc. Flying Food is a large-scale airline catering company that provides top-tier passenger meals in non-airline catering snacks for over 70 leading airlines and high-level retailers nationwide. Flying Food Group produces exceptional food destined for multi-market destinations like airline, grocery, food service, and specialty markets.

Mr. Noffke has worked in the investment banking industry, along with being a Chief Financial Officer in the forest products, waste recycling, media, construction, and other manufacturing and processing businesses

Mr. Noffke has operated in many cycles in various industries. Mr. Noffke is a Certified Public Accountant and has a B.S. in Accounting from Valparaiso University in Northwestern Indiana. He also has served on several non-profit and company boards.

Leading-Edge Technology Mapping the Way to New Therapies

Brain Research Foundation Seed Grant Leads to an AI-enabled Brain Aging Atlas, Paving the Way for Accelerated Brain Research

A detailed atlas of gene expression across millions of brain cells in response to calorie restriction and brain aging published last fall by 2025 Brain Research Foundation Seed Grant recipient Junyue Cao, Ph.D., has become a springboard for discoveries on age-related brain diseases and potential therapies.

BRF's grant, funded by the Dementia Society of America, enabled Dr. Cao, Associate Professor at Rockefeller University in New York, to exploit leading DNA-barcoding technology and AI-powered data analysis to create a detailed brain atlas of the locations and behaviors of hundreds of types of brain cells across 11 brain regions in response to aging and calorie restriction. Previous studies had shown that calorie restriction slows, and potentially reverses, age-related cognitive decline, but exactly how was unclear. The atlas, which was published in September 2025 in ***Cell Reports*** provides new details.

"A small subset of brain cells are rescued from age-related changes by caloric restriction," he explained. "And they do not all get rescued the same way."

Calorie restriction helps turn off excessive activity in immune cells called microglia that damage other brain cells. It helps boost the production of myelin, a protective coating for nerve and brain cells, in cells called oligodendrocytes. It also increases the production of new information-transmitting brain cells called neurons.

"There's a potential beneficial effect of caloric restriction—not just on aging brain—but in Alzheimer's disease," Dr. Cao said. He explained that the changes reversed by calorie restriction, including cell damage caused by excess immune activity, loss of myelin around nerve cells, and reduced production of new cells are all hallmarks of Alzheimer's disease and other neurodegenerative conditions.

Rejuvenating the Brain

Now, Cao and his colleagues are looking for ways to replicate the benefits of calorie restriction using therapies that do not require calorie cutting.

A powerful effect of calorie restriction on the brain is that it reduces the number of "zombie cells" in the brain. These cells are no longer functional, but they can promote harmful inflammation and other problems in the brain if left in place.

"If we can use drugs to remove these zombie cells, can we replicate the beneficial effects of caloric restriction?" Dr. Cao said.

Calorie restriction also helps reset brain cells that act like a "clock" to keep the brain tuned to the 24-hour day-night cycle, or circadian rhythm. Dr. Cao explained that many people develop sleeping disorders or experience circadian disturbances with aging or Alzheimer's disease. Learning more about these processes could help the team develop therapies that reset the circadian clock and restore sleep.

Dr. Cao and his team are currently testing medications that promote weight loss or metabolic improvements, such as glucagon-like peptide-1 receptor agonists (e.g. Ozempic) and metformin, to see whether they may also have beneficial effects on aging- or disease-linked processes in the brain. They are also working with other researchers who would like to use their brain atlas to study gliomas, a type of brain tumor that is very difficult to treat.

"The brain atlas is a very promising tool that can be applied to many different brain diseases," Dr. Cao said. "We receive a lot of requests for the dataset from scientists that want use it for their own studies."

Brain-Body Crosstalk

Dr. Cao and his team have expanded their research to examine age-related processes across 21 organs and tissues in young mice, middle-aged mice, and mice nearing the end of their lifespan. They published their results in February 2026 in the highly competitive, top-tier journal *Science*. Building off the BRF-supported brain atlas, the research showed that the age-related processes they documented in the brain are occurring in cells throughout the body. They showed that cells in other organs—including the heart, lungs, and bones—have reduced new cell production, impaired cell-to-cell communication, and damage caused by excess immune cell activity.

> "It would have been impossible to generate this large-scale data without BRF's Seed Grant and the Dementia Society of America's generous support."
>
> -Dr. Junyue Cao

"The organs have to have very close communication to maintain their functions," he said. "Our hypothesis is that the changes in the brain or in any other organ are affected by signaling from other organs."

Calorie restriction or therapies that mimic its effects may help delay these changes, Dr. Cao said.

"We are hoping to integrate the data from the two studies to identify shared signaling and potential therapeutic targets that we can use to rescue—not just the brain—but multiple organs," he said.

Technological Boost

The technologies developed and deployed by Dr. Cao's team, including the DNA barcoding technology they used to create the brain atlas and tools they used to track the regulation of gene expression in single cells in their multiorgan study, are helping to rapidly advance progress in the field of neuroscience.

"The technology is having a huge impact, especially for understanding brain aging because it is just so complex and it is just so challenging with conventional approaches," he said. "We can now scan hundreds of thousands or millions of individual cells to see changes in each individual cell."

Less than a year after receiving his 2025 BRF Seed Grant, Dr. Cao has published two major studies and launched collaboration with with another scientist who wants to use it to study brain diseases.

He also expects to continue generating new insights from the data using AI and custom-built data algorithms to process the millions of datapoints in the brain atlas. These high-powered data analysis tools will also allow them to combine the brain atlas data with other large scale brain datasets to answer additional questions

about the brain, identify potential therapeutic targets for Alzheimer's, or develop sophisticated computer models. "We can also use this data to answer many other questions related to the brain science, and that is what we are currently working on," Dr. Cao said. They are also developing AI-agents to help other researchers navigate this treasure trove of data.

That support is also helping train the next generation of scientists to be able to leverage these new tools and large-scale datasets. Three of his graduate students were co-first authors on the *Cell Reports* study funded by BRF and learned to use this new technology, providing a foundation for them to one day deploy it in their own laboratories.

"Not only did BRF's Seed Grant fund one paper, but it built the foundation for this research," Dr. Cao explained. "It also built the foundation of the future research by my trainees that will continue to advance the field."

Dementia Society of America Partnership

The Seed Grant that BRF awarded Dr. Cao was generously funded through a pioneering partnership between Brain Research Foundation and the Dementia Society of America. This collaboration leverages BRF's years of experience in identifying innovative, high-impact neuroscience and the Society's committment to funding groundbreaking research.

Pictured, from left: Dr. Jean Whaley and Kevin Jameson, founder and CEO from the Dementia Society of America, and Dr. Junyue Cao.

Selected by our Scientific Review Committee and Board of Trustees, BRF's Seed Grant Winners and Scientific Innovations Award Grantees advance neuroscience and the understanding of neurological diseases.

2026 Seed Grant Winners

VICTORIA ABRAIRA, PH.D.
Rutgers University

Project Title: Nurturing Touch: Mapping How Infant Touch Experiences Wire the Brain for Life

Keywords: Autism, Sensory Disorders, Touch Development, Brain Development

WOMEN'S COUNCIL SEED GRANT

GABRIELLA BOULTING, PH.D.
University of Massachusetts

Project Title: Cell-type specific function of MEF2C in Human Brain Development

Keywords: Autism, Schizophrenia, Human Stem Cells, Neurodevelopmental and Psychiatric Disorders

JOSEPH CICHON, M.D., PH.D.
University of Pennsylvania

Project Title: Trigger-and-Propagate Mechanisms of Psychedelic-Induced Cortical Plasticity

Keywords: Depression, Psychedelics, Psilocybin, Brain Plasticity

CAROLINE DIAS, M.D., PH.D.
University of Colorado Anschutz

Project Title: Elucidating the Neurodevelopmental Origins of Brain Degeneration

Keywords: Autism, Alzheimer's, Memory Loss, Neurodevelopment and Neurodegeneration

SUNG HAN, PH.D.
The Salk Institute

Project Title: Molecular Mechanisms of μ-σ Opioid Heterodimers in Dissociating Reward and Analgesia Circuits

Keywords: Addiction, Pain Control, Opioid, Craving

ROSALIE A. CIARDULLO SEED GRANT

JAMES HEYS, PH.D.
University of Utah

Project Title: Transforming Time into Value: Neural Mechanisms Linking Temporal Coding and Decision-Making

Keywords: Alzheimer's, Memory and Cognition, Decision-Making

EUN JUNG HWANG, PH.D.
Rosalind Franklin University

Project Title: Reactivating Parietal Circuits to Rejuvenate Exploration and Learning in Aging

Keywords: Cognitive Aging and Flexibility, Learning, Exploration

NICHOLAS KLUG, PH.D.
University of Vermont

Project Title: Pericytes as Gatekeepers of Cortical Oxygen: A Bioluminescent Approach

Keywords: Alzheimer's, Stroke, Oxygen Delivery

ALI MOHEBI, PH.D.
University of Wisconsin

Project Title: Two Signals: One Memory: Dual Neuromodulator Control of Working Memory

Keywords: ADHD, Schizophrenia, Memory, Dopamine

NESET OZEL, PH.D.
Stowers Institute for Medical Research

Project Title: Neuronal Identity Specification by Alternative Splicing

Keywords: Parkinson's, Visual System, Neuronal Diversity, Synaptic Connections

CATHERINE PEÑA, PH.D.
Princeton University

Project Title: Unlocking the Genetic Resilience of Dopamine-Glutamate Neurons

Keywords: Parkinson's, Neurodegenerative Diseases, Dopamine

MARTHA ROCIO SERVIN-VENCES, PH.D.
Northwestern University

Project Title: Mechanosensory Circuits Driving Gut-Brain Communication during Defecation

Keywords: Gut-brain Axis, Sensory Neurons, Defecation

XUEQIN SUN, PH.D.
Sanford Burnham Presbys

Project Title: Chromatin Remodeling Drives Neural Stem Cell Fate Determination and Gliomagenesis

Keywords: Autism, Schizophrenia, Genetics

JANET SONG, PH.D.
Harvard University

Project Title: Overlooked Resources for Genetic Innovation in the Brain

Keywords: Autism, Schizophrenia, Cognition, Evolutionary Genetics

MARIELENA SOSA, PH.D.
University of Colorado, Boulder

Project Title: Hippocampal Spatial Memory Plasticity During and After Pregnancy

Keywords: Pregnancy Brain, Postpartum, Memory, Mood, Dementia

STEPHEN VAN HOOSER, PH.D.
Brandeis University

Project Title: Prototuning of the Visual System Before the Onset of Visual Experience

Keywords: Visual Disease, Visual Defect, Premature Vision

QUINCHENG ZHAO, PH.D.
Baylor College of Medicine

Project Title: Understanding Body-Brain Crosstalk in Extreme Physiology

Keywords: Hibernation, Cancer, Stroke, Neurodegeneration, Trauma

2026 Scientific Innovations Award Grantees

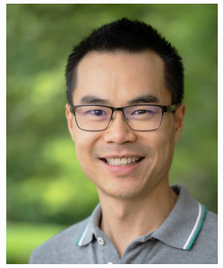
ROSHANAK IRANNEJAD, PH.D.
University of California, Berkeley

Project Title: Elucidating Compartment-Specific Dopamine Receptor Signaling in the Regulation of Brain Health and Disease

Keywords: Parkinson's, Movement, Dyskinesia, Dopamine

Dopamine is a chemical in the brain that helps control movement, motivation, and reward. It works by sensing signals through receptors that bind dopamine, on brain cells. It was thought for a long time that these signals only happened on the surface of cells. However, our lab made an exciting discovery that dopamine can also send signals inside brain cells, specifically at a cellular region called the Golgi apparatus, which acts like a cellular packaging center. Once dopamine reaches the Golgi apparatus, it triggers a unique chain reaction that influences how a key protein, DARPP32, enters the cell's nucleus-the cell's control center-where they can turn genes on or off and cause long-term rewiring of the brain.

This is a significant finding because long-term dopamine surges, like those caused by drugs such as cocaine or morphine, or by L-DOPA treatment for Parkinson's disease, may overstimulate these internal signals, leading to harmful brain changes. These changes could help explain why addiction is so hard to treat or why some Parkinson's patients develop involuntary movement (dyskinesia) over time. By studying how dopamine signals differently at the surface and inside cells, we hope to uncover new ways to treat these brain disorders—by targeting the right place, not just the right chemicals.



KENNETH KWAN, PH.D.
University of Michigan

Project Title: A Hypothesis-Agnostic Approach to Discovering Convergent Mechanisms of Autism in 12 Mouse Models

Keywords: Autism, Genetics

Autism is a condition that affects how the brain develops and functions. People with autism have difficulties with social interactions and social communications. Although scientists are still learning about what happens in the brain to cause autism, we know that genes play an important role; mutations affecting certain genes can carry significant risks for autism. Because there are many genes that can cause autism, we hypothesize that different genetic causes of autism can lead to similar changes in how the brain develops and how neural circuits form. Understanding these shared changes can inform us about the potential causes of the autism. To test our hypothesis, we propose to use twelve groups of animals, each with a different genetic change associated with autism. Instead of looking at just one gene or one part of the brain, we will look at the role of twelve genes in six distinct brain regions to unbiasedly determine which areas of the brain and what kinds of brain cells are most affected in autism. By integrating the data from these twelve mouse models, we hope to find new clues about when and where autism begins. With the support of the Brain Research Foundation, this work will help scientists come up with new ideas about autism and form the basis of future studies.

ANDREW WANG, M.D., PH.D.
Yale University

Project Title: Understanding the Role of T-lymphocytes in the Brain in Health and Disease

Keywords: Parkinson's, Depression, Immune Cells, Brain-body

What causes diseases of the brain, ranging from psychiatric diseases to neurodegenerative diseases, is poorly understood. Recently, a potential role for both the digestive and immune systems in causing disease have emerged, but why these systems would be involved at all was unclear. We recently discovered that cells of the immune system normally travel between the digestive system and the brain to communicate information and coordinate bodily functions. We found that a set of specialized immune cells are shaped by the gut—the microbiota and diet—and reside in particular places in the brain where they are essential to normal brain and bodily function. This proposal seeks to test of the quality, quantity, and location of immune cells differ in diseases of the brain from steady state, and if these cells are driving disease. This understanding may open new ways to diagnose and treat a wide range of diseases of the brain.

Brain Research Foundation

111 W. Washington Street
Suite 1460
Chicago, Illinois 60602

312.759.5150
info@theBRF.org
theBRF.org

Non-Profit
Organization
U.S. Postage
PAID
Chicago, IL
Permit No. 8374

From last year's Discovery Dinner

Our Presentation addressed "Cutting Through the Noise: How Our Brain Prioritizes What We Hear" with, from left, Dr. Howard Gritton, University of Illinois Urbana-Champaign, Dr. Craig Blackstone, Scientific Review Committee, Harvard Medical School and moderator Dr. Terre Constantine, Executive Director and CEO of BRF.

(right) Deirdre Jameson and Charles Huzenis received the 2025 Dr. Frederic A. Gibbs Discovery Award for Philanthropic Leadership.

Our 2026 Discovery Dinner will be held in November at the Four Seasons Chicago.

Evening Panel Discussion:
Sleep and Brain Health

For more information about BRF, sponsorship opportunities, or event attendance, don't hesitate to get in touch with our Director of Philanthropy, Sandra Jaggi, sjaggi@theBRF.org.

To make a donation, please visit www.theBRF.org or scan the QR code to go directly to our donation page. Thank you!

Brain Research Foundation is a 501C(3) nonprofit. Our EIN is 36-2477928. You can be assured that 100% of donations made to research go towards research. Operating costs are covered by a separate fund.